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THE

# GARDENERS' CHRONICLE.

A Weekly Illustrated Journal

OF

## HORTICULTURE AND ALLIED SUBJECTS.

VOL. XV.—NEW SERIES.

JANUARY TO JUNE, 1881.

LONDON:

41, WELLINGTON STREET, COVENT GARDEN, W.C.

1881.

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Per
G160
Jan. - Je
1881

LONDON:
BRADBURY, AGNEW, & CO., PRINTERS, WHITEFRIARS.

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THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 366.—Vol. XV. {New Series.} SATURDAY, JANUARY 1, 1881. {Registered at the General Post-office as a Newspaper.} Price 5d. Post Free, 5½d.

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DOUBLE WHITE PRIMULAS, just coming into flower, 12s. and 15s. per dozen.
HEATH AND SON, Florists, Cheltenham.

SPRUCE FIRS for Christmas Trees, well formed, 3 to 4 feet, 30s. per 100; 4 to 5 feet, 40s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

ROSES, CLEMATIS, SHRUBS, FRUIT TREES, &c., the leading varieties, very strong and healthy.
Descriptive priced CATALOGUE post-free on application.
GEO. J. WOOLLETT, Nurseries, Caterham, Surrey.

WILL BE SOLD, CHEAP, as they have to be removed off the ground by middle of January:— 800 LIMES, 5 to 7 feet.
400 ,, 3 to 4 feet.
200 PINUS CEMBRA, 3 to 5 feet.
JAMES YOUNG, Brechin, N.B.

HARDILY GROWN EVERGREENS, and all other Nursery Stock, in great quantity, and of very superior quality. Priced CATALOGUES post-free on application.
JAMES DICKSON & SONS, Newton Nurseries, Chester.

EXTRA STRONG THORNS.—Several millions from 2 to 5 feet, well rooted. Stock believed to be unequalled. Sample hundreds or thousands. Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**To the Trade.**

JAMES CARTER AND CO.'S General TRADE CATALOGUE of Seeds has been posted to their Customers—should it miscarry, another copy will be sent on application. It includes all sterling Vegetable and Floral Novelties of the year.
237 and 238, High Holborn, London, W.C.

**Continental Seeds.**

O. KNOPFF AND CO., Erfurt (Established 1832), offer their well known FLOWER SEEDS to the Trade. For CATALOGUES, &c., apply to
BECK AND POLLITZER, 211, Upper Thames Street, E.C.

**Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.**

MESSRS. LEVAVASSEUR and SON, Nurserymen, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

LARCH and QUICKWOOD PLANTS for Sale.—2,000,000 Larch, 1 to 2 and 2 to 3 feet; 2,000,000 Quickwood, 1 to 2 and 2 to 3 feet; also a quantity of SPRUCE, SCOTCH FIR, and BEECH, all transplanted, at greatly reduced prices For particulars apply to
FRANCIS BELL, Nurseryman, Easingwold.

**Notice to the Trade.**

NUTTING AND SONS have now posted their ANNUAL TRADE CATALOGUE of Garden Flower and Agricultural Seeds to all their friends. If not duly received, they will be obliged by an early intimation, when another copy will be posted.
NUTTING AND SONS, Seed Merchants, 60, Barbican, E.C.

**Fruiting Trees of**

APPLES, PEARS, PLUMS, CHERRIES, &c., of all shapes and sizes, well set with Fruit Buds. Priced LIST on application to
J. GEO. HILL (late John Scott), The Royal Nurseries, Merriott, Somerset.

DWARF-TRAINED APPLES, splendid stuff, 5 feet high, 5 feet through, best varieties, 24s. per dozen, £9 10s. per 100.
HEATH AND SON, Florists, Cheltenham.

**Fruiting Bush Apples on the Paradise Stock.**

THOMAS RIVERS AND SON have a large Stock of these fruitful little bushes to offer. LIST of sorts and prices forwarded on application.
The Nurseries, Sawbridgeworth, Herts.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

RHUBARB FOR SALE.—Extra strong Roots, for Forcing and Planting. Price, per dozen, 100, or 1000, of
S. BIDE, Alma Nursery, Farnham, Surrey.

SPECIAL TERMS to large Consignors of CUT FLOWERS, CHOICE FRUITS, &c.—WISE AND RIDES, Horticultural Agents, Tavistock Court, Covent Garden, W.C.

**Gardenias.**

WARREN AND CRAIK will return the highest Price for GARDENIAS, TUBEROSES, and MARÉCHAL NIEL ROSES. Not for commission.
43, Jermyn Street, St. James's, London, W.

WANTED, CUT MAIDENHAIR FERN, GARDENIAS, ROSES, LILY of the VALLEY, and VIOLETS. Trade and others can dispose of above through UNWIN'S Commission Agency, 13 and 14, James Street, Covent Garden, W.C.

**Floral Commission Agency.**

WANTED, CUT MARÉCHAL NIEL ROSES, the Third Week in January. Particulars to
W. CALE, 4, Tavistock Row, Covent Garden, W.C.

WANTED, Double PRIMULAS, PRIMROSES, POLYANTHUS (Duke of Wellington in particular) Send names and prices, &c.
H. CANNELL AND SONS, Swanley, Kent.

WANTED, a few Hundreds of good strong Standard ROSES. State price and quantity to
R. AND F. ALLUM, Nurserymen, Tamworth.

WANTED, MANETTI STOCKS. State quantity and price to
R. AND F. ALLUM, Nurserymen, Tamworth.

WANTED, about 5000 good Manetti Stocks. Sample and price will oblige.
WOOD AND INGRAM, The Nurseries, Huntingdon.

WANTED, common White LILIES. Quote lowest cash price per 100 or 1000 for good bulbs to
A. B., *Gardeners' Chronicle* Office, W.C.

WANTED, SCOTS FIR, 2 to 3 feet, twice transplanted. Sample and price to
PARKER AND SONS, St. Michael's Hill, Bristol.

WANTED, SHALLOTS.—Sample, price, and quantity, to
G. AND W. YATES, Seed Merchants, Manchester.

SUTTON'S AMATEUR'S GUIDE contains the best Novelties of the Season. 1s. 3d., post-free. Gratis to Customers.

SUTTON'S AMATEUR'S GUIDE. One of the most practical works on Gardening. 1s. 3d., post-free. Gratis to Customers.

SUTTON'S AMATEUR'S GUIDE. Beautifully Illustrated with Coloured and other Engravings. 1s. 3d., post-free. Gratis to Customers.

SUTTON'S AMATEUR'S GUIDE is now being posted to all Messrs. Sutton's Customers. If not received Messrs. Sutton should be written to. Non-customers may obtain it post-free for 15 stamps, or for 1s. at all the Bookstalls.
Royal Berks Seed Establishment, Reading.

**Roses, Fruit Trees, &c.**

WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.
Ottershaw Nurseries, Chertsey.

AZALEA INDICA.—Twelve New and Beautiful Azaleas, 21s.; large, full plants in 5-inch pots, about 1 foot over, crowded with buds (50 to 100 on each plant); finest known sorts, Double Whites, &c. Packages gratis for cash, with order. A few fine specimens, 10s 6d. and 21s. each.
J. H. LEY, Royal Nursery, Croydon.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

EVERGREEN HEDGES, in great variety, very cheap.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

EVERLASTING FLOWERS, any quantity. Price on application.
CHARLES AYRES, Florist and Seedsman, Cape Town, South Africa.

PELARGONIUM, "Freak of Nature." It is one of the best ornamental foliage plants sent out for years. See *Gardeners' Chronicle*, December 18, 1880. 1s. each, 8s. per dozen.
W. GRAY, Florist, Thorngumbald, Hull.

DELPHINIUM CARDINALE.—Just imported, fresh seeds of the above distinct and rare Perennial, flowers bright scarlet, 1s. 6d. per packet on receipt of stamps.
J. VANDER SWAELMEN, Lily Nursery, Ghent, Belgium.

QUICKS, 2 to 3 feet, 17s. per 1000, extra strong. Strong PEAR STOCKS, to graft, 30s. per 1000. Strong PLUM STOCKS, 30s. per 1000. Common LAUREL, bushy, 1 to 2 feet, 80s. per 1000.
W. JACKSON, Blakedown, near Kidderminster.

THORN QUICK and HOLLY for Hedges. Several thousands of the above to be Sold Cheap, the ground being required for other purposes Apply
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

**Forest Trees.**

MUNRO BROTHERS, Inverness, N.B., have a large stock of the above, including transplanted true native SCOTCH FIR, LARCH, SPRUCE, HAZEL, ALDER, &c.

HAZEL and EVERGREEN PRIVET.—Price on application to
GEORGE TOWNSEND, Nurseryman, Fordham, Cambridgeshire.

**Bulbs, Orchids, &c.**

THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.
Lion Walk, Colchester.

RASPBERRY CANES, Fastolf, good stout. Strong well-rooted DAMSON TREES in large or small quantities, for present planting.
W. H. HAINES, Crouch, St. Mary Cray, Kent.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

**Grapes this Year.**

FRUITING CANES, thoroughly ripened without bottom-heat, 7s. 6d. to 10s. 6d. each. PLANTING CANES, 3s. 6d. to 5s. each. Leading kinds.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

## SALES BY AUCTION.

**Anguloa eburnea.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 13, at half-past 12 o'Clock precisely, by order of Mr. F Sander, St. Albans, a good quantity of this fine pure white ANGULOA. The Sale will also contain an immense mass of LÆLIA ANCEPS DAWSONI, quantities of CATTLEYA MOSSIÆ, a splendid lot of CYPRIPEDIUM SCHLIMI in unusually fine condition, and many good and valuable Orchids, full particulars of which will appear next week.

May be viewed the morning of Sale, and Catalogues had.

**Lælia anceps rosea.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 13, at half-past 12 o'Clock precisely, about 30 Lots of this New LÆLIA; it is a splendid novelty.

May be viewed the morning of Sale, and Catalogues had.

**Epidendrum Wallisi.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 13, at half-past 12 o'Clock precisely, a very fine and healthy importation of this superb EPIDENDRUM.

May be viewed the morning of Sale, and Catalogues had.

**Masdevallia tovarensis (candida).**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Gardeu, W.C., on THURSDAY, January 13, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, St. Albans, a large and splendid importation of this truly fine MASDEVALLIA; its easy growth, combined with its being so floriferous, and its pure white flowers, make it one of the very finest Masdevallias extant.

May be viewed the morning of Sale, and Catalogues had.

**Hardy Plants and Bulbs.**—(Sale No. 5764.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C, on WEDNESDAY, January 5, at half-past 12 o'Clock precisely, Standard and Dwarf ROSES of sorts, HARDY HERBACEOUS PLANTS, such as CARNATIONS, PINKS, VIOLETS, SPIRÆAS, LILY of the VALLEY, DIELYTRAS, and a great variety of HARDY PLANTS and BULBS for the open border; GOOSEBERRY and CURRANT bushes, Choice GLADIOLI, LILIUMS, &c., for spring planting, DUTCH BULBS, &c.

May be viewed the morning of Sale, and Catalogues had.

**Lilium auratum and Kramerii.—Important Sale.**

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, opposite the Bank, E.C., on MONDAY, January 10, 5000 Bulbs of LILIUM AURATUM, 4000 LILIUM KRAMERII, just arrived from Japan; also a splendid assortment of English grown LILIES and various other Bulbs and Roots, together with an importation of 2000 double American TUBEROSES of the best quality. Received direct. Further particulars next week.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

WANTED to RENT, Immediately, near London, 4000 (or more) superficial feet of GLASS, heated by Hot Water; with some good Land and a good Residence attached or near, preferred.

X. M. A. S., *Gardeners' Chronicle* Office, W.C.

**London, S.E. (5026).**

Seven Miles from Covent Garden.

FOR SALE, a well established FLORIST and MARKET NURSERY BUSINESS, comprising nearly 2 Acres of Ground with 3 Greenhouses, a 6-light Pit, and a Potting-shed belonging to the freeholder; and 7 other Houses, 3 Pits and Outbuildings, the property of the present proprietors. All modern Glass. Long Lease. Rent only £50. Incoming £1200 to £1500. No premium required.

Particulars and orders to view of PROTHEROE AND MORRIS, Horticultural Agents, 98, Gracechurch Street, E.C.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are Eight and a Half Acres of deep rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business.—For particulars, Apply to J. WATSON, 38, Crown Street, Bury St. Edmunds.

**To Potato Growers and Market Gardeners.**

THE CORPORATION of PETERBOROUGH are prepared to LET by TENDER about 90 Acres of the SEWAGE FARM, as a whole or in parcels, at per acre.

Particulars may be had of the BOROUGH SURVEYOR, Guildhall, Peterborough, to whom Tenders are to be sent by noon of January 12, 1881.

AMERICAN TUBEROSES.—Just arrived. Low offers of the tall double and dwarf Pearl may be had on application.

WATKINS AND SIMPSON, 1, Savoy Hill, Strand, W.C.

**Wholesale Seed Catalogue.**

WATKINS AND SIMPSON, WHOLESALE SEEDSMEN and BULB MERCHANTS.

Their TRADE CATALOGUE of Agricultural, Garden, and Flower Seeds, may now be had on application. Any Customer not having received a Copy by post will oblige by letting them know. Special quotations for large quantities of seeds by arrangement.

Seed Warehouses: 1, Savoy Hill, and 7, Savoy Street, Strand, W.C.

**Trade Price Current.**

THE LAWSON SEED AND NURSERY COMPANY (Limited), have posted their SEED CATALOGUE for 1881, but should any omissions have inadvertently occurred copies will be sent on application.

106, Southwark Street, London, and George IV. Bridge, Edinburgh.

SUTTON'S POTATOS for PLANTING.
SUTTON'S DISEASE-RESISTING POTATOS.
SUTTON'S LIST of CHOICE SEED POTATOS.
Gratis and post-free on application.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

**Seed Potatos.**

H. AND F. SHARPE are prepared to make special offers of all the leading varieties of Seed Potatos, grown from the finest selected stock and free from disease.

Seed Growing Establishment, Wisbech.

CHRYSANTHEMUMS.—210 best varieties only, includes 70 distinct varieties incurved, and 60 ditto Japanese, &c. Purchaser's selection, 2s. 3d. per dozen; post-free, in good rooted cuttings. Catalogue 1 stamp.

WM. ETHERINGTON, Manor House, Swanscombe, Kent.

FOR SALE, for Cash, Fourteen Bushels Dr. Maclean PEAS (unpicked), at 38s. per Bushel, grown from Miner's Stock; Five Bushels Prince of Wales (unpicked), at 38s. per Bushel, grown from Legerton's Stock; also a large quantity of Sangsters No. 1 (ordinary stock), at 10s. per Bushel (unpicked). They are all good samples, having been well harvested).

E. S. KNOX, Nurseryman, Alcester.

CABBAGE PLANTS, very fine autumn sown:—Early Enfield, Battersea, York, Rainham, East Ham, Sugarloaf, Wheeler's Imperial, Robinson's Champion Drumhead, Thousand-Head, Nonpareil, and Red Pickling, in any quantity, at 3s. per 1000. Low price quoted for large quantities.

EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

CHRYSANTHEMUMS.—Cuttings from 200 of the choicest large flowering varieties, many of them quite new, 1s. per dozen; Rooted ditto, 1s. 6d. The Collection, 10s.; Rooted ditto, 15s.

T. HAWKINS, Hillingdon Heath, Uxbridge.

CHEAP PLANTS.—Pelargoniums, well rooted, choice varieties, 2s. per dozen; Azaleas, 1 to 2 feet high, 12s. per dozen; Dahlia clumps, finest sorts only, 5s. per dozen; Spiræa, 3s. per dozen; Euonymus, 3s. per dozen; Choicest Tea-scented Roses, 10s. per dozen; Violets, any variety, 1s. per dozen runners; Rose Cuttings, from 200 choice varieties, 9d. per dozen; Cuttings, choice Picotee and Carnation, 1s. per dozen; ditto Fuchsias, 6d. per dozen; ditto Myrtle, 9d. per dozen; ditto Coleus, 9d. per dozen; Rooted ditto, 2s. per dozen.

T. HAWKINS, Hillingdon Heath, Uxbridge.

FOR ABSOLUTE SALE, having to give up the land, strong transplanted Deciduous TREES, up to 10 and 12 feet, 4s. to 6s. per dozen; Standard APPLES, from 6 to 8 feet, 6s to 9s. per dozen, or from 45s. per 100; other Nursery Stock correspondingly cheap. For LIST apply to

T. L. MAYOS, Nurseryman, Hereford.

**To the Trade.**

MUSSEL STOCKS.

MESSRS. JOHN STANDISH AND CO. have from 15,000 to 20,000 EXCEPTIONALLY fine grown MUSSEL STOCKS to offer. They are straight, clean grown, and beautifully rooted. Price 40s. per 1000.

Royal Nurseries, Ascot, Berks.

**To the Trade and Large Buyers.**

EWING AND CO. offer large quantities of the following, viz., BLACK CURRANT BUSHES, NUT and FILBERT BUSHES; ELMS of many sorts, large and small trees; POPLARS, ditto; RED-TWIGGED LIMES, WILLOWS, and HORSE CHESTNUTS, large and small trees, MYROBELLA (PRUNUS MYROBALANA), for fencing, &c.

The Royal Norfolk Nurseries, Eaton, near Norwich.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.

Strong HOLLY, 9 to 12 inches high, 12s. per 100.
Strong HAWTHORN QUICK, 25s. to 30s. per 1000.

RICHARD SMITH AND CO., Nurserymen, Worcester.

**Gold Medal Begonias.**

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 1s. and 2s. 6d. each. All first quality. The Trade supplied.

JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

HORSE CHESTNUTS, very fine, straight stems, 14 to 16 feet high. SYCAMORE, 12 to 14 feet high. RED HEART WITHY, extra strong, for coppice planting. As I am wanting to clear the ground the above will be sold very cheap. Prices sent on application.

C. SHILLING, The Hill Nursery, Winchfield, Hants.

FRUIT TREE STOCKS.

CRAB APPLES, or APPLES from seed, 1-yr. old, extra, £12 per 10,000; first choice, £10 per 10,000.
PEARS, 1-yr. old, extra fine, £15 per 10,000; first choice, £13 per 10,000.
QUINCE, extra transplanted, £15 per 10,000; first choice, £13 per 10,000.
PLUM, Myrobalan, extra, 1-yr., £10 per 10,000; first choice, £8 per 10,000; transplanted, extra, £12 per 10,000.
MAHALEB, extra, 1-yr., £6 per 10,000; first choice, £5 per 10,000.

CATALOGUES of Ornamental Trees and Shrubs, Stocks and Plants, Roses, Pæonies, Magnolia Linné, and others, will be sent on demand. FRESH FLOWERS of VIOLET sent every day to all parts of Europe. Orders to

L. PAILLET, Nurseryman, Vallée de Chatenay, par Sceaux, prés Paris, France.

**Camellias in Bloom.**

WM. PAUL AND SON (successors to the late A. PAUL & SON—Established 1806), Paul's Nurseries, Waltham Cross, Herts), beg to announce that their CAMELLIAS are now finely in bloom. The collection, which is the largest and most complete in the country, will remain in bloom till the end of February.

Visitors by railway can enter the Nurseries from the platform, Waltham Station, Great Eastern Railway, half-an-hour's ride from London.

**Grape Vines.**

B. S. WILLIAMS has still on hand a good stock of all the leading kinds, including the Alowick Seedling, which has proved the best late black Grape in cultivation. Strong Planting and Fruiting Canes.

A LIST of kinds and prices on application.

Victoria and Paradise Nursery, Upper Holloway, N.

LARCH, 2 to 3 feet.—Sample and price on application.

PARKER and SONS, St. Michael's Hill Nursery, Bristol.

**To Planters.**

SEEDLING and TRANSPLANTED FOREST TREES, PLANTS for Game Coverts, ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c. The immense stock of the above is this season in splendid condition, and special offers for future delivery will be made on application. CATALOGUES on application.

The LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh.

ABIES DOUGLASII, about 1 foot, transplanted, 7s. 6d. per 100, 68s. per 1000; CUPRESSUS LAWSONIANA, about 14 inches, twice transplanted, 8s. 6d. per 100, 75s. per 1000; PINUS LARICIO, stocky, transplanted, 7s. 6d. per 1000; PINUS RIGIDA, for planting in swampy places, 5s. per 1000.

JAS. HATHERALL, Weybridge Station.

POTATOS FOR SEED.

20 Tons of SUTTON'S MAGNUM BONUM POTATOS, at £5 5s. per ton.
20 Tons of MYATT'S PROLIFIC, at £5 5s per Ton.
20 Tons of CHAMPION, at £4 4s. per ton.
4 Tons of VEITCH'S IMPROVED ASHLEAF KIDNEY, at £7 per ton.
10 Tons of EARLY ROSE, at £4 per Ton.
Free on rails. Cash.

Also 10,000 CROWN BOBS and WARRINGTON GOOSEBERRY TREES; 2000 BLACK GRAPE and NAPLES CURRANT TREES. Apply to

W. COCKS, Monk's Hall, Gosberton, Spalding.

MR. LAXTON'S NEW PEAS.—JOHN BULL.—The finest main-crop, 3 feet, blue wrinkled Pea, and the best of all T. Laxton's introductions. Sealed half-pint packets, 5s.

MINIMUM.—The dwarfest Pea. A very early and most prolific white wrinkled variety, and the best of all for Forcing. Sealed half-pint packets, 3s. 6d. One packet of each variety, 7s. 6d.

NEW AGRICULTURAL PEA, No. 1 EARLY MAPLE.—Three weeks earlier than the old Maple. 10s. per quart.

For further particulars see *Gardeners' Chronicle* of November 20 last.

Wholesale of HURST AND SON, 152, Houndsditch, London, E.C.; THOMAS LAXTON, Seed Grower, Bedford; and Retail of all Seedsmen.

JOHNSTONE'S ST. MARTIN'S RHUBARB.—Earliest and best in cultivation, forces well. Strong Roots 1s. each, 9s. per dozen. Trade price on application. Priced Trade CATALOGUE of Seedling and Transplanted Forest Trees, &c, free on application.

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

SPRING FLOWERS.

POLYANTHUS—Choice varieties, including Gold and Silver Chain, Hose-in-Hose, &c.
PRIMROSES—Double White, Lilac, Yellow, Crimson, and choice Single varieties.
COWSLIPS—Giant and other sorts.
AURICULAS—Alpine and Double Dark varieties.
HEPATICAS—Red, White, and Blue.
CHRISTMAS ROSES—In variety.
SWEET WILLIAMS—Very choice sorts.
WALLFLOWERS—Yellow and Dark.
MYOSOTIS DISSITIFLORA—Spring Forget-me-Not.
COLEUS—In first-class variety.

Apply to Mr. COOPER, Calcot Gardens, Reading, Berks.

**Webb's Prize Cob Filberts.**

MR. COOPER having succeeded to the whole of the late Mr. Webb's valuable stock of Prize Cob Filbert Trees, is prepared to supply them in small or large quantities, and solicits early orders.

Calcot Gardens, near Reading, Berks.

**Twelfth Edition**

"WEBBS' PRIZE COB FILBERTS, AND HOW TO GROW THEM."

This Pamphlet will be forwarded to any one sending Two Postage Stamps to

Mr. COOPER, Calcot Gardens, near Reading, Berks.

SPECIAL TRADE OFFER of FOREST TREE SEEDLINGS, &c.

APPLE, Crabs, 1-yr., very fine, 3s. 6d. per 1000
PEARS, Stocks, 1-yr., very fine, 4s. per 1000
ACACIA, 1-yr., fine, 2s. per 1000
ALDER, 1-yr., fine, 3s.; 2-yr., fine, 5s. per 1000
ASH, 1-yr., fine, 2s.; 2-yr., fine, 4s. per 1000
BEECH, 1-yr., very fine, 3s. per 1000
BIRCH, 1-yr., 3s.; 2-yr., 5s. per 1000
BRIER, Sweet, 1-yr., 4s. per 1000
BROOM, 1-yr., strong, 2s. 6d. per 1000
CHESTNUT, Horse, 2-yr., 10s. per 1000
,, Spanish, 1-yr., 4s. 6d.; 2-yr., 7s. 6d. per 1000
ELM, Scotch, 1-yr., fine, 3s. 6d.; 2-yr., fine, 6s. per 1000
HAZEL, 2-yr., drilled, 9 to 14 inches, 10s. per 1000
HOLLY, 1-yr., good, 3s. 6d.; 2-yr., good, 6s. per 1000
LABURNUM, 1-yr., extra strong, 3s. per 1000
OAK, 2-yr., fine, drilled, 7s. 6d. per 1000
SYCAMORE, 1-yr., fine, 3s.; 2-yr., 5s. per 1000
THORN, or QUICK, 1-yr., 3s.; 2-yr., fine, 5s. per 1000
PINE, Austrian, 1-yr., 2s.; 2-yr., 5s. per 1000
,, Corsican, 1-yr., 2s. 6d.; 2-yr., 5s. per 1000
,, Pinaster, 1-yr., 2s. 6d. per 1000
FIR, Scots, true Native, 2-yr., scarce, 6s.; 2-yr. 2-yr., 9 to 15 inches, 17s. 6d. per 1000
SPRUCE, Norway, 2-yr., 1s. 6d.; 3-yr., 2s. 6d. per 1000
AUCUBA JAPONICA, 1-yr. cuttings, extra fine, 50s. per 1000

Samples of any of the above per post free.

We can also offer a splendid general stock of transplanted NURSERY STUFF, including Larches, 2 to 3½ feet; Scots Fir and Spruce, 9 to 15 inches; Austrian Pine, Pinaster Pine, and nearly all kinds of Hardwoods, and will be glad to send samples and quote prices to intending buyers.

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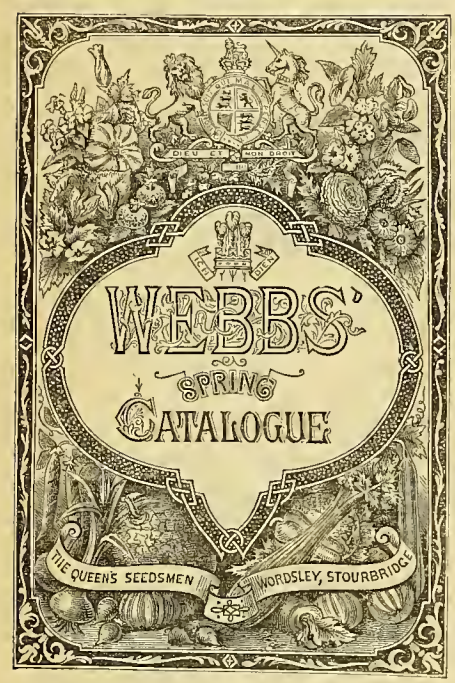


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# Gardeners' Chronicle.

*SATURDAY, JANUARY* 1, 1881.


## THE NEW PLANTS OF 1880.

THE year that has just closed, though yielding a fair number of new plants, has not given us, amongst the strictly novel subjects, many of startling importance. A considerable array, indeed, has been introduced to public notice, and many may be described as useful and ornamental, but we are unable to point to any one which is especially sensational. The plant which appears to us to be most deserving of being singled out for the premier position is one which has in former years been already placed in the front rank on the faith of the published illustration of it, but which has this year been seen in a growing and blooming condition, and which has more than realised the anticipations formed of it. We refer to Mr. Linden's Anthurium Andréanum (see fig. 88, p. 497, vol. xiii.), which in the size, substance and brilliant scarlet hue of its spathes is most gorgeous, and in the general contour of the plant has a nobility of aspect which at once asserts its pre-eminence.

With this as our starting point we may next refer to Mr. Bull's Anthurium Harrisii pulchrum, a charming Brazilian plant, with a short caudex, elongate lanceolate leaves of a bright green, edged and dotted with white, and a creamy-white spathe, set off by a deep crimson spadix. Anthurium Walujewi, from Venezuela, introduced by M. Wallis, is another fine species of this very ornamental genus, with great cordate olive-green leaves, in the way of A. magnificum, but not variegated The Sumatran Musa sumatrana is a handsome variegated, tall-growing plant, with long-stalked oblong-elliptic leaves, elegantly marked with transverse blotches of chocolate-brown; it is possibly a Malayan form of M. zebrina, but the published figure suggests a more elegant and pleasingly marked plant. In Carludovica Wallisii we have a dwarf-growing Cyclanth, with wedge-shaped obovate bifid plicate leaves, introduced from Utria, in tropical America, and a welcome addition to a somewhat limited family. High up in the list of interesting novelties must be placed the Nepenthes bicalcarata brought by Burbidge from Borneo, whose large pitchers are remarkable for the two sharp horns or spurs, which project over the mouth beneath the lid, the neck being, moreover, furnished with a blunt dorsal spur (see fig. 36, p. 201, vol. xiii). Several hybrid Pitcher-plants of American origin have also made their appearance, and are interesting additions to a remarkable family. They comprise N. Lawrenceana, Outramiana, Williamsii, robusta, and compacta (see pp. 40, 41, vol. xiv). The New Guinea Colocasia neoguineensis, introduced by M. Linden, is a fine Arad with cordate acuminate deep green leaves, handsomely blotched with white, like a Dieffenbachia; while from the Solomon Isles comes the provisionally-named Pothos aurea, a climbing Arad, with deep green cordate leaves variegated with yellow and white, which possibly belongs to the genus Scindapsus. To the

already too numerous Dracænas and Crotons there are several additions. D. Lindeni, from South Brazil, with narrow, recurving green leaves margined with creamy-yellow, of a handsome and distinct specific type; D. regis, broad-leaved and dark coloured, with abundant rosy variegation, is of French origin; while of Mr. Wills' set D. aurantiaca, narrow and drooping-leaved, with a marginal band of bright orange or flame colour, the young growth being almost wholly suffused with this orange tint—and D. Knausei, broad and recurved, the bold green leaves bordered with rose-colour, are novel and desirable varieties. Amongst the Crotons, the Codiæum pictum Bergmanni, raised by MM. Chantrier, of Mortefontaine, is a fine bold variety, with its obovate oblong green leaves freely marked with canary-yellow on the margin and principal veins, and with a broad central band of the same. C. pictum Warreni, introduced by Mr. Williams from the Polynesian Isles, has very beautiful long drooping twisted leaves of a dark green, mottled and suffused with yellow, orange and carmine, b coming intensified into a rich carmine. Several others, as C. Carrièri, Hanburyanum, Nevillæ, and Stewartii, are acquisitions.

There have been some useful flowering plants added to our stove collections, but none of a very striking character. The pretty Bornean Jasminum gracillimum, figured on the opposite page, sent home by Burbidge, and recently exhibited at South Kensington, a slender free blooming twiggy shrub, with starry white flowers, is likely to prove a good decoration subject; and Hoya globulosa, with large globose heads of straw-coloured blossoms, will be an acquisition amongst stove climbers. Rhododendron assamicum is a pretty neat-habited, white-flowered plant of the R. formosum type. One or two seedling Ixoras have come prominently into notice; of these both I. picturata and I. Pilgrimii are fine high-coloured varieties. Several good additions have been made to the interesting family of Bromeliaceæ, of which it will suffice to mention Caraguata ligulata cardinalis, a strikingly handsome species, with a crown of spreading scarlet bracts; Bilbergia Chantinii and B. roseo-marginata, two ornamental species, the former with bright red and the latter with deep rose conspicuous bracts; and Pitcairnia violacea, a tall plant with a loosely branched inflorescence of deep violet-purple flowers, which has flowered in the French gardens. Of the Orchidaceous order, Renanthera Storiei, from the Philippines, occupies a foremost place, being very floriferous, equalling, if not excelling R. coccinea, with flowers of the brightest yellow and vermilion, and having a dark-coloured lip. Some new forms of Lælia prove to be very chaste and beautiful, as, for example, L. majalis alba, L. Perrinii nivea, and L. anceps vestalis. The Brazilian Miltonia Bluntii, with yellowish sepals blotched with cinnamon, and a broad white lip purple at the base, will be quite an acquisition, as will some choice varieties of Miltonia spectabilis Moreliana—rosea and radians; some new forms of Odontoglossum vexillarium; and some of the Lady's Slippers, as Cypripedium Spicerianum, a handsome and distinct Indian species, with a large white dorsal sepal marked by a purple mid-line, undulate, greenish, purple-specked petals, and a purple-brown lip (see p. 41, vol. xiii.); and C. Morganianum ×, one of Messrs. Veitch's hybrids, bred between superbiens and Stonei, and having noble flowers with whitish dark-lined sepals, yellowish white petals, with dark blotches and stripes on the inner side, and a brownish-mauve lip of a sulphury-white beneath.

Amongst stove Ferns, the most noble introduction is the Sagenia Lawrenceana, described on the opposite page, a Madagascar plant, collected by Humblot, and a close ally of the Mascaren S. Pica. Lastrea membranifolia, sent out by Mr. Williams, is a Polynesian species, with an erect crown, throwing out arching bipinnate triangular-ovate fronds, having the apex and the apices of the pinnæ, of which the lower is much the largest, caudately acuminate. Lastrea Richardsii multifida has pinnato-pinnatifid fronds, with the apices of the fronds and pinnæ dactyliferous; it is a New Caledonian plant, and has been exhibited during the past season by the Messrs. Veitch & Sons. Two useful Polystichums have been brought into cultivation by Mr. Bull, the Indian P. lentum and the West India P. viviparum; the latter a plant of well-marked character with handsome, glossy, proliferous drooping fronds. Pteris moluccana, a bold pinnate species of refined character, has been introduced to the Royal Exotic Nursery at Chelsea; and P. internata, a dwarf West Indian plant, allied to P. heterophylla, to the Victoria Nursery at Holloway. Mr. Williams has also obtained from the South Sea Islands the free-growing evergreen Asplenium Baptistii, which has the aspect of a bipinnate form of A. contiguum, but whether really so or not it is a most distinct and ornamental addition to the group. To the Maidenhairs Mr. Bull has added Adiantum aneitense, a Pacific Island species of ornamental character, allied to A. Cunninghamii and A. fulvum, and likely to prove a very useful decorative stove Fern, somewhat taller than the universal favourite, A. cuneatum, but not at all merging into coarseness of habit.

We shall have to defer our brief notes on greenhouse and hardy plants till our next number. *T. Moore.*

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THE CHARLEVILLE GRAPES.—Mr. Roberts, gardener to the Countess of Charleville, Charleville Forest, Tullamore, writing to the Council of the Royal Horticultural Society of Ireland, thanking that body for the special award of the Society's large Silver Medal for the wonderful bunch of black Grapes (Gros Guillaume) exhibited by him at the late winter show, states that the exact weight of the bunch was 26 lb. 6 oz., and that in five seasons the same Vine has borne nine bunches, the total weight of which was 165 lb.

## New Garden Plants.

BEGONIA SOCOTRANA, *Hook. fil., sp. n.**

A very pretty species, of which tubers were brought by Dr. I. B. Balfour from the dry and hot island of Socotra in the Indian Ocean, off the coast of Arabia, one of the last places in the world in which a Begonia could have been expected to occur. From the geographical position of that island the affinity of this discovery may be conjectured to be either Asiatic or African, and upon the whole, though referable to none of the sixty sections of the genus, founded by Klotzsch and A. de Candolle, it must, I think, be placed in the African one of *Augustia*, from the characters of which it differs chiefly in the male perianth having four segments, in the shorter filaments, rounded top of the anther, in the six lobes of the female perianth instead of five, and the untwisted arms of the style—characters which, except the last, occur in the Natal B. geranioides, Hook. f. (*Bot. Mag.*, t. 5583), to which B. socotrana is unquestionably closely allied. This is only one of the many most interesting plants brought by Dr. I. B. Balfour from an island which he alone has had the good fortune to explore, and the publication of the results of which exploration are awaited with impatience by botanists no less than horticulturists. A coloured plate of the Begonia will shortly be published in the *Botanical Magazine*. The Royal gardens are indebted to Dr. I. B. Balfour for tubers which he liberally presented to that institution in April, and which flowered in December. *J. D. Hooker.*

FIG. 1.—BEGONIA SOCOTRANA: FLOWERS ROSE-PINK.

* *Begonia socotrana*, Hook. fil.—Sparsely hairy, erect leaves orbicular peltate crenate, disk intruded, funnel-shaped, margins recurved; flowers monœcious, rose-pink, males numerous, perianth-lobes 4, obovate; stamens in a globose cluster, filaments short, free, anthers clavate, recurved, tip rounded, dehiscence dorsal,—female flower solitary; perianth segments 6 elliptic-obovate; styles short, arms spreading and incurved not twisted; stigmas cordate, connected by a papillose band: ovary 3-angled, 3-celled, dorsal cell moderately winged, placentas entire.

JASMINUM GRACILLIMUM, *Hook. f., n. sp.**

A very near ally of the well known Jasminum pubescens of India and China, which is the type around which are to be ranged a good many closely allied species, differing in habit, in the amount of pubescence, and in the size and number of flowers and of the divisions of the corolla, all of them natives of Eastern Asia and its islands. Of these J. gracillimum is one of the most distinct in its graceful habit and in the abundance of its large sweet-scented drooping flowers, which are also more copiously produced, in which respects I know of none to compare with it. It appears to be a small species; the pot plant exhibited by Messrs. Veitch at the Royal Horticultural Society, and which was in full flower, was about 3 feet high, branched from the base, the long very slender branches springing from low down on the stem and curving over on all sides, weighted down by terminal globose panicles as large as the fist. J. gracillimum is a native of Northern Borneo, where it was discovered by Mr. Burbidge (the author of the charming little work on that island, recently published under the title of *The Gardens of the Sun*), when collecting for Messrs. Veitch, with whom the plant flowered last December. *J. D. Hooker.*

FIG. 2.—JASMINUM GRACILLIMUM: FLOWERS WHITE, AND FRAGRANT.

* *Jasminum gracillimum*, n. sp.—Pater ti-hirsutum, ramis elongatis gracillimis teretibus decurvis; foliis 1—1½ pollicaribus oppositis breviter petiolatis ovato-cordatis acutis subtus hirsutis; paniculis densifloris globosis pendulis; floribus breviter pedicellatis albis suaveolentibus; corolla alba, tubo ⅔ pollicari lobis calycinis filiformibus patentim pilosis subduplo longiore, limbi 1½ poll. diametr. lobis ad 9 elliptico oblongis subacutis.

SAGENIA LAWRENCEANA, *n. sp.**

This noble Fern—which would be called Aspidium Lawrenceanum if the character derived from the indusium were ignored, and Nephrodium Lawrenceanum if that derived from the venation were but partially recognised—inhabits the dense forests of Madagascar, where it is found in a very humid atmosphere, at an elevation of 3000 feet. It was discovered by Mr. L. Humblot, who has sent to this country living plants, which are in the hands of Messrs. Sander & Co., of St. Albans, Herts. It is by their desire that we have named it in compliment to Sir Trevor Lawrence, Bart., M.P., as a slight acknowledgment of the countenance and support which he is ever ready to afford to those who risk their lives in securing for our English gardens the floral treasures of the tropics. Mr. Humblot writes, that it is a splendid Fern, with a trunk or caudex some 3 to 4 inches in height, the fronds attaining a length of 2 feet or more, and spreading gracefully from the crown. In the specimens before us the fronds (wanting the stipes, which is doubtless black and glossy) are some 2 feet long, ovate in outline, pinnate below, pinnatifid above, the apices both of the frond and of the pinnæ, acuminate. All the pinnæ have an upward curve, which renders them more or less falcate. The lower pinnæ are about 18 inches long, with the anterior basal segment 3 inches long, and the posterior one 7 inches long and 2½ inches broad. The remaining lobes on the upper side are about 2 inches long, and tolerably uniform to the point, but those on the posterior side shorten rapidly, the second being about 5 inches long, and the rest gradually decreasing into shallow sinuate lobes. The next pair of pinnæ are about 1 foot long, falcately oblong, acuminate, 3½ inches broad, sinuately lobed on the lower, entire or slightly repand on the upper side, which is cut down to within about an inch of the rachis, and separated by a narrow sinus from the next superior pair of segments. The segments, three or four in number (our specimens are not very perfect), decrease in size up to the acuminate apex. The remains of the stipes show that it is black and glossy, as also are the rachides and the costa on their under surface, their upper surface being set with short thick hairs. The venation is compoundly anastomosing, the primary veins being pinnate, falcately curved, somewhat irregular or flexuose and becoming lost in the reticulations near the margin. There is a series of larger reticulations irregular but roundish in outline, of which some three or more areoles lie between the veins; within these is a series of smaller reticulations, and these again contain a third series of smaller ultimate areoles within many of which are free divaricate veinlets. The sori are large and conspicuous, either on or within the first series of reticulations, and thus forming a line on each side the primary veins; they are compital, that is, situated on points where two or more veins meet; and they are covered by a broad cordate-reniform involucre, which is somewhat undulated at the margins.

We are informed that the plant comes from a region where the temperature is intermediate, ranging from 55° to 65°, so that although requiring stove treatment it will not need excessive heat. Its nearest ally is the Sagenia Pica of the Mascaren Islands. *T. Moore.*

* *Sagenia Lawrenceana*, n. sp.—Fronds very large, ovate acuminate, glabrous, pinnate below, pinnatifid above; pinnæ all somewhat falcate, and distinctly acuminate, the lower ones obliquely deltoid, much enlarged on the posterior side, deeply pinnatifid near the base, becoming sinuately lobed upwards; upper ones oblong-acuminate, the larger entire on the upper, sinuately lobed on the lower margin, confluent, with a narrow sinus, gradually smaller upwards, entire; rachides and costæ glossy-black, very distinctly marked on the under surface, strigose above; veins compoundly anastomosing, the primary ones pinnately disposed, parallel-curved in an upward direction, running out into the reticulations of the margin, somewhat flexuose, about half an inch apart in the middle entire segments, more widely separated (1 inch) in the middle parts of the lower pinnæ; secondary veins in 3—4 irregular series between the primaries; tertiary veins forming a close network with numerous free divaricate veinlets in the ultimate areoles; sori large, mostly confined to a row on each side the primary veins, within or on the border of the primary areoles, compital; indusium broad cordate-reniform.—Madagascar, elev 3000 feet, L. Humblot. *T. M.*

BIFRENARIA HADWENII (*Lindl.*) *var.* BELLA.

A new and grand variety, mentioned at p. 812, vol. xiv. Sepals and petals almost wholly whitish-yellow outside; most brilliant shining cinnamon inside, with a few spots, bars and hieroglyphical figures of light whitish-sulphur colour. Lip wide, white, with one light brown spot behind, and a larger one in front of the callus, radiating light brown lines on lateral lobes, and mauve ones on the anterior lobe. Column brown in front. I have to thank for this lovely thing Dr. Wallace, New Plant and Bulb Company, Lion Walk, Colchester. *H. G. Rchb. f.*

SCUTICARIA DODGSONI, *Hort.*

I must acknowledge at this place that I am ignorant as to what Scuticaria Dodgsoni is. The name is used in England just as if the plant were an established species. Perhaps it is, but no one of my numerous and well-instructed correspondents could help me. Mr. P. C. M. Veitch looked in vain over some English periodicals which I have not at hand. Mr. B. S. Williams was not very clear in his memory, though he quotes the plant in his *Manual*; it also occurred in the catalogue of Messrs. Rollisson, late of Tooting, and in Mr. Stevens' catalogue. The plant is a myth for me. If some of our readers could give us some information, perhaps even an indication, it might be very serviceable, provided we were favoured also with the name of our benefactor, as anonymous presents of this kind are apt to be dubious. *H. G. Rchb. f.*

TEMPLETONIA RETUSA.—This was first discovered by Robert Brown on the south-west coast of Australia, but the honour of actually introducing it into this country, at the very commencement of the present century, is due to Peter Good, one of the rather large army of botanical collectors who have been, at one time or another, since the formation of the Royal gardens at Kew, in the employment of that establishment. The present plant is easily grown, and yet far too seldom seen in collections; its large crimson pea-shaped flowers are produced singly from the axils of its small, smooth, broadly-ovate, glaucous leaves. It may easily, by pinching, be kept within any bounds, and neat, well-bloomed plants grown even in small pots. It is now flowering in the winter garden at Kew.

## THE KEW ARBORETUM.

### THE MAPLES.—I.

SINCE the publication of Loudon's great work, *Arboretum et Fruticetum Britannicum*, forty-two years ago, and the abridged edition of the same work, *An Encyclopædia of the Trees and Shrubs of Great Britain*, four years later, a large number of species, many of them of the highest importance both as regards their beauty and their usefulness for the embellishment of the scenery of our parks and gardens, not to speak of the value of many from a purely economical or commercial standpoint, have been introduced to this country, and a crowd of new forms of old and well-known species have originated in our nurseries. As regards the latter, in the majority of cases no record of their origin has been kept either by the adoption of a distinctive name or otherwise, and a good deal or confusion regarding them has consequently arisen. A glance at almost any tolerably comprehensive tree and shrub catalogue will at once prove this, for a host of names will be seen which cannot be found in any botanical work. To remedy this state of affairs as far as possible it is intended, from time to time, to publish in these columns lists of the species and varieties of the more important genera; to give the synonyms under which they are generally known in gardens and in systematically named collections of nurserymen and others, and to append notes of interest respecting their origin, affinities, &c. Figures of the leaves, fruits, &c., of rare, little known, and interesting species and varieties will be added, and no pains will be spared to make the lists as trustworthy as possible, and to bring them abreast of the present time.

A commencement is now made with the Maples, and it may be as well, even at the risk of repetition to accurately define the object and limits of the plan proposed with regard to them. The species will not follow in botanical sequence, nor will the Acers of any one country be treated of before proceeding to those of another. The sense, too, in which the word species will throughout be employed in the treatment of the Maples is rather an elastic one, and a rigidly scientific meaning must by no means be attached to it. Many forms which from a purely botanical point of view are indisputably varieties, but which for arboricultural purposes are abundantly distinct, will provisionally and for purposes of convenience be treated as species. In a like manner, some which are as undoubtedly merely sub-varieties will, in their places, be accorded varietal rank. No botanical synonyms will be admitted but those which are absolutely necessary, but care will be taken to collect together, as far as possible, all the names under which the different species are known in gardens. After the names will follow a reference to one or two of the most easily accessible books in which authentic descriptions and (where such exist) figures are to be found. The geographical distribution of each species will be indicated, and general notes of interest will be added when requisite. A more perfect list, comprising fuller references to existing literature and a more complete synonymy, may be published at some future time.

Every opportunity will be taken of rendering the great resources of Kew subservient to the success of the present attempt. A large series of specimens of all the Maples in the Kew Arboretum was collected during the season of 1880 by myself, and these will be carefully compared and studied in connection with specimens obtained from other sources, such as the well known tree nurseries of Messrs. J. Veitch & Son, Charles Lee & Son, &c. Perhaps, however, in no single establishment, either in this country or elsewhere, does there exist so large a number of species and varieties as in the arboretum of the Royal Gardens, Kew, and the great advantages of studying such a collection in a living state under identical conditions as regards soil, climate, &c., are too obvious to need more than a passing mention. Of course, the same advantage is derived from dried specimens obtained from such a source—the exaggerated differences which would occur, for instance, between one species procured from the deep rich soil of a sheltered locality and a nearly allied one from where the artificial conditions were the reverse of favourable being thus minimised. All the available material I have got together is being, and will continue to be, carefully compared with that in the herbarium, and in clearing up doubtful points Sir Joseph Hooker—than whom no living botanist has had more experience in studying the vegetable world under so many varying aspects in both hemispheres—has most kindly promised to give his valuable assistance. I am also allowed to state that I can count for help on the great practical knowledge of arboriculture possessed by my immediate superior, Mr. John Smith, the Curator of the Royal Gardens. *Geo. Nicholson, Kew.*

ACER MACROPHYLLUM, *Pursh.*, Flor. Amer., Sept. 1, p. 267.—Fig. Hooker, *Flora Boreali Americana*, vol. i., p. 112, tab. xxxviii.; Loudon's *Encyclop. of Trees and Shrubs*, p. 82, tab. 126.—California and Oregon.

A noble and distinct species, of rapid growth, perfectly hardy in this country, to which it was introduced in 1826. Loudon states that a tree in the Royal Horticultural Society's gardens had attained a height of between 40 and 50 feet after having been planted thirteen years. In its native country it is, according to Douglas, one of the most graceful of trees, and he claimed for it that at some future time it would constitute, in England, one of our most ornamental forest trees. The long, crowded, pendulous racemes of fragrant yellow flowers appear before the foliage. The leaves, with slender petioles about 6 inches long, measure as much as a foot across, and are deeply (mostly) 5-cleft, the segments being sinuate, with two or three acute lobes. The bark of the trunk is light grey, on the younger branches green, with stripes of lighter colour.

"A tree 80—100 feet in height, with a trunk sometimes 5 feet in diameter; in California much smaller. From the inner bark mats, hats and baskets of excellent quality are made; maple sugar is manufactured from the sap of this species:" Sargent's *Catalogue of the Forest Trees of North America.* "For cabinet purposes it is thought to be equal to mahogany:" Vasey's *Catalogue of the Forest Trees of the United States.*

ACER CIRCINATUM, *Pursh.*, Flor. Amer., Sept, 1, p. 267; *Geographical Survey of California: Botany*, vol. i., p. 107.—Fig. Hooker, *Flor. Bor. Amer.*, tab. xxxix., p. 112; Loud. *Encyclop. of Trees and Shrubs*, p. 90, tab. 136.—Northern California to Puget Sound.

"Wood fine, white, close-grained, very tough, and susceptible of a fine polish."

"A tree 32—40 feet high, or sometimes a shrub, forming impenetrable thickets along streams, the Vine-like stems taking root wherever they touch the ground:" Sargent's *Catalogue of the Forest Trees of North America.*

The largest specimen of this species in the Kew Arboretum is a good bush about 10 feet high. For shrubbery purposes it is highly ornamental both in spring and autumn—at the latter period the rich orange-red colour assumed by the decaying leaves being very striking and handsome. The roundly cordate leaves measure about 4 inches long by as much across, and have seven or nine sharply serrate, acuminate lobes. In spring the young leaves, of a delicate light green colour, push through the long crimson leaf-scales about the same time that the corymbs of flowers are developed; the latter are conspicuous on account of the rather large purplish-red sepals, which much exceed the greenish-white petals. The bark is smooth, green when young, white when fully grown.

"From the slender branches of this tree the native tribes make their scop-nets, which are employed for taking salmon at the rapids."

ACER VAN VOLXEMII, *Masters*, in *Gardeners' Chronicle*, 1877, vol. vii., p. 72 (with fig.).—Acer species nova de Kakhétie, Hort. Van Volxem. A native of the Caucasus.

A handsome tree of more columnar habit than the common Sycamore (A. Pseudo-Platanus), from which it differs, too, in the lighter green of the upper surface of its leaves, and the silvery colour and perfectly glabrous character of their under surface. According to its discoverer, Van Volxem—who introduced and distributed it under the provisional designation above quoted—it is recognisable from A. Pseudo-Platanus, with which it grows intermixed, hundreds of yards away, by reason of its larger size and different colour. Mr. Van Volxem observed no intermediates between these two species, Its exact locality was the southern slope of the Caucasus in the valley of the Jora, or Yorra, one of the tributaries of the Cyrus.

No flowers have as yet been produced by this species under cultivation—in this country at any rate, so its exact place cannot be ascertained.

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EXHIBITION AT FRANKFURT.—In connection with a forthcoming general exhibition of industrial objects, an exhibition of flowers, fruit, vegetables, &c., is announced to take place at Frankfurt, and to be continued from May 1 to October 1, 1881.

## AN AMATEUR GARDENER'S EXPERIENCES.—VII.

ALPINE PLANTS.—I have already pointed out the adaptability of alpine plants for growth as edging plants in gardens, particularly in small ones close to the house, where neatness is a necessity and variety of foliage and flowers greatly to be desired; but it is a subject on which so much can be said, and about which so little is known by the mass of amateur gardeners that I gladly return to it, and hope I may assist in inducing many to take up the cultivation of some of the numerous interesting plants of diminutive stature now available at such moderate prices as place them within reach of every one. Where lawns or grass-plots are partially or wholly surrounded by flower borders it is a matter of some importance that the edge of the borders should be clearly defined, and yet done in such a manner as to add to the charm of the garden. When the borders come flush up to the grass there is a constant tendency for the plants grown in them to stray beyond the boundary line and to extend on to the grass, to its injury, thus causing an untidy appearance altogether out of place. In my attempts to secure a definite boundary in my own garden between grass and border, which should add to rather than diminish the usefulness of the one, and the pleasant appearance of the other, I was led to adopt the plan I am about to describe, which renders it easy to keep the lawn free from encroachment, furnishes the borders with a permanent front line of varied and beautiful plants, and enables me to grow in a thoroughly satisfactory manner a large number of the dwarfest growing alpines, &c., in a position where they are seen to the greatest possible advantage, and are kept in a state of health not to be surpassed.

The material used for defining the boundary line must of necessity be something durable, and it is also desirable that it should be agreeable to look at. After a number of trials I have come to the conclusion that dark red sandstone is the most suitable, at all events in districts where it is obtainable at a cheap rate. I get the stone delivered at about 15*s.* a ton. It comes to me in rough irregularly shaped pieces, but being comparatively soft it is easily broken with the aid of a steel chisel and hammer into pieces of a smaller size from 1 to 2 inches in thickness, and varying in length and breadth, which is a convenience. I usually cut the stone to an average breadth of 8 or 9 inches, and select the smoothest side to be placed next the grass. The pieces of stone are placed side by side along the front of the border quite close up to the edge of the turf, which is first cut as nearly perpendicular as possible, and makes a dwarf wall separating the soil in the border from the grass in front of it. If the border is wide enough I give up 18 inches for my alpines and range them in two rows; but where only a less space can be spared I limit myself to one row. With pieces of the sandstone I next proceed to divide the space into pockets by arranging the stone triangularly thus △△△, the base of the triangle in each alternate pocket being formed by the dwarf wall in front, and in the others by stones placed at the back which form the boundary between the pockets and the border behind it. I avoid formality by leaving the edges of the stone as rough and irregular (within moderate limits) as possible, and thus secure something like naturalness in the appearance of the stone-work when finished.

The soil for the entire length of this stone-divided portion of my borders is the very best old turfy loam I have been able to obtain, as I find it suits to perfection nearly all the plants I have as yet grown in the pockets. I fill up each little compartment quite to the top with soil of the same kind, so that only the edges of the stone used in forming them are seen except at the front next the grass, where, of course, one side of the dwarf boundary wall is also visible. This is the condition before planting. Having got my pockets all ready, my next work is to fill them with plants.

I find the endless kinds of the dwarfer Saxifrages, Sedums, and Sempervivums the most useful plants for the greater number of the pockets. My favourites are Saxifraga aizoides (in the shadier spots), S. Aizoon and its varieties, all lovely with their silvery rosettes; S. aretioides, a very miniature gem; S. biflora and its elegant relative, our British S. oppositifolia, which bursts into masses of rosy-purple flowers at the earliest moment in spring; S. cæsia, thriving in the driest, sunniest spots; S. longifolia, glorious always, in flower

or out; S. juniperina, very distinct; and S. Rocheliana, the rosettes formed of narrow tongue-shaped leaves, ornamented by silvery dots. The hypnoides section, or mossy Saxifrages, are also most valuable. Some of them are extremely lovely all the year round, and never more so than in winter when daintily decorated by hoar-frost. They are for the most part rapid in growth, and soon form handsome tufts, which need occasional curtailment to prevent undesirable incursions into neighbouring quarters. I have a number of forms of London Pride (S. umbrosa) which I much prize, the beauty of their flowers being very great. Most of them thrive in the shade, and I find them useful and not difficult to keep within bounds.

The Stonecrops I also find invaluable—Sedum acre, S. acre variegatum, S. album, S. brevifolium, S. dasyphyllum, S. Ewersii, S. glaucum, S. kamschaticum, S. pulchellum, S. rupestre, and S. Sieboldii being among those I most like and use most. No plants do I find more useful or ornamental than the Sempervivums. I have many kinds, but the following are all easy to grow and thrive almost anywhere, so long as they are fully exposed:—Sempervivum arachnoideum, S. montanum, S. soboliferum, S. tectorum, S. calcareum, S. arenarium, and S. Funckii. The smaller growing Campanulas I use largely, and find most decorative; I recommend the following:—Campanula cæspitosa, C. carpatica, C. carpatica alba, C. fragilis, C. garganica, C. hederacea, C. pulla, C. turbinata, C. turbinata alba, and C. Hendersoni. The three last-named require rather more room than the other kinds mentioned.

Some of the pockets I give up to the dwarfer members of the Pink family, and find them always very attractive when in flower. Dianthus alpinus, D. cæsius (a lovely native plant), D. dentosus, D. neglectus (the glacier Pink—a real gem), D. petræus and D. plumarius are those I find thrive best. The isolation of the stone-edged pockets suits the Pinks admirably, and preserves them from being overrun by more rapidly growing plants. Here and there I have a mass of the American Cowslip (Dodecatheon Meadia), and greatly prize the long-continuing pendulous flowers. The Androsaces are all of them cherished pets. What can be more chaste or beautiful than A. carnea, A. chamæjasme, A. helvetica, A. imbricata, or, when well grown, A. lanuginosa?

The following are all plants which I can recommend to be grown in similar rock-divided pockets to mine:—Acæna novæ-zelandiæ, Acantholimon glumaceum, Alyssum saxatile, Anemone angulosa, A. apennina, A. blanda, A. fulgens, A. nemorosa, A. vernalis, Antennaria dioica, Arenaria balearica, A. montana, Aster alpinus, Aubrietia græca superba, Bulbocodium vernum, Cheiranthus alpinus, Daphne Cneorum, Erinus alpinus, Gentiana acaulis, G. bavarica, G. verna, Globularia nana, Iberis correæfolia, I. gibraltarica, Ionopsidium acaule, Linaria alpina (the two last-named raised annually from seed), Lithospermum prostratum, Lychnis alpina, Myosotis azorica, Oxalis Bowiei, Phlox subulata, P. Nelsoni, Saponaria ocymoides, Scilla amœna, S. bifolia, S. sibirica, Silene acaulis, S. alpestris, S. Schafta, Soldanella alpina, Thymus lanuginosus, Veronica prostrata, and Viola biflora. None of these plants are costly to buy, and they are all fairly easy to cultivate.

Here and there I devote a pocket to bulbs, which brighten up the border in spring. I use Crocuses, especially the early and late blooming kinds, Snowdrops, the dwarfer Irises and Narcissi, &c., Winter Aconites and Dog's-tooth Violets, some of the dwarfer Primulas, alpine Auriculas, and tuberous Begonias, all contribute to the adornment of my rock border. I also keep a few pockets vacant for dwarf annuals, such as Leptosiphon roseus, and Saponaria calabrica, &c. I have said I rely chiefly on good turfy loam as the soil to grow my plants in; but where a preponderance of peat, or leaf-mould, or anything else is desirable, I supply it. In some cases I add lime rubbish, in others fragments of sandstone or whatever experience has shown is conducive to the health of the plants about to be planted. *Philanthes.*

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HARDY WINTER FLOWERS.—This is the season to make us realise the force of the saying "Flowers are flowers." How very few of them can the open garden show, but because few how much to be cherished! A few clumps of Anemone coronaria that have been in the ground all the year now give some charming flowers of various hues. I cannot but think that if a frame were planted with clumps of these in November that a large quantity of beautiful flowers might be easily obtained through the winter. The leaves, too, are handsome, and most useful for house decoration. *Z.*

## HEDGES.

(*Concluded from* vol. xiv., *p.* 782.)

THE relative proportion of breadth to height best calculated to keep the hedge strong and full in the bottom, is to allow the base to grow to a breadth not very much less than the height; if it is kept to a height of 5 feet, the width at bottom should be 4 feet: sufficient breadth at the base is of the greatest consequence, for the further the lower branches are allowed to extend the stronger they will get, and the closer they will keep. Many otherwise well-managed Quick hedges are never such perfect fences as they should be through not having breadth enough below, a defect which naturally forces the strength to the top. As soon as the full required size is reached the annual clipping should be as close as possible, severing the year's growth as near where it springs from as can be; if this is not done the hedge in a few years gets too big both in height and breadth, necessitating its being cut hard in—a work that will scarcely require doing once in a life-time if the annual dressing is well done. I could point to a place in the north of the kingdom where there are scores of miles of Thorn hedges that are not 6 inches higher or broader than they were forty years ago, yet they have never been touched beyond the annual cutting done with Dunse-hooks, followed by the ordinary dubbing shears to take off such bits of slender wood as the hook left too long. The time of the year that the cutting is performed is also an important matter, both during the early stages of growth before the requisite size has been reached and also afterwards, particularly in the latter case, when the cutting-in is so close as not to let the hedge get perceptibly bigger. Experience invariably proves that all cutting-in of the branches of any plant proportionately reduces its ability to gain size and strength; the greater the size the plant naturally would grow to if uninterfered with the more enfeebling effect severe cutting yearly will be found to have, but if in addition a deciduous plant like Quickthorn is cut in the summer when in leaf, the weakening influence is still greater; consequently whilst young the cutting should always be deferred until the leaves have fallen, and where kept very close in as I have described after the required size has been reached the dressing is better done in winter.

The method or rather want of method that is frequently adopted of planting a Quick hedge and afterwards allowing it to grow for years untouched, is about the worst practice that can be followed. Even when in open exposed situations, where, as sometimes required to give shelter for cattle, the hedge is allowed to grow up to 12 or 14 feet in height, the Thorns ultimately getting as thick as a man's leg, still in exceptional cases like this it is much better to cut them down the second year after planting, for the reason that the headed-down Thorns will each be composed of two or three stems in place of one such as the uncut-back plants will consist of. Where all the energies of a plant, of whatever kind it may be, are directed to the support of a single stem, the tendency to leave the lower side branches weak, and consequently to get bare in the bottom, is invariably increased.

The practice of planting a hedge and allowing the Thorns to grow untouched until they reach a height of 7 or 8 feet, and then laying them, results in such an indifferent hedge compared to that obtainable by means of annual clipping that it might be supposed any one who would adopt or approve such a course could never have seen the two systems fairly tried. Yet in some parts of the country the laying method is largely followed, particularly by the railway companies. In other parts it is so little known that I have met with good hands at hedge-work who did not know how to do it. The natural form of growth of this Thorn is such as to make it impossible for a layed hedge to be so strong and close in the lower side branches, which are the most important in a perfect fence, as they should be; the plants that act as upright stakes with all their side shoots cut away and their heads cut off at say 4½ feet, push all their growth into the shoots afterwards made at the top—the rest of the plants, which are four-fifths cut through just above the base and bent low down, afterwards make proportionately weaker growth, generally pushing up strong shoots from the bottom below where they have been all but severed: these, as might be expected, grow rapidly up through the body of the mutilated hedge, making next to no side shoots until they get their heads through the top, where they are usually after clipped-in yearly. Such is the unavoidable state of a layed hedge, thin and deficient at the bottom, through the way it has been treated before being layed, and the laying down places it in the worst possible position for ever improving in this respect, as the subsequent growth to a great extent has a determined inclination to the top. When a hedge has been neglected until it has run up high, where possible it is much the best to cut it right down to a few inches above the ground, treating it subsequently in the matter of annual clipping similarly to young plants; where the hedge as a fence cannot for a time be dispensed with, then it is better to cut it down as low as the circumstances will permit of. One of the most essential things to get a hedge up in little time is to keep it free from weeds, which if suffered to grow, not only impoverish the soil and so far rob the young plants, but their effects are such as to check and enfeeble the bottom branches, that if once destroyed or weakened can never be replaced without heading-down. I have never found anything for keeping down weeds equal to tanners' bark; if this is laid on about 2 inches thick in the spring after the Thorns are planted, it not only keeps down weeds, but acts as a mulching that assists them through the dry summer weather. Where the land is poor, a mulching of rotten stable-manure is a great assistance. After the first few years, if the soil is at all suitable for the growth of Quick, and they are properly attended to, the lower branches get so close and bushy as to destroy the weeds under them.

For appearance combined with efficiency as a fence, there is nothing equal to Holly, which undeservedly often gets the character of being a slow grower, yet if the planting is done at the right time, the plants in good condition, the ground dry enough and properly prepared, especially by a liberal use of manure, the growth after the first two years is anything but slow. The price of Holly being necessarily so much greater than Quick, where a considerable extent of hedge is wanted the cost will always interfere with its use. One advantage with Holly is that where it has a fair chance by a sufficiency of room, if required it will keep a dense thick bottom right down to the ground extending in both width and height so as to form an impervious fence with little cutting, or it can be kept within very small limits and still retain a healthy existence; but where a Holly hedge is confined to a limited size, like Thorn, it should be wide at the bottom, regularly tapering up to the top, the sides not quite flat but slightly rounded.

As a shelter hedge or screen to separate different parts of a garden, the old-fashioned Beech has still much to recommend it: it looks well in summer, clipping causes it to hold its leaves in winter, which thus afford shelter when wanted, but their coming off in spring makes a disagreeable litter. An advantage in Beech for a hedge of the description named is that it will keep healthy for an indefinite time. The common Yew is a well tried plant for an ornamental hedge or screen, but it does not like confining to a small size especially when clipped into a narrow space; if so treated in some soils it dies off or gets naked in the bottom.

Where a break or screen-hedge is wanted quickly, nothing can be made to accomplish it sooner than the Chinese or the American Arbor-vitæ, as these plants can be used big enough to form a tall fence at once. They look well either when grown with little training of the shoots, or they may be clipped into a limited size, but so treated odd plants will sometimes die off suddenly, and in this way cause unsightly gaps.

There is nothing that, from small plants, at little cost, will so soon make a tall screen hedge as the oval-leaved Privet. Where the soil is of fair quality it grows most rapidly, and if required it can be kept cut-in so as to occupy very little width; a proportion of 3½ feet wide at bottom to 8 feet in height, will answer, keeping it clipped up to a point at the top. For a clipped hedge, up to 5 or 6 feet in height, I have found Tree Box do very well, and look nice, but the soil needs to be moderately free and dry, or its leaves have a yellow sickly hue.

For an ornamental hedge up to 5 or 6 feet, kept partially, but not too close or formally cut in, Pyrus japonica has a very pleasing effect. For a long time each year its flowers, especially where the dark and the light-coloured varieties are mixed, are very attractive. It will grow in any situation where the soil is of fair quality, and not absolutely overhung by trees. It is a plant that does not make very

rapid growth, and does not require much annual cutting.

The most effective way of dealing with Roses for a screen hedge is to fix light iron uprights of the height the screen is wanted with stout wires 2 feet apart running longitudinally. On this any of the strong-growing climbing sorts can be used, having a variety of colours, and letting them ramble with no more training-in than required to keep the strongest from encroaching on the weaker kinds, and to prevent the whole getting heavier than the support will bear. The advantage of iron to support a Rose hedge of this description is, that it does not cost so much, as wood lasts longer, and is much less seen in winter when the leaves are off. *T. Baines.*

## PLEUROTHALLIS TESTÆFOLIA.

THIS is such a small, apparently insignificant epiphytal Orchid, that it is not at all likely that many cultivators of the order have ever seen it growing under artificial treatment, still less at home in its own peculiar and somewhat abnormal way. It belongs to the section that is characterised by having the primary stem creeping-radicant. Its stem, which is thin terete, by no means wiry, attains to about 12 inches in length, and is, exceptionally, shortly forked. Along this stem, at pretty regular distances, spring upward thin rounded ⅜-inch long branches, that are each terminated, or rather seem to be terminated, by thick, carnose, rounded or elliptic shield-like leaves about ¾ inch in length, and thus they look more like footstalks to the leaves than what they are—true branches. The wee flowers are of a rich deep purple colour, and are developed singly, and are sub-sessile on the summit of the footstalk-like branches, and are completely shielded by the concave upper surface of the leaves.

I have found this species common enough at mid-elevations—say between 2000 and 3000 feet—growing on the trunks of large rough-barked trees. One bole in particular that I examined was covered from near the ground to the first branches with this Orchid, and the plants might have been counted by hundreds. Think of my astonishment when on careful examination I found that each and all were growing and rooting down the trunk, and not up, as the great majority of creeping plants do when left to their own sensitive inclinations. But such was the case; the point of growth was invariably, and generally in a straight line, below the original attachment by roots of the plants. The roots, though numerous, are neither long nor strong, but are obviously sufficient to hold the plant in its present position. Were it to grow in an opposite direction—*i.e.*, directly the reverse of the one it now assumes—it is probable that a much stronger set of roots would be required. The last developed leaves are larger and heavier than the first, and apparently so much out of proportion to the strength of the stem that were the growing point once dislodged from its position by either wind or rain, the probabilities are that the entire plant would speedily be torn from the trunk by the weight of its liberated points. Viewing the plant as it is attached to the tree its leaves are so disposed as to all but hide the slender primary stem from sight; their under surface, which is sharply convex, is exposed to the light, and they shortly but loosely overlap, thus shielding the slender stems, and the wee but valuable flowers (valuable to the species) that nestle in their bosoms, and which if specially attractive, can only be so, it seems to me, to the searching eyes of crawling, creeping, probably wingless insects, from below. On the other hand, as purple is common to the flowers of many species of the genus, our plant may have inherited and retained the colour, though of no special use to the species; but if so, it is certain that it must have retained it for a very long time, for its nearest existing relatives are, physiologically speaking, far removed.

The flowers of many plants exhibit a decided dislike to both sunlight and moisture, particularly if in the form of heavy rain. The flower of our plant may be one of those. It modestly expands in one of earth's wettest regions, but the shield-leaf so completely covers it that it is next to impossible for rain, or even much light, to fall on it; and this, could we only know, may be at the root of, and the key, to all the contrarieties indulged in by this small and curious but not insignificant Orchid. *George Syme, Castleton Botanic Garden, Kingston, Jamaica.*

## COLONIAL NOTES.

THE INTRODUCTION AND CULTIVATION OF COCOA IN CEYLON.—The different kinds of Cocoa either consist of or are prepared from the seeds of the genus Theobroma, which belongs to the natural order Byttneriaceæ, and contains a number of species, trees of moderate size, with large undivided leaves and clustering flowers, all natives of the tropical parts of America. The fruit, a five-angled capsule of a substance between leathery and woody, not splitting when ripe, is five-celled, and contains from twenty-five to thirty seeds in a pap-like or leather-like pulp. The seeds of several species yield more or less of the cocoa of commerce.

By far the most important species of the genus is Theobroma Cacoa, to which the name Cocoa-tree is often exclusively appropriated. It is extensively cultivated in tropical America and the West Indies, and its cultivation has been introduced into some parts of Asia and Africa. It generally rises with a bare stem to the height of 6 or 7 feet, dividing into many branches, and attaining a height of 16 or 20 feet altogether. The fruit is somewhat like a Cucumber in shape, and is 6 to 8 inches long, yellow and red on the side next the sun; the rind is thick and warty, the pulp sweetish and not unpleasant; the seeds compressed, and not unlike almonds, with a thin, pale reddish-brown skin or shell. The tree produces larger seeds in cultivation than in a wild state, and attains its full vigour and productiveness in seven or eight years, and generally yields two crops a year.

When gathered the fruit is subjected to five days' fermentation in heaps on the ground, and then opened by the hand, and the seeds dried in the sun or by fire, or it is buried for awhile in the earth until the pulp becomes rotten. The latter method is said to produce the best cocoa. The pulp of the fruit is eaten in the countries in which the tree grows, and a kind of spirit is obtained from it by fermentation and distillation.

Some fifteen years ago Cocoa was introduced into the island by Mr. R. B. Tytler from Trinidad, and planted in his Coffee plantation at Pallakelly, in Dumbura Valley, near Kandy, at an elevation about 1500 feet above sea level. There it has been growing and fruiting freely, no notice having been paid to its cultivation; the fruit never gathered, but left to the monkeys, squirrels, bats and birds to feed upon. Only some four years ago was Mr. Tytler's attention drawn to Cocoa cultivation, seeing how successfully the trees had grown, and that they were fruiting abundantly. Orders were at once given to have all the ripe pods collected, and the seeds put into bamboo pots, one in each pot. The Cocoa has now become such a success with Mr. Tytler that all the other estate proprietors in Dumbura have been planting extensively in the last three years, and there is such a demand for the Pallakelly Cocoa that the pods have been, and are still, selling at 6*d.* each. Not only in Dumbura has its cultivation extended, but also in lower Mātāle, and other parts of the island.

Ceylon has yet to develope its resources in the many thousand acres of land all over the low country fit for Cocoa cultivation, which some day, not far distant, will be covered with thriving trees. The soil and climate of Dumbura and Mātāle are very similar, and admirably suited for Cocoa cultivation. The Cocoa is a pretty plant, with light-green foliage, and very delicate when young; it will not stand transplanting from beds or boxes, and is most successfully reared in pots and baskets, which are placed in the holes prepared for them and soon rot away.

Planting at stake is also done, but not with any success; in wet weather, when the seeds are inserted in the ground in a pulpy state, they soon rot off, and are readily eaten by white ants. Success would be more certain if the seeds were cleared of the pulp before planting, by rubbing them lightly with the hand among dry ashes or powdered charcoal. Previously the Cocoa has only been planted in vacancies among the Coffee until this year, when forest was felled and cleared for its special cultivation, and the general mistake is being made in wide planting.

Considerable benefits are derived from close planting, and what I see and believe to be the proper distance is 6 feet by 6. We are not growing a shrub, but a tree. The plants protect each other as they grow; the surface is sooner covered from the sun, and also a saving in weeding; the soil is easily tilled, and manuring more effectual. Shade trees are not wanted in a Cocoa plantation, but belts of trees to break the wind are most necessary, as the Cocoa trees will not stand the wind. Owing to the failure of the Coffee crops in the last few years, principally from the severe annual attacks of leaf-disease—Hemileia vastatrix—planters have had to look to their laurels in "fresh fields with products new." The Cocoa sent from Dumbura this year has fetched a splendid price in the London market—86*s.* to 90*s.* per cwt.—as good as any price given for West Indian, which must be very gratifying to the "Father of Ceylon Coffee Planters." The Cocoa trees at the Botanic Gardens, Peradenyia, have been fruiting for some years, the pods being sold to planters and enterprising natives. The Caraccas, or golden-podded Cocoa, is also grown, and its pods distributed. I believe it was introduced into the island by the late Mr R. J. Corbet. In 1872, Dr. Thwaites in his report for that year directed the attention of the Government to the cultivation of Cocoa, but without avail. Left to the planters, they have now proved its success. *J. Alexander, Mātāle, Ceylon, December* 3.

## FLOWER GARDENING AT HECKFIELD.

ON several occasions during recent years we have noticed the flower-gardening arrangements at Heckfield as being extraordinarily well carried out, the most noteworthy feature being that, whilst plants which afford enough colour to give the floral picture a sufficiently bright appearance are present, form has been considered a matter of equal importance. The accompanying illustration (fig. 5, p. 17) represents the terrace garden on the principal front of the mansion. As will be seen, the arrangement is a combination of the low-growing, dense-habited plants, now so much used in mosaic bedding and flowering subjects freely intermixed with handsome leaved things of taller habit varying in height: in this way the unnatural, even, carpet-like surface is corrected. Of low growing plants employed to cover the surface may be named Herniaria glabra, Sedum glaucum, S. acre elegans, S. corsicum, S. lydium, Saxifraga hirta and S. rosularis. The taller growing plants consist of American Agaves, several kinds of Abutilons, Acacia lophantha, Dracæna lineata and australis, &c.

The two last winters have ruthlessly disappointed many a hope entertained as to the ability of not a few plants to live out-of-doors in England, about which there was an uncertainty. The country to which a plant is indigenous, or even the altitude in such country that it may be found growing in, is anything but a certain guide as to its being able to bear the cold of our severest winters; just in the same way that we now and then find that plants which come from parts such as would give little likelihood of their being hardy in this country, turn out to be so. The immediate surroundings present where a plant establishes itself in a state of Nature often so far influence its ability to bear a low temperature, that nothing short of an absolute trial can decide the question. Beyond this there is another important thing to be taken into account—the nature of the soil and other local matters pertaining to the place where the test of hardihood is made, and still further our variable summers, through the effects of which it frequently happens that a plant in a certain place has withstood without injury an amount of cold which, if following a less favourable summer, would cause its death. On this account there is an especial interest attached to the Heckfield Palms after the last winter, succeeding as it did one of the worst summers for maturing the growth that has ever occurred since any reliable weather records have been kept. As a matter of course plants possessing the nature and habit of these Palms are not so much affected by the wet sunless weather of any exceptional summer as things of quicker and softer growth; yet there can be no doubt but that in their case, if even to a less degree, the season's growth is affected by the weather existent whilst it is in course of formation. These handsome Chinese Palms (Chamærops Fortunei) were planted out in 1869. The height of their stems is 9 feet, extreme height to top of leaves, 12 feet; girth of stems, a yard above the ground, 3 feet 8 inches. The leaves were a little cut last winter, but no permanent injury was done. Our illustration (fig. 4, p. 16), taken from a photograph, gives a good idea of the effect these noble plants have in a garden with their lower leaves drooping so as to almost cover their tree-like trunks. Apart from their distinct individual aspect,

the contrast they offer to the trees, shrubs, and general surroundings, has an excellent effect.

Lord Eversley is a lover of gardening in its widest sense, from the artistically arranged parterre which adorns the terrace, the wide expanse of fresh green turf that carpets the beautifully undulating slopes, the acres of luxuriant shrubs which serve as a frame to the mirror-like lake, to the fine trees, old and young, that stand out in relief from the lower vegetation. That the situation suits coniferous trees equally with the grand old Beeches and Oaks, is apparent from the fine example of an Abies Douglasii, planted in 1845; its height is 97 feet; girth at 4 feet from the ground, 7 feet 6 inches; spread of branches, 48 feet. It would be difficult to imagine a more perfect example of this marvellously beautiful Fir; it stands in one of the sheltered dells that add so much to the appearance of the grounds at Heckfield.

## NEW INVENTIONS.

AN apparatus which provides for the admission of air, both fresh and warm, into buildings, should commend itself to the public and stand the test of time. Such advantages are claimed for an apparatus introduced by John Weeks & Co., who furnish the following particulars:—The boiler is tubular, the apparatus economical in its cost and in its consumption of fuel; it is powerful, rapid in its action, and requires very little attention. The connections are so arranged that any number of rooms, from two or three up to fifty or more, can be warmed, and the whole or any number worked together or separately as required.

This mode of distributing the apparatus through a series of compartments is novel and good, and to avoid the expense of excavating channels, building walls, and casting gratings to cover the pipes, they adopt the plan, when a new building has to be erected, of recommending that the window recesses, instead of starting from the line of the window sills, as usual, should begin at the floor level, and that the recess between the level of the sill and the floor should be filled with a coil of pipes. The following sketches illustrate this:—

Fig. 3 shows a section through the outer wall of a church, at a window. It will be seen that the wall below the window sill is built hollow, and that the recess thus formed is filled with hot-water pipes. The opening at the top may or may not be covered by an iron grating, C. A is an opening into the church, and closed at pleasure by a wooden flap. B is an iron ventilator just above the level of opening A, also closed at pleasure by a flap. This arrangement serves as a warming apparatus and ventilating apparatus combined, thus: In the summer, when the warming apparatus is not in use, the flap A is closed and the ventilator B remains open. The result is that cool fresh air enters at B, passes up the cavity, through the grating C into the church above the heads of the congregation. In addition to this, the current of air would naturally follow the direction acquired in passing through the cavity for some height in the church, as shown by the arrows, and then disperse into an immense number of small currents and descend imperceptibly; thus avoiding the draughts so common and distressing in buildings devoted to public worship.

In the winter, when the warming apparatus is in use, the flap A being still closed and the ventilator B open, the result would be the same, except that the fresh air would be thoroughly warmed by contact with the hot-water pipes before entering the church; thus entirely obviating the necessity which exists under most plans of warming for admitting cold air into the building for the sake of ventilation. In very severe weather, or while the heat is being got up before the arrival of the congregation, the ventilator B may be closed and the flap A opened. The result then is, that the air in the church passes into the cavity at A through the coil, out into the church at grating C, and, this process being continued, the church becomes thoroughly and efficiently warmed with great rapidity.

Among the advantages of this system may be mentioned the following. The pipes do not take up valuable space, as they do not project into the building beyond the inner line of the wall. All channels and gratings are dispensed with, and consequently their cost. The pipes are placed in immediate contact with the greatest cooling surfaces, namely, the windows. It is not necessary to admit any cold air into the building, as the fresh outer air can be thoroughly warmed before being admitted.

It is not necessary to fill the recess of each window with pipes, usually every alternate one is sufficient, but this depends on the size and height of the room to be warmed.

Another great advantage of this system is that, supposing a building has, say, six windows on one side, three of which are fitted with these coils of pipes, and the temperature of the day is such that only one or two of the coils are required to be in operation, then any one or more can be shut off, and the evil of

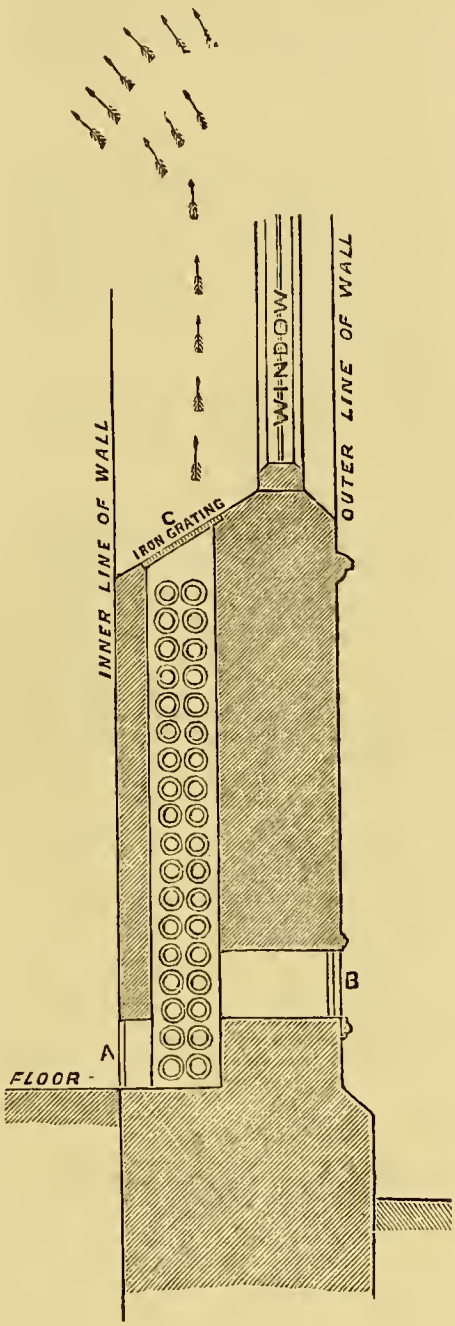



FIG. 3.—WEEKS' NEW SYSTEM OF HEATING.

making the building too warm avoided. This is an evil not unfrequently complained of where the heating apparatus consists of masses of pipes where the whole only can be turned on and off at pleasure. When necessary, evaporation troughs are fixed on the coils to give moisture to the air admitted.

When the building is already erected, and in such a manner as not to admit of this arrangement of the apparatus, certain modifications have to be introduced; but it is possible, with a little care and skill to adapt it to almost any building without seriously interfering with the general principles just explained.

When the building to be warmed is used for domestic purposes, and a good supply of hot water for baths, washing, &c., is necessary, then the warming apparatus can be arranged to form a hot-water supplying apparatus also—the same boiler being used to work the two. A special service is made from the boiler to a cistern in any convenient and elevated position, and from this a hot-water supply is carried over the building, and the water so drawn off as not to interfere with the working of the warming apparatus. Either of the systems, the warming or the hot-water supplying, can be worked in conjunction with or separately from the other, and either can be fixed with or without the other, according to the requirements of the building.

## Foreign Correspondence.

PALERMO: *December* 8.—You may possibly recollect that I addressed you last spring in reference to a Lily of the Valley in my garden here which had exhibited not only double flowers, but a ramified flower-stem. I have, as you suggested, marked the plant for observation, and next spring will probably show whether the appearance was merely a sport, which seems most probable, or marks a variety.

But I have now a much more singular phenomenon to bring before your notice, and, if you think it worth while, that of your readers.

In the courtyard attached to the house of one of the principal English residents here there are three or four Bougainvilleas planted to mask a rather unsightly wall. They were placed there some six or seven years ago, and have grown well. In the month of April last it was discovered that one of these plants had no communication with the ground, the stem having been cut or broken through—it is difficult to say which—just above the root. The root has since been taken up, and found quite decayed. How long this severance of the trunk (which is about 2 inches in diameter at that point, though twice as much higher up) took place before the discovery cannot be said, but it would seem natural to infer that the time could not have been long. This inference turns out to have been wholly untrustworthy; for eight months have passed since the discovery of the fact, and the tree up to this moment shows no sign of its having been affected by it. It was in flower at the time; the flowering went on as usual; the foliage continues, after an unusually hot summer, as fresh as those of the other trees beside it; and, moreover, since flowering it has thrown out at its extremities a mass of shoots not smaller nor less vigorous than the rest. In short, so far, the separation from the earth appears to have had no effect upon it whatever.

You will, I imagine, find this phenomenon as extraordinary as we do here. Neither the head gardener of the gentleman at whose town house this had occurred—a regularly educated and particularly well-informed and intelligent German—nor other professional gardeners who have examined the tree, can offer any theory to account for it. No, there I am wrong. One of Mr. W.'s under-gardeners, a native Sicilian, is not so much at a loss. He ascribes it to the virtue of the wall against which it is trained, the wall in question being the back wall of a church. Whatever you may think of this theory, it is at present in possession of the field. [Has not the plant rooted into a crevice of the wall? EDS.]

Mr. W., at his villa some miles out of the city, has a garden which boasts a magnificent collection of plants and trees, of which many of the specimens are probably among the finest to be found in Europe, and, writing to you, I should like to ask if the last year's (1879) flowering of a Renanthera (Vanda Lowii) is not extraordinary? The plant is under 1 m. 90 c. in height (above the pot), and has three young plants growing on the stem. The following is a note of the flowering:—The mother plant, on fourteen spikes, bore 233 blossoms; one young plant, on three spikes, 86 blossoms; another young plant, on one spike, 14 blossoms: in all, 333 blossoms. All the flowers were out at the same time, and in perfection. The plant is in excellent condition this year, but has not flowered. *T. Burbidge.*

OPORTO.—The weather here is superb, and the days are as fine as in spring. The Camellias have begun to flower and to add to the brilliancy of our gardens, which had begun to lose their bright appearance. Oporto is a place made for Camellias; we have some which measure several metres in height, and which produce in the open ground thousands of flowers every year. Oh, how beautiful Hyde Park would be if you could make a display of Camellias there! The Camellia with us is like the realisation of a dream of the *Arabian Nights*. I have seen them in English conservatories, where they excited my compassion. I feel for the unfortunate plants that love air and sunshine, and which are overshadowed, and, as it were, cut off from their world by little squares of glass set in a framework of iron. *Duarte d Oliveira, Jun.*

# Notices of Books.

**The Gardens of the Sun**; *a Naturalist's Journal on the Mountains and in the Forests and Swamps of Borneo and the Sulu Archipelago.* By F. W. Burbidge. Murray.

Mr. Burbidge has followed the excellent example set by the late Robert Fortune. He was not content merely to traverse little known countries and collect plants for his employers, Messrs. Veitch, but he jotted down notes of what he saw and what he did; and these notes, written, as it seems, when impressions were still fresh, are of much interest and considerable value. Borneo is not altogether a *terra incognita*. The works of Low and St. John have told us a great deal, while for other Malay islands there is a rich literature. Still Mr. Burbidge's book is very serviceable, and it contains, moreover, some account of the islands of the Sulu Archipelago, of which but little information was previously accessible to the general reader. Setting apart for the moment those portions of the book in which the readers of this journal may be supposed to be specially interested, we may call attention to the chapters on the Sulu Islands as among the most interesting. In later times haunts of pirates, they apparently at one time possessed a population much more advanced in civilisation than that by which they are now peopled, while quite recently they have passed under the dominion of Spain. Mr. Burbidge writes interestingly, with a little too much disregard for literary workmanship, and with an over-partiality for "slang," and he presumes on the reader's interest in so frequently alluding to his partiality for tobacco. It is really no unusual thing for a traveller to solace himself with the fumes of tobacco—at least, it is so common as not to be worth mentioning. These are minor defects, outweighed by the valuable information he gives us as to the native haunts of Pitcher-plants and Orchids, and the hints he gives us as to the composition of the flora of the several islands. Thus Borneo mingles with Malayan forms Indian Rhododendrons, and on the mountains Conifers of Australian type, while the Sulu Islands resemble in their vegetation the Philippines. In an appendix Mr. Burbidge sums up the principal results of his expedition, so far as the introduction of living plants is concerned; he prides himself justly on the introduction of Nepenthes Rajah and bicalcarata—the latter figured some time since in our columns; the beautiful Burbidgea nitida (see p. 401, vol. xii.), various new Aroids described in our pages by Mr. N. E. Brown, various Orchids, and a large number of Ferns, some of which prove to be entirely new. Lastly, a descriptive list of the birds shot by the author in Borneo and Sulu is given by Mr. Bowdler Sharpe; so that Mr. Burbidge has the satisfaction of having produced a book which will always be read with interest, and of having by his researches extended the boundaries of knowledge. A few extracts will, however, best serve the purpose of informing the reader as to the style and scope of the book.

Speaking of the general aspect of tropical vegetation, he says:—

"A lover of Nature who sees a tropical country for the first time cannot help but enjoy the bright light and heat, the vegetable glories of flower, fruit, and leaf, called forth by the rain and sunshine—of a clime where winter is unknown. And yet, with all the sunshine and showers, the tropical blossoms are in a way aristocratic and exclusive, and never mingle socially in bosky masses, as do our own wildings; and it is not possible to name half-a-dozen of them that could at all compare with the Bluebells, or Heather, the Buttercups, the Primroses, Forget-me-nots, Anemones, Violets, and rosy Lychnis of our own cool moist woods and pastures.

"During a year's rambles in one of the richest and most fertile of tropical islands I saw nothing really fresh and spring-like—nothing like the 'green and gold' of Daffodils, and the tender young grass of April, or the royal glory of a summer Iris, or an autumnal Crocus on its mossy bed. This much is ever lacking in the forest primeval; and even in gardens—Eastern gardens—beautiful as they undoubtedly are in many ways, the sameness, the cloying degree of permanency observable in the forest, becomes intensified, and so still more unsatisfying. The plants seem always to present the same aspect; and although most of them are at their best when revived by the rains, just after the dry season, yet the charm of freshness is destroyed by the number of evergreens everywhere, and the driblets of bloom kept up by them nearly all the year round.

"Still the beauty of tropical gardens is lovely of its kind. You have, or may have, all the tropical treasures of Kew—Palms, Ferns, and Orchids—around you in the open air; but all this is as the beauty of a lovely woman jaded by over-enjoyment, the whirl of a whole season's gaieties! There is elegance of form and charm of colour, all the refinement of cultured beauty, sure enough. Victoria Water Lilies, and dainty Nymphæas in open-air pools, the flesh-tinted blooms and umbrageous leafage of the sacred Lotus also; the noble Amherstia, with its pendents of crimson and gold,—groves of feathery-leaved Palms—all this, and very much more, is common; but it is astonishing how soon one tires of this plethora of floral charms, and how eager becomes the longing to sniff the homely fragrance of Pinks and Wallflowers; to stoop for a Violet from a mossy hedge-bank, or a Snowdrop even from a cotter's garden. Indeed, there is no gainsaying the fact, as has been pointed out by Wallace and others, that the most lovely and satisfying, the most sociable of all flowers, are those of temperate climates."

With reference to caoutchouc the author remarks:—

"Caoutchouc, or rubber, is in the N.W. districts of Borneo the produce of three species of climbing plants, known to the natives as 'Manoongan,' 'Manoongan putih,' and 'Manoongan manga.' Their stems are fifty to one hundred feet in length, and rarely more than 6 inches in diameter, the bark corrugated, and of a grey or reddish-brown colour; leaves oblong, and of a glossy green colour; the flowers are borne in axillary clusters, and are succeeded by yellow fruits, the size of an Orange, and containing seeds as large as Beans, each enclosed in a section of apricot-coloured fruits. These fruits are of a delicious flavour, and are highly valued by the natives. Here, again, the stems are cut down to facilitate the collection of the creamy sap, which is afterwards coagulated into rough balls by the addition of nipa salt.

"It is most deplorable to see the fallen gutta trees lying about in all directions in the forest, and the rubber-yielding Willughbeias are also gradually, but none the less surely, being exterminated by the collectors here in Borneo, as, indeed, throughout the other islands, and on the peninsula, where they also abound.

"It was formerly thought that gutta was the produce of one particular species of tree—Isonandra gutta—but that from the Lawas district is formed of the mixed sap of at least five species, the juice of Ficus and one or two species of Artocarpeæ being not unfrequently used in addition as adulterants. The Bornean 'gutta soosoo,' or rubber, again, is the mixed sap of three species of Willughbeias, and here, again, the milk of two or three other plants is added surreptitiously to augment the quantity collected. The gutta trees are a long time in attaining to maturity, and are not easy to propagate, except by seeds. The Willughbeias, on the other hand, grow quickly, and may be easily and rapidly increased by vegetative as well as by seminal modes of propagation, hence the latter are more especially deserving of the attention of our Government in India, where they might reasonably be expected to thrive.

"No doubt there are yet many thousands of tons of these products existing in Bornean woods, but as the trees are killed by the collectors without a thought of replacement, the supply will recede further and further from the markets, and so prices must of necessity rise as the supply fails, or as the collection of it becomes more laborious."

The following extract refers especially to plants of much interest to gardeners:—

"At about 5000 feet a dead and broken pitcher of Nepenthes Lowii lying in the path led to the discovery of the plant itself scrambling among the mossy branches overhead, its singular flagon-shaped ascidia hanging from the point of every leaf. It is a vigorous-habited plant, with bright green leathery leaves, the petioles of which clasp the stem in a peculiar manner. The only plants we saw were epiphytal on mossy trunks and branches, and we searched for young plants diligently, but without success. All the pitchers hitherto seen are cauline ones, and as the plant has never yet been seen in a young state, it is an open question as to whether the radical pitchers differ in shape or size, as is the case with most other species. As we ascended higher, epiphytal Orchids, especially Erias, Dendrochili, and Cœlogynes became more plentiful, and we came upon a large-flowered Rhododendron, bearing rich orange flowers 2 inches in diameter, and twenty flowers in a cluster! It grew on a dangerous declivity, and not one of our lazy men would venture to get it for us. Such a prize, however, was too lovely to forego, and after a wet scramble among the surrounding bushes, I secured it in good condition. Two or three other species were seen in flower, but none equal to it in its golden beauty. Casuarina trees became common, and higher up these were joined by two or three species of Gleichenias, and a distinct form of Dipteris. Phyllocladus also appeared, and a glaucous-leaved Dianella (D. javanica). Here also were two of the most distinct of all Rhododendrons, R. ericifolium and R. stenophyllum. On open spaces, among rocks and sedges, the giant Nepenthes Rajah began to appear, the plants being of all sizes, and in the most luxuriant health and beauty. The soil in which they grew was a stiff yellow loam, surfaced with sandstone-grit, and around the larger plants a good deal of rich humus and leaf *débris* had collected. The long red-pitchered N. Edwardsiana was seen in two places. This plant, like N. Lowii, is epiphytal in its perfect state, and is of a slender rambling habit. Highest of all in the great Nepenthes zone came N. villosa, a beautiful plant, having rounded pitchers of the softest pink colour, with a crimson frilled orifice, similar to that of N. Edwardsiana. All thoughts of fatigue and discomfort vanished as we gazed on these living wonders of the Bornean Andes! Here, on this cloud-girt mountain side, were vegetable treasures which imperial Kew had longed for in vain. Discovered by Mr. Low in 1851, dried specimens had been transmitted by him to Europe, and Dr. (now Sir Joseph) Hooker had described and illustrated them in the *Transactions* of the Linnæan Society, but all attempts to introduce them alive into European gardens had failed. To see these plants in all their health and vigour was a sensation I shall never forget—one of those which we experience but rarely in a whole lifetime!"

# Garden Operations.

## *PLANT HOUSES.*

STOVE.—Where insect pests are troublesome in a collection of stove plants, it will now be a good time to give them a thorough overhauling before the temperature of this department rises with the return of longer days and increased sunshine. The foliage of most plants will now resist stronger doses of any given insecticide than would be the case if this operation were left till the plants break into young growth. Where mealy-bug and brown and white scale abound no half measures will do if the cultivator is determined to subdue these insects. Where dipping the plants can be practised it is the most effectual plan; but if the subjects are too large for this treatment, the syringe should be used freely. A great saving in the mixture that is used will be effected if a receiver is placed under the plants into which it can drain, to be again used as required. I have had a zinc trough made for the purpose, which has paid for itself over and over again. It is 6 feet long, 4 feet wide, and 4 inches deep, with a hole in one corner of the bottom, through which the mixture can drain into a zinc pail (no painted vessel ought to be used, or it will soon be minus the paint). After the plants have been thus treated, they should be carefully sponged, both the wood and the foliage. If climbers are under treatment they can be easily cleansed by laying them in the trough, using the syringe freely. There are now many kinds of insecticides which can be used effectually; but it is better to adhere to one than to practise on many. Where one has been found to be effectual keep to it, and one will soon find to what a degree of strength it can be used. Such subjects as Crotons, Gardenias, and the like will resist stronger doses than plants with downy foliage, such as Dipladenias. If more perseverance were exercised in the eradication of insects than is now practised by even some of our good growers, how much greater would be the pleasure derived from our hothouse plants, let alone the great saving in labour. If this work is looked to now it will save much time in the spring, when heavy pressure from other sources may cause it to to be neglected. The temperature of the stove proper ought now to be kept at a minimum of 60° in mild weather, with a few degrees less when frosty at night, allowing a rise of 7° or 8° by fire-heat, and 10° to 15° by sunshine during the day. Ventilate a trifle at the top in mild weather every day, but be watchful on this point if an easterly wind should prevail, or the air should be frosty. When plants are seen to touch the glass move them a trifle to avoid touching, especially in cold weather: the young leaves of Palms are often injured by omitting to do this. Give close attention to the watering of stove plants now the temperature is at the minimum. Such as are now at comparative rest will break into more free growth if kept dry at the roots for a while. Plants of robust free growth, such as Palms, must always be supplied freely with water, more so if they are pot-bound. If this is overlooked in the case of Palms, red-spider will soon prey on the foliage of most kinds. Keep an eye on Gloxinias which are at rest; they will be benefited by an occasional watering if they are or have been stored in a dry situation. Now would be a good time to sow a pinch of seed to come on for late summer bloom. When stove plants have to be forwarded for an early supply of bloom it will be found better to devote a structure to their special wants.

GREENHOUSE.—If we should have a spell of cold weather during the next few weeks see that the more tender plants, as Statices and Pleromas, have the warmer end of the house, or if a temperate-house is

available keep them there rather than risk them in the lower temperature of the greenhouse, which in frosty weather should not exceed 40° during the night. The constitution of most greenhouse plants is often weakened by maintaining too high a temperature during our dull winter months, causing them to make weak growth and often to bloom prematurely. If Bouvardias are expected to give a good supply of flowers during the winter they must be treated to a temperature of from 50° to 55° at night, and a corresponding rise during the day, with ventilation when possible. This might also refer to Perpetual Carnations, the flowers of which are valuable at this season of the year. The winter and early spring-blooming varieties of Epacris ought now to be giving a good supply of flowers for cutting, in which state they are most useful, and last a long time. These Epacrises are not grown nearly so much as they ought to be, and frequently where grown are seen in a miserable condition. When in a healthy state they amply repay any extra pains bestowed upon them. Now they are coming freely into flower they must not be allowed to become dry at the roots. This remark also applies to the winter-flowering kinds of Erica, as hyemalis and such-like sorts with free growth. Those which have been recently purchased at the nursery should be closely watched in this respect—E. hyemalis in particular; this sort if allowed to suffer for want of water will often refuse to open its flowers in perfection, and when in full bloom will soon fade if then overlooked. This kind may be grown on from year to year if proper regard is paid to this point in its culture. In damp, mild weather watch closely for any signs of mildew on the harder-wooded kinds of Heaths; if any symptom of it is seen apply sulphur at once. Where any of the Citrus family are grown, if they should be affected with scale, now will be a good time to endeavour to eradicate it.

CONSERVATORY.—This structure ought now to be looking gay with the earlier blooms of the Camellias, which this season promise an abundant supply. It is not advisable to leave more than two buds on a shoot; if more than this have set, they should be rubbed off as soon as the best developed buds could be discerned. Do not let them suffer for want of water, or some kinds will quickly shed their buds—Alba plena and Lady Hume's Blush in particular. If fire-heat has to be maintained to keep up the required temperature for other plants, causing the atmosphere to become too dry for the Camellia, the syringe should be used frequently over the foliage to counteract the evil. The earlier batches of Primula sinensis will now be of service, with the winter-flowering plants of Pelargoniums in various colours, and plants of the berried Solanums. These will greatly aid in keeping the cultivator from trespassing somewhat early upon his stock of forcing plants, which will yield a better return if not forced into flower as yet. *James Hudson, Gunnersbury House Gardens, Acton, W.*

## *FRUIT HOUSES.*

PINES.—January is a very trying month for plants in all stages, so that every possible care and attention should be given them; even with the most modern structures and scientific improvements this care and observation must not be wanting. The primary conditions for successful culture are light, heat, and moisture. Watering is of great importance, and no plants better repay careful examination at the various stages and different seasons. Before watering always ascertain if the plants require it, and examine each separate row of plants; the lines that run parallel over the bottom-heat pipes will be drier and require water more frequently than the rest The same applies to succession plants and suckers. Never allow the roots to become dust-dry or the leaves to shrivel. Fruiting plants now require very judicious watering, and should never be allowed to become dry except for about three weeks before the process of colouring becomes general, when no more water should be given. This applies especially to large fruit, as they are apt to turn black in the centre and the flavour to become deteriorated. Use the water at a temperature of 85°. Keep the temperature of fruiting plants at 65° to 70° by night, with a rise of 5° by day; the successions and suckers at 60° by night, with a rise of 5° by day. Do not keep to a rigid line, but rather be guided by the state of the weather. Give air on every favourable opportunity, and make the most of every ray of sunshine. Keep the atmosphere moist by damping the paths, walls, and over the surface of the beds; but only apply the syringe sparingly, and never allow the water to accumulate round the stems of the plants. Keep the bottom-heat for fruiting plants at about 90°; the successions and suckers at 75° to 80°. Collect leaves for new beds, and turn over fermenting materials, also renew the linings of pits. Start a batch of Queens and Smooth Cayennes; these will come in when fruit are scarce. Select the most vigorous, and choose those that are closing in the centres—a sure indication of fruiting. If the plants can be fruited where grown do not move them. *D. Wilson, Castle Hill, Devon.*

VINES.

The mild weather is causing early Vines to make good progress, and they look very promising. As the days increase in length they will, with good management, soon make up for the time apparently lost while passing through the early stages of swelling and bursting their buds, for Vines started slowly invariably produce more compact bunches and make better progress afterwards than when forced hard through the dull days of December. Vigorous young canes that have been tied down to induce them to break regularly should be tied up to the wires as soon as the most backward buds are seen to be pushing freely from the rods, for if left too long before tying up there is danger of the shoots being broken. Proceed gradually with disbudding, tying down the shoots before they touch the glass, and stopping. I usually stop at the third or fourth joint beyond the bunch, according to the room there is for the foliage, and afterwards allow the laterals to fill all the available trellis with as many good leaves as can be fully exposed to the light. As the bunches show prominently gradually increase the temperature to from 57° to 60° at night, with a rise of 10° by day with fire-heat. Raise the temperature to day heat early, to give the Vines the full benefit of light and heat combined. On bright days give a little air at 65°, as it sweetens the atmosphere, and close early to economise heat when the temperature is on bright days 80°. If fermenting materials are used on outside borders, and good Grapes can be secured by their use, the prudent grower will not readily depart from the system which he finds to answer well. I use it on both inside and outside borders for early Vines, and have always a fair crop of Grapes. Attention must be paid to the temperature, which will not vary much if covered up with shutters. I find shutters covered with felt answer well. Succession-houses from which ripe Grapes are expected in June must be closed on January 1, and be well watered with tepid water at a temperature of 85°. Syringe the rods several times a day with warm water, taking care to wet every part of the wood. Keep the temperature at 45° on cold nights, and 53° if the nights are mild, with a rise of 10° more by day. To economise the use of fuel put in a good bed of leaves, with about one-third of short stable-manure added, turn it every morning, and make additions to it as the heat declines: I find the Vines break more regularly than if fire-heat only is used. Late Muscat Grapes not cut should be kept at a temperature of 50°. I usually clear the Vines early in January, and bottle a few to last till the end of the month, which is as long as they can be well kept. Alicante and Lady Downe's would be better if cut at once and bottled, filling the bottles with soft water and a few lumps of charcoal. Keep them in a steady temperature of 45°. As soon as the Grapes are cut prune the Vines, using a little styptic to prevent bleeding. Wash the glass, walls, and Vines thoroughly, and if the borders are exhausted now is a good time to top-dress them, using turfy loam, bones, and charcoal, with manure over all as a mulching. Outside borders of late houses that have been covered may now be exposed, leaving a slight covering of dung to keep out extreme frost. As pot Vines come into flower keep them warmer and drier. Now is a good time to put in eyes for fruiting canes next year, using only the eyes of thoroughly ripened wood; put them in single pots or on turves, and place them in heat. *Joshua Atkins, Lockinge Gardens, Wantage.*

ORCHARD-HOUSE.

The plants in the early house should now be making some growth, and the flower-buds should be very prominent. Attend to watering the roots when necessary. The roots of Peach and Nectarine trees ought to be in an active growing condition from the time the house is started, and it is only reasonable that the active rootlets should be kept in a healthy growing state; indeed, it is just possible that most of the failures, especially the dropping of the blossoms at the time of setting, and later of the fruit, is owing to the rootlets being injured from some cause or other, too much or too little water, drainage choked, &c. The cultural directions were given fully at p. 787 in last year's volume. We are now preparing the late house for the reception of the trees that were placed out-of-doors in October. It is best to get them in as soon as the house is ready, although in our district they do not receive any injury should they be left out until February. As the trees are moved into their positions it is just as well to look over the young wood to remove any scale that may be attached to it, washing the portions with strong soft-soapy water. At this season of the year there ought to be ample opportunity to thoroughly cleanse the glass and woodwork. The glass should be washed with warm rain-water, and the woodwork, if it is very dirty, should have a little soft-soap added to the water. Strawberry plants on the shelves will merely require the little attention of giving water, &c., as directed at p. 787 (1880): there may now be an opportunity prepare supports for the fruit when it is ready. A quantity of brushwood should be taken into a dry place to be ready for stormy weather. The small branches should be cut to the length of 9 inches or a foot; these must be trimmed closely, merely leaving two or three clefts at the end to support the footstalks of the fruit. In this way the fruit is held up a little above the leaves, where it ripens quicker and better than if it is left hanging down over the sides of the pots. The pots may also be washed if time can be afforded for it. In every part let neatness and cleanliness be the rule. *J. Douglas, Loxford, Ilford.*

## *HARDY FRUIT GARDEN.*

Generally favourable weather during the last two months of the old year has allowed good progress to be made with the various operations in this department. In most instances the bulk of the tying and nailing on walls will be nearly completed; but where this is not the case no time should be lost in pushing forward the work with all possible dispatch as opportunity offers. It will be advantageous at this time to take a retrospective glance at the work in this department to see that nothing intended to have been done during the last two months has been neglected, in order that, should such be the case, the delayed operations may be attended to before it is too late, and a season lost. See that no young trees planted in the autumn, or older ones that were lifted, have been left without efficient mulching and staking. Fruit trees in a full bearin gstate may require surface-dressing of rich loam and manure to prevent their feeding-ground from being exhausted; while others that are in a too vigorous or unfruitful state will be benefited by lifting carefully and bringing the roots nearer to the surface of the ground, if the condition to be remedied proceeds from a heavy, wet and cold soil, or from tap-roots penetrating an unsuitable subsoil. Where too rich soil is the cause of over-luxuriant growth, the replanting must be done with fresh soil—light loam by preference, but, failing that, poorer garden soil may be used. Stations for young fruit trees are frequently taken out and refilled with a compost too rich for the well-being of the trees planted in them, as no fruit trees are the better for heavy feeding until they have to perform heavy work—namely, when they can carry full crops of fruit.

Trenching, draining where found necessary, and the removal of inferior varieties of fruits, with the consequent substitution of superior sorts, must all be thought of before the lengthening days call our attention to other matters in various departments. Young stocks of bush fruits are not now so generally propagated in private gardens as formerly, as such good plants of all the standard varieties may be had in all nurseries at a cheap rate. Cuttings may, if required, be put in at once, selecting strong, straight growths — if with a heel all the better, cutting them to a foot in length, and carefully removing all buds except three or four at the top. Cuttings of black Currants may, however, have the buds left the whole length of the cutting; as the bushes will remain longer in a healthy condition when so grown. Established Pear trees, that have stood many years against walls, are greatly benefited by having some of the largest spurs, where crowded, cut clean out—thus giving more room to the younger spurs which may be depended upon for affording the finest and most perfect fruits. This season offers a good opportunity for doing so, as the trees are so full of bloom-buds that the removal of a part of the spurs will be of benefit to them. Espalier trees require the same attention as those on walls, but frequently do not receive it. They may be pruned, and the spurs thinned as recommended for wall-trees; but it is, perhaps, advisable to allow the lower branches freer spur development than is accorded to those on the upper part of the trellis. Retain no more branches in pyramidal trees than are required to furnish symmetrical specimens.

In pruning young trees, use the knife as little as possible on the shoots required for extension, if the growth is straight and in the required direction. Note whether the habit of the tree is upright or spreading, and when a cut has to be made let it accordingly be above an eye pointing outwards or inwards, as required, in order to correct any too decided tendency to either an upward or drooping mode of growth. As pyramidal trees attain to good form their stakes may not require renewal, but may be removed, except where recently lifted or in very exposed situations. In all cases of trees not fully established in form, stake carefully, using some material to shield the bark from injury by the cutting of the ties. Pieces of old leather, india-rubber hose and felt all form useful pads for tying upon. Any of the branches that from upright habit of growth crowd the centre of the trees too much, may be readily brought to a more horizontal position by inserting strong pegs into the ground, to which the offending branches may be attached with tar cord. Keep a sharp look-out for scale on Plums, Cherries, &c., and for the American blight on Apples, dressing with linseed or rock oil where necessary, which, with attention, will soon effect a clearance. If frosty weather prevails get manure wheeled on to the fruit borders. *R. Crossling, St. Fagan's Castle, Cardiff.*

THE fact that the leaves of evergreens droop when frozen will be known to the most superficial observers of the phenomena of plant life. Dr. J. W. MOLL, of Utrecht, has published some observations concerning the influence of frost on evergreen plants. It is known that when vegetable tissues are frozen the ice is not usually generated within the cells; on the contrary, it is found on the surface of the organs, or in the intercellular spaces. When the crystals of ice occupy the intercellular spaces of the green parts there is generally a change of colour to a deeper hue, in consequence of the air being replaced by ice. Moreover these parts become more transparent than in their ordinary condition. These changes are easily seen in frozen leaves, the increased intensity of colour being most prominent on their under-surface, where the intercellular spaces are very numerous. The leaves present the same appearance as if water had been injected by means of an air-pump through the stomates into the intercellular spaces. In this case, of course, the water would be derived from without, whereas in congelation the contrary is the case, the cells of the tissue itself having parted with the liquid which previously formed an integral part of them. The phenomenon, therefore, is entirely different from injection, and Dr. MOLL proposes giving it the name of infiltration—a word employed in animal physiology for analogous phenomena. This process of infiltration is exhibited, according to Dr. MOLL, by all our evergreen plants without exception. If the cold is not great—the thermometer not being below —3° or —4° Cent. (24°—26° F.), for instance—the leaves of some plants are not commonly of a uniform dark green below, but only dotted with dark green. This is notably the case in Berberis fasciculata and other species—Helleborus niger, Ilex Aquifolium, I. balearica, Prunus lusitanica, Taxus baccata, &c. As the temperature falls lower, the dark green spreads until it covers the surface. In other plants—Aucuba japonica, Hedera Helix, and Ilex laurifolia, for example, — 1° to 2° C. (28°—30° F.) is sufficient to effect complete infiltration. In some plants the state of infiltration is not so easily seen, but a comparison of a frozen leaf with an unfrozen one will at once reveal the condition. When the infiltrated parts of plants thaw, and they have not been killed by the frost, the liquid passes back into the cells, and the normal colour reappears. TREVIRANUS observed this long ago in Buxus sempervirens and Saxifraga crassifolia; and he observed that it took place very rapidly in a hot room. The more striking phenomenon of the drooping of the leaves under the influence of cold is very strongly developed in Euphorbia Lathyris, Aucuba japonica, Hedera Helix, and Rhododendron. According to HOFMEISTER, the needle-shaped leaves of Pinus Strobus and excelsa exhibit changes of direction in unison with thermometrical variations. When the temperature descends to the freezing point the leaves become pendent and flaccid; when a thaw takes place the leaves of all the plants mentioned regain their normal position, and that very rapidly. Dr. MOLL was struck with the rapid disappearance of infiltration and return to normal position of the leaves of some plants. He also observed that merely touching with the tip of the finger causes the instantaneous disappearance of infiltration from the spot touched. When the temperature out-of-doors was at —1°.7 C. (30° F.) he took leaves of various plants into a room where the thermometer indicated + 9° C. (48° F.), and infiltration completely disappeared from the leaves of Aucuba japonica in fifteen seconds, Ilex laurifolia in thirty seconds, and Hedera Helix in one minute. Leaves taken into a room at + 4°.5 C. (40° F.) when the outside temperature was — 4°.5 C. (24° F.) behaved as follows:—Berberis fasciculata and Buxus sempervirens lost the dark green colour in one minute, Thuja

FIG. 4.—THE CHINESE PALMS AT HECKFIELD. (SEE P. 12.)

orientalis in two minutes, Prunus lusitanica in four minutes, Rhododendron ponticum in five minutes, and so on. All Dr. MOLL's observations tend to show that the phenomenon of infiltration is common to all plants, and that it disappears in a very few minutes when the temperature rises above the freezing point. With regard to the drooping of leaves under the influence of frost, Dr. MOLL states that this phenomenon also is common to all plants, though it is imperceptible in some, and only determinable by measurement. A branch of Ilex Aquifolium taken into a room at + 5° C. (41° F.) when the outside temperature was −4°.4 C. 24° F.) was so fixed that exact measurements could be taken of the rate of the return of one of the leaves to its normal position. The leaf was 2 inches long, and was spread out horizontally at the beginning of the experiment. The following table shows the rate and space of a circle traversed by the rising leaf :—

| At the end of | Rising of the tip of the Leaf. | Amount of Rotation. | Rotation per Minute. |
|---|---|---|---|
| 2 minutes | 1 millimetre | 1° | 0°.5 |
| 3 ,, | 3 ,, | 3°.5 | 2°.5 |
| 5 ,, | 8 ,, | 9° | 2°.7 |
| 7 ,, | 12 ,, | 14° | 2°.5 |
| 10 ,, | 15 ,, | 17° | 1° |
| 12 ,, | 16 ,, | 18°.5 | 0°.7 |
| 18 ,, | 16 ,, | 18°.5 | 0° |

In this instance the rise of the leaf was only about three-quarters of an inch, passing through 18°.5 ; but in Aucuba japonica some of the leaves rotated as much as 54°, in Prunus lusitanica 31°, in Rhododendron ponticum 40°, &c. The time occupied by the leaves in regaining their normal position varied between seven and thirty minutes, the mean average being eighteen minutes. Dr. MOLL attributes the drooping of the leaves to the loss of water consequent upon the fall of temperature.

—— THE ALMANAC.—With the present number we issue gratis to our subscribers and friends a coloured supplement, in the form of an Almanac. In addition to the usual calendarial matter, our readers will find indications of the dates fixed for the shows and meetings of the Royal Horticultural, the Royal Botanic, the Royal Caledonian, the Manchester, and of all those horticultural and scientific societies whose arrangements are at present known. The column of mean temperature is taken from the average of forty years' observations at Chiswick as reduced and checked by Mr. GLAISHER. It may be taken as a rough approximation to the temperature of Southern Britain, and, with the necessary allowance, for that of the whole island.

—— CHANGES IN THE DIAMETER OF THE TRUNKS OF TREES.—According to the researches of MM. KRAUS and KAISER it appears that the trunks of trees undergo daily changes in diameter. From early morning to early afternoon there is a regular diminution till the minimum is reached, when the process is reversed and the maximum diameter attained at the time of twilight ; then again comes a diminution, to be succeeded by an increase about dawn—an increase more marked than that in the evening. The variations in diameter coincide, therefore, with those of the tension, but they are shown to be inverse to the temperature, the maximum of the one corresponding roughly to the minimum of the other, and so on.

—— GARDENERS' BOOTS. — Few men stand in need of sounder boots than gardeners, whether their special work be out-of-doors or under cover. For their behoof the inventor of Gishurst Compound (which well holds its own against a host of the insecticides that have been introduced since "Gishurst" became a gardener's friend) has introduced a preparation, under the name of "Gishurstine," which in many respects is an improvement on the old-fashioned dubbing. We have given the new compound a good trial, and do not hesitate to say that it is well suited for the use of all whose avocations require them to be dry shod. Price's Patent Candle Company are the manufacturers.

—— LARDIZABALA BITERNATA.—A fine specimen of this handsome tall-growing climber will soon be in full flower on a couple of the iron pillars near the south staircase of the gallery in the Temperate-house at Kew. Its dark green leathery leaves are (generally), as its name implies, made up of six leaf-

FIG. 5.—THE FLOWER GARDEN AT HECKFIELD. (SEE P. 12.)

lets, but there is in this respect a considerable amount of variation. The long pendulous racemes are rendered conspicuous by the dark purplish colour of the blossoms. Although hardy in the open air in this country, provided it has the shelter of a wall, it is far better worth a place in a cool conservatory, where it can attain a good size and produce its ornamental flowers. In Chili the fruits, which contain a sweet-tasted pulp, are sold in the markets, and a tough cordage is made from the fibre obtained from the stems. The species was first introduced to this country by Messrs. VEITCH.

—— THE SOUDAN VINE. — The French papers have lately been mentioning a Vine found in tropical Africa between 12° and 13° N. lat. with a tuberous root-stock, and which produces, so it is said, exquisite fruits. The discoverer, M. LÉCART, with some boldness asserts that this Vine will establish itself everywhere, even in Siberia! The tuber remains buried beneath the soil, three months' heat being alone sufficient to mature the fruits. While maintaining a reserve, the prudence of which none will deny, we may yet say that Vines with thick fleshy stocks or stems, or both, have long been known in various parts of tropical Africa. Vitis macropus is one of these, which was figured in the *Botanical Magazine*, t. 5479. Specimens of some of these may be seen living in the Succulent-house at Kew.

—— THE LESSER DUCKWEED.—In the recently published number of the *Proceedings* of the Academy of Natural Sciences of Philadelphia is an interesting account of the germination of Lemna minor by Mr. BARBECK. In the early stages the germination is similar to that of many other monocotyledonous plants, such as Potamogeton. The plumule forms the first frond, from a fissure in which proceeds a second frond with its radicle; from the second a third, and so on, reproduction being effected by this budding process, or prolification, the seed-bearing stage being only formed at intervals.

—— "THE ILLUSTRATION HORTICOLE."—We are requested by M. ED. ANDRÉ to state that, in consequence of some disagreement between him and the proprietor of the *Illustration Horticole*, M. ANDRÉ has sent in his resignation as Editor of that periodical, the editorship of which will be placed in other hands from the beginning of the present year, 1881.

—— FLOWER SHOWS IN LONDON AND MANCHESTER.—A correspondent calls our attention to the unfortunate choice of the day selected for opening the great summer show of the Royal Horticultural Society at South Kensington, viz., the Friday before Whitsunday, which is two days after Parliament breaks up, when the Upper Ten rush away to the country for the holidays; and moreover is the Oaks day at Epsom; as well as the opening day of the great annual Whitsuntide exhibition at Manchester.

—— HOME-GROWN SEEDLING OF GREVILLEA ROSMARINIFOLIA.—In April, 1876, we published (p. 529) some remarks upon this subject, with an illustration of a branch from a plant growing in Mr. STOW'S garden at Tonbridge, showing how freely it flowered there in the open air. The plant then described continued in good health until last winter, when the severe cold proved too much for it, and it was supposed to be dead. In May, however, signs of life appeared close to the ground, and the stem is now surrounded with a little bush of young shoots. A few weeks since Mr. STOW noticed a tiny growth of leaves at some distance from the stem, and upon closer examination this proved to be a seedling, which he took up and potted. We may, therefore, no longer refuse this Grevillea a place in the list of shrubs occasionally hardy in the South of England. It should be said that the soil in which the seedling was produced is a heavy clay. The fact of Proteads living and producing fertile seed in the open air might be utilised by the geologists in their speculations as to the indications afforded by various fossil plants as to the nature of the climate in bygone ages, and also as to the connection between the British flora and that of Australia.

—— MR. PETER GRIEVE.—A substantial testimonial has lately been presented to Mr. GRIEVE, on his retirement from the charge of Culford Gardens, after thirty-four years' service. The presentation was made at a dinner at EVERARD'S Hotel, Bury. It was right that friends and neighbours should unite in paying a compliment to a man who, by his sterling worth and horticultural attainments, has amply won it. Outside Culford Mr. GRIEVE'S claims as a practical gardener of the first rank are generally admitted, while his labours for the improvement of various flowers, and especially of the Pelargonium, give him a place among those who have not only done their best under existing circumstances, but have extended the bounds of knowledge, and increased the resources of gardeners for the future.

—— COFFEE CULTIVATION IN MYSORE.—At the last meeting of the Scientific Committee a paper on this subject was submitted by Major-General PUCKLE, of which the following is an abstract. The author observed that much progress has been made at Mysore during the last decade, and described how BÁB A BOODEN first brought Coffee from Arabia, and selected the Horse-shoe range of hills whereupon to plant it: Mysore being thus the original "home" of Coffee in India. The object of the paper was to sketch the *modus operandi*, and to elicit scientific opinion upon it. The author describes how the great demand for coffee induced growth of ruinous methods at the least trouble: but that now it must be cultivated scientifically to be remunerative. The methods adopted were (1) in much shade, (2) in partial shade, and (3) in open ground: the second only being now adopted. He observes that "garden" culture proves more remunerative than field culture, as 50 acres of the former will yield more than 100 of the latter. The method of preparation for the London and other markets was described. The European planter leaves the crop till the fruit is "cherry ripe," and it is then pulped. The natives pick the fruit green, sun-dry it, when the pulp becomes black and shrivelled. Both kinds are then sent to Bangalore to be husked and cleaned of parchment, &c. The questions the author would ask are—(1.) Is the "green" fruit more nutritious than the other, and is it better flavoured, as the French prefer the green "native" berry? (2.) Is the higher price due to fashion and to the eye of the broker being pleased, at the expense of the consumer's palate? The author then described the times at which the different crops are obtained, and asks if it be desirable to "disbud" entirely the first season, instead of gathering the small crop usually produced, and so procure a moderate crop in second season? He also asks what seedlings should be planted out, and whether those from berries with only one seed are preferable to those with two? The general opinion of the Scientific Committee was that the author's questions could best, or, indeed, only, be answered by the practical experience of the cultivators themselves.

—— LUCULIA GRATISSIMA.—This old favourite winter-flowering plant is not so largely grown or so well known as it deserves to be, possibly through its cultivation not being better understood. Unlike most flowering plants it will not endure the bright sun. A north house, or a north end of a warm conservatory, is best suited for its growth—plenty of light without the direct sun-rays. A large stock of this delicious sweet-scented plant is now in flower in 6-inch pots at the nurseries of Mr. B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway.

—— ABSORPTION AND DIFFUSION OF HEAT BY LEAVES.—In a recent number of the *Annales Agronomiques* M. MAQUENNE gives an account of an elaborate series of experiments undertaken by him with a view to ascertain the amount of heat absorbed by and radiated from leaves, under given conditions. M. MAQUENNE'S paper is too long for us to do more than give an abstract from his general conclusions:—"All leaves, it appears, diffuse a portion of the heat which they receive, more or less according to the source of the heat. Generally, but not universally, the lower surface gives off more heat than the upper. The absorption of the heat is due to the presence in the leaf of absorbent substances, such as water and chlorophyll. Thick leaves absorb more than thin ones, which latter, however, transmit heat better than thin ones."

—— DEHERAINIA SMARAGDINA.—This Mexican shrub, which is now flowering in the Palm-house at Kew, possesses more than ordinary interest for the botanist. Although by no means of value as a decorative plant—its deep green foliage exhibiting no individuality—the large, handsome, very dark green blossoms, 2 inches in diameter, are certainly striking. In the description, &c., accompanying the figure in a recent volume of the *Botanical Magazine*, Sir JOSEPH HOOKER remarks on the singular fact that almost all the other genera of the tribe to which Deherainia belong have small and white or coloured flowers, namely, Theophrasta, Clavija, and Jacquinia. The tolerably well-known Ixia viridiflora is a familiar example of a monocotyledon with large green flowers; amongst dicotyledons green flowers of considerable size occur in Anonaceæ and a few other natural orders.

—— BŒNNINGHAUSENIA ALBIFLORA.—In a small cool greenhouse in the neighbourhood of London we recently saw several well-grown and nicely-flowered specimens of this pretty Nepalese Rue. It is more than half a century since it was first introduced to British gardens, and for a long time after its arrival among us it was known as Ruta albiflora. From the true Rue, however, it differs in its stalked ovary, and the flat, oblong, entire, white petals. In sheltered places in the open air it succeeds fairly well, but its pretty, rather light green Fern-like foliage, and its elegant leafy panicles of drooping white flowers render it sufficiently attractive to grow in pots for the decoration of the cool conservatory.

—— THE HARDIHOOD OF AGAPANTHUS.—The statements frequently made, that this plant is quite hardy, should be accepted with a little reservation. It is a plant that many persons grow in pots for decorating the entrance to halls, stone steps, balustrades, &c., and for this purpose nothing can well be more suitable, as the plants have a rich and healthy leafage, and during the summer flower very freely when pot-bound. The winter of 1879-80 witnessed the destruction of some fine plants that were left standing in exposed positions in the belief that it was perfectly hardy. It would appear that the frost acted on the roots with much more deadly effect than on the leaves, and when the dead plants were turned out of the pots it was found that the fleshy roots were a mass of putrefaction, and the roots being thus affected, the decay passing upward, laid low the plants. It would thus appear that the roots are the most assailable point. We have known beds of Agapanthus preserved during the winter year after year by mulching the bed with some frost-resisting material as a protection, and, generally speaking, such plants would survive the winter. Beware, then, of trusting plants to the mercy of the frost in positions so exposed as that the frost can act on the roots. There is no plant better adapted for the above purpose than the Agapanthus, after it has become well established in good soil, for then it yields flowers with great freedom.

—— RONDELETIA BACKHOUSEI.—This species was originally received at the Royal Gardens, Kew, from Messrs. BACKHOUSE, but no information could be supplied respecting its native country, nor has anything been discovered on that point since the date of its arrival at Kew some twenty years ago. The lax terminal panicles of rose-coloured flowers are produced freely every year in the Palm-house. It is rather a large-growing species, with shortly stalked ovate green leaves, the petioles and veins of the under surface of the leaf being red. A figure of it appeared in one of the recent volumes of the *Botanical Magazine*.

—— THE SOCIÉTÉ NATIONALE D'HORTICULTURE DE FRANCE.—The last meeting for the year 1880 took place on December 23. There was a very large number of members present, owing to the renewal of part of the Council of the Society. The Fruit and Vegetable Committee had not much to do, and the Floral Committee had only six plants to judge, but they were rather interesting ones. The President of the Society, M. A. LAVALLÉ, had brought two shrubs, Pieris japonica variegata and Chloranthus brachystachis, which he has just received from Japan. M. A. TRUFFAUT, of Versailles, had a good-sized plant of Tillandsia Lindeni with seven flower-spikes, one of which only was in bloom; and a new Vriesia, something in the way of V. brachystachis, and not yet named, for which he received a First-class Certificate. M. F. BERGMAN, from Baron ROTHSCHILD'S at Ferrières, had a fine plant of Anthurium Andréanum with one good sized flower. This plant created something like a sensation amongst the horticulturists

present, owing, first, to the noise that has been made about it in France, and, secondly, to the fact of this being the very first plant that has flowered in France. This specimen came from M. LEHMANN's first importation, which was sold at STEVENS' on May 5 last. M. ANDRÉ, the discoverer of this novelty, gave a short narrative of the way in which he found it, and concluded by saying, that though it had turned out a commercial failure for some, through the recent importations received in London, it was a good thing to know that it would soon be in everybody's collection of stove plants. It received a First-class Certificate.

—— RHODODENDRON GRACILE.—In the T range at Kew this charming Bornean Rhododendron is now in flower. It has golden-yellow long-tubed flowers altogether different in form from those of any of the handsome species or varieties which are cultivated in the open air in this country. The rather slender long tube and the spreading limb of the Jasmine give a good idea of the structure of the flowers of the plant now under notice. There is a figure of it given in the *Journal of the Horticultural Society*, vol. iii., p. 85, together with interesting notes by its discoverer, Mr. LOW. He says that it is "found on rocks, at the Sirul mouth of the Sarawak River. It is confined to a space of ground not extending over 200 yards square, and was never seen in any other place. It grows luxuriantly upon the sandstone rocks, which are covered with moss and decaying leaves, to the height of from 4 to 6 feet. It flowers all the year round." Of R. Brookeanum, which is figured at p. 83 of the same volume, and of which R. gracile is undoubtedly a new variety with narrow leaves, Mr. LOW says, "I shall never forget the first discovery of this gorgeous plant; it was epiphytal upon a tree which was growing in the water of a creek. The head of flowers was very large, arranged loosely, of the richest golden-yellow, resplendent in the sun; the habit was graceful, the leaves large. . . . The roots are large and fleshy, not fibrous as those of the terrestrial Rhododendrons. It is the least common of all the genus in the island, and has many varieties. . . . Very high and large trees in damp forests are its favourite haunts."

—— THE WEATHER.—General remarks on the weather during the week ending December 27, issued by the Meteorological Office, London:—The weather has been dull and unsettled generally, with heavy falls of snow in Scotland, much rain and some snow or sleet over England and Ireland. On the 25th, however, the sky was comparatively clear, and continued so in the south-east of England on the 26th. The temperature was about equal to the mean in "England, S.," but below it in all other districts. In "Scotland, E." the deficit was as much as 8°, and in "Ireland, N." 5°. The mildest day in most places was the 23d, when the thermometer rose to about 54° or 55° in most of the English districts, and "Ireland, S.;" while the lowest readings were registered on the 27th, when a reading of 15° was recorded at Glenalmond, and 23° or 24° over the greater part of England and Ireland. In the extreme north of Scotland readings were even lower, a minimum of 10° being recorded at Wick. The rainfall was much more than the mean in all districts, the excess being very large in the western parts of England. Bright sunshine shows an increase in most places, the percentage of total possible duration ranging from 10 in "England, S.W." to 35 in "England, N.E." The wind at the commencement of the period was fresh from the north-westward on all our coasts, but by the 22d it had backed to south-west, and continued to blow freshly from that quarter, except in the extreme north of Scotland (where an easterly gale prevailed) during the 23d; on the two following days, however, fresh north-westerly winds again prevailed on all coasts, but on the 26th an easterly breeze had appeared in southern Ireland, and on the 27th the wind circulated round a depression which lay over the west of England—being strong from west in the south, moderate from south-east in the east, light from east in the north, and from north in the west and south of Ireland.

—— GARDENING APPOINTMENTS.—Mr. JAMES HYDE, for the last twelve years Bailiff and Gardener to Captain G. H. ELLIOTT, at Farnborough Park, Hants, has been appointed General Steward and Gardener to R. CHRISTY, Esq., Watergate, Emsworth, Hants.

# Home Correspondence.

**Potatos.**—I can give Mr. Rushall an excellent character of Hooper's Covent Garden Perfection Potato. I grew it in 1879, but the season was so bad that no fair estimate of that or any other kind could be got. During the past summer, having planted it largely, I found it to be a really first-rate kind. A mid-season ripener, top of medium height, crop remarkably good and clean. Diseased tubers were rare, a virtue that might well be looked for in an own brother to Magnum Bonum. The tubers are white with a tinge of pink about the eyes; shape flat and quite smooth and handsome. I regard it as a capital garden kind, or to be largely grown in good soil for early marketing. The flesh is white and of excellent quality. Beauty of Hebron has the advantage of the Rose in a paler skin and somewhat drier flesh. The Schoolmaster forms are not matters of special concern to any one. If Webb's is an improvement upon Turner's it would only have been a retrogressive one. These things amuse some, confuse others, but hurt no one. *Z.*

**Root Pruning.**—It all depends. No doubt. But what depends—and on what? My answer is—fertility depends on root-pruning. It may be assisted by other causes, such as summer pinching, surface-digging, multiple-grafting, the selection of dwarfing or fertile stocks; but root-pruning, either by Nature or Art, is the chief cause of fertility; hence the ex sion "It all depends" may cover a fallacy. Not a few already affirm that, whether root-pruning be needful or not, all depends on soil, culture, stock. The question of "Do we need to root-prune?" may be far better answered thus—Has it already been done by Nature, or by artificial equivalents, such as transplantation, &c.? Neither is summer pinching a substitute for root-pruning, as Mr. Sheppard seems to affirm at p. 794, vol. xiv. Did it force fertility to the same extent in equal or less time it would be objectionable; but it does not, and is withal a rather dangerous expedient in our short and uncertain climate; for even should the persistent stopper succeed in forming a nest of fruit-buds at the base of his shoots, there is no security that these would be sufficiently ripened to yield fruits; besides, the summer pincher forces back vital force in full vigour, and attempts in vain to change its character and products from above; whereas the root-pruner turns or cuts off the crude forces and gross supplies from below, and what remains, glides, as a matter of course, into fruitful ways. The pruner-stopper is the engine driver a-top of the safety-valve; the root-pruner is the prudent stoker regulating or withdrawing the fire. Mr. Sheppard's last sentence also seems to need explanation. The effect of grafting on fertility cannot be so briefly dismissed as is done in that sentence. The editorial note does nothing to clear up the matter, as, of course, grafting for improved variety was not the point referred to as causing a too violent check to the beheaded tree. No doubt beheading a tree to graft it causes a loss of time, but otherwise the process can hardly be said to check, but rather increase its vigour. This is only natural, as most of the roots of the beheaded tree remain intact, and, of course, given a large number of roots to feed one or more scions, the growth of the latter will be prodigious; and it is: hence the cutting down and grafting of weakly trees is one of the most common modes of resuscitating them to fresh vigour and new life—and this on the well-known principle of the concentration of force. It is, therefore, quite a mistake to place grafting on a level with root-pruning as an aid to fertility. Of course, by the use of dwarfing, or weakly, or the employment of fibrous rooting stocks, by double or by double multiple grafting, much may be done to heighten fertility, but the mere grafting of a plant on a stem of like quality to itself, instead of giving too violent a check to it, will stimulate its growth the more. In the case of double or multiple grafting, the difference of texture, grain, structure, ratio of growth between the one or more foreign vital cylinders intervening between the roots and top check or moderate the flow of sap, or, in other words, tend to heighten fertility, for not only do different roots collect and convey different food probably, but the flowers of plants may also be changed in character and modified in volume by the length and character of the stems or boles of trees; otherwise the theory of double grafting is a mistake, and its practice a loss of labour and of force—conclusions which many would hesitate to adopt. *D. T. Fish.*

**Banks of Flowers in Winter.**—Nothing looks more cheerful at this uninviting gloomy period than a bank of tastefully arranged flowers, which tend as much as anything to render the coming festive season joyous and happy. How welcome is the first Snowdrop or Primrose, and how the eye rejoices at the sight of the budding Violet or Crocus. Should we not equally rejoice that Nature, in her unbounded liberality, has given us many charming flowers which blossom and bud and yield their fragrance in all weathers under glass? Perhaps we do not always make the best of our resources in winter. A flower here, another there, half hidden from view by the dingy shadow of some flowerless neighbour, does not do justice to winter-flowering plants. They should be grouped together to produce effect. A front stage of a temperate-house 3 feet in width, arranged with the following plants in full flower, will give a practical illustration of what I mean. The plants slope gently from the back to the front of the stage, and a row of flowering Mignonette, set upon inverted pots, is dotted along the centre of the stage. The back row consists of winter-flowering Carnations, Bouvardias, scarlet and white; scarlet Pelargoniums, followed by Eupatoriums, Goldfussia isophylla, Linum trigynum, Libonia floribunda, and finished off with Cyclamens and scarlet and white Primulas. In another house, kept at greenhouse temperature, the following plants, arranged *en masse*, also look pretty:—A creeper (Habrothamnus elegans), overhanging Callas in flower, has a very pretty effect; then comes Erica melananthera, E. Wilmoreana, Epacris ignea, Paper-white Narciss, richly scented; Cinerarias in different colours; and the front line, which I consider very handsome, is arranged alternately with pots of Roman Hyacinths and Libonia penrhosiensis×. Had these plants been arranged here and there in dots they would have looked but little, but in condensed masses and carelessly arranged they are more striking than a similar show would be at any other season of the year. *Cultivator.*

**English Gardeners Going Abroad.**—An acquaintance of mine was sent to South America by one of our leading nursery firms, but he was given to understand by the firm that if he returned to this country he would probably find some difficulty in getting a suitable situation. Nothing daunted he went, and remained abroad between three and four years. He returned home, and had the greatest difficulty in obtaining a situation as a foreman in a private establishment. Such are the prejudices which exist in the minds of many English gardeners. Another friend of mine was sent to the neighbourhood of Berne, and another to Belgium, and both returned and experienced similar results. Let the traveller and non-traveller be placed at least on an equal footing in this country, and I am sure many more would go abroad. Let it be understood that there are real practical advantages to be derived from foreign travel, and a great point will be gained—not merely that a gardener will get well acquainted with men and manners, and that he will perhaps master two or three languages, but that good practical experience is really to be gained, and that travel is not at all detrimental to his knowledge as an English gardener, as is often supposed. A knowledge of languages, &c., is a good and often very useful accomplishment; but the English gentleman's estimate of the abilities of his gardener is guided rather by practical results than by personal acquirements. The English are a hard matter-of-fact race of people, caring more as a rule for those things which can be turned to profitable account, and it is only in large commercial establishments—nurseries, botanical gardens, and such like, that a knowledge of languages and foreign experience is really appreciated. There is no doubt a wide field and a good prospect for enterprising English gardeners, especially in our colonies. The youth of England are now far better educated than they were a short time ago, and consequently, as time rolls on, they will be better able to cope with the foreigner and for the young English gardener it is only necessary to remove existing prejudices to induce him to travel. *Alfred Gaut.* [It should be remembered that Belgium, France, and Germany, possess schools of horticulture sometimes connected with the universities to which we unfortunately have no parallel, though at Kew a good deal is done in the way of instruction. EDS.]

**Celery and Tomatos.**—I have been struck by the number of letters which have appeared lately treating on Celery and Tomatos. There is not much difficulty in the cultivation of either. Every gardener should know the proper time to sow and to plant, and to him is committed the judgment of soil and situation, &c. Respecting Celery I am pleased to say I have the best plants this year that I ever grew, free from blight, leaves healthy and green, and the bottoms large and crisp. I have no faith in shallow planting, nor in allowing the plants to remain a long time exposed to sun and light, as recommended by some; that would, I think, tend to give them a start off to seed. My plan is to sow on a small hotbed, and when the plants are large enough to prick them out thinly in the garden. When sufficiently grown I have the trenches dug, and mix some rotten dung with the earth; I plant in single rows, and earth up a little as the plants grow, always being particular to keep the heart or centre above ground. I think the rot complained of by some of my good brothers may be started by this over-earthing. All the Tomato plants I had outdoors the past season fell victims to the disease, which I think is nothing

short of the Potato disease; both leaf and fruit alike perished, and I could find no fault with either training or thinning. The plants I had indoors did exceedingly well both in leaf and fruit. My plan is to keep the plants in pots outdoors until well established, the wood hard and plants dwarf, then shift into fruiting pots, placing the same near the glass indoors, with light and air as weather would permit. *R. Inch, Gr. and Bailiff, Hatchcourt, Taunton.*

**Effective Arrangement of Poinsettias in Flower.**—A very pretty effect may be had at this season in the exotic fernery by arranging plants of these in flower here and there throughout the house. The rich scarlet bracts contrast beautifully with the deep green of the Ferns. Arranged in this manner they are shown to more advantage than if placed in the usual way side by side with other plants, either in flower or otherwise, more especially when, as is too often the case, they are minus their bottom foliage. Placed among the Ferns this does not mar their beauty in the least, as in that position only their flower trusses are visible; so arranged and kept rather dry at the roots they will enliven this house for weeks. Calanthes also, when so arranged, are very effective, as the foliage of these plants generally begins to give way when the flowers are at their best; and when arranged openly on the benches, this takes away much of the effect they would have if placed in the way above mentioned. *G. G.*

**Eucharis amazonica.**—Few plants make so grand a display in mid-winter as the Eucharis amazonica. Having been fortunate during the present season in changing a quantity of these plants from a starved and exhausted condition to a very satisfactory one, I will give you an account of our mode of treatment. The bulbs were shaken out of the old soil and sorted. The largest were placed twelve bulbs in a 12-inch, and the smallest twelve in an 8-inch pot, using the following compost:—One part each of turfy loam, peat, rotted stable-manure, and leaf-mould, with a good sprinkling of wood charcoal, half-inch bones and silver-sand. They were placed in the stove on inverted pots about the third week in December, 1879, in a temperature varying from 65° to 75° through the spring months, which was increased to 70° and 85° throughout the summer; they were syringed morning and evening, and carefully watered. Here they made rapid growth, and by the month of July had filled the pots with roots. The second week in September they were removed to a pit with a south aspect, and placed on inverted pots so as to nearly touch the glass; little or no artificial heat was given, nor any water; a little air was kept continually on at the back of the pit. They were removed back to the stove in the second week in October, and well watered with weak liquid manure, and given a temperature of 70° to 75°, with plenty of moisture. On December 2 we were able to cut 100 fine flowers, and the plants are very promising for the future. If any of your readers who have been unsuccessful with this plant will adopt this simple method and succeed, I shall not have written in vain. The Eucharis must be well grown, then rested a few weeks, and afterwards returned to heat and moisture. Flowers may thus be had at any time of the year. *H. Ellis, Summer Hill, Pendleton.*

**How to Make Hotbeds.**—The ground on which the hotbeds are made should be higher than that surrounding it, so as to prevent the lodgment of water under the beds. Where this is not the case half-a-dozen faggots placed underneath the bed, or beds, as the case may be, would answer the same purpose. Make the bed sufficiently large to take the frame intended to be placed thereon; it is best to have it an inch or two larger than the frame all round. As the work proceeds beat the dung and leaves with a fork. Make the bed sufficiently high to allow of its subsiding, which will be to the extent of rather more than one-third its height when finished. When the bed is being made place a few layers of old pea-sticks across and along the bed, for the purpose of conducting the heat supplied by the linings to the interior of the bed. When the box is placed on the bed put a shell inside the frame, which should be 6 inches shallower than the box. This shell can be easily made by measuring the interior of the box and making it an inch less all round, and, as I have before stated, 6 inches shallower, and nailing the battens on the outer side of the shell, so that when it is fixed in the frame there will be a clear space of 1 inch between the shell and the frame, thus supplying a means of admitting top-heat. Let there be sufficient fermenting material put inside the frame to make the depth at the back part correspond with that of the front, after which a couple of inches of short dung, and then 4 or 5 inches of dry leaf-mould or sawdust, in which, so soon as the heat gets up, to raise young Melon and Cucumber plants, &c. *H. W. Ward, Longford Castle.*

**The Potato Disease.**—The crop of the year 1876 was remarkable for the extraordinarily vigorous growth of the stems and foliage—the haulm. Having, under a similar condition of such growth heretofore, found the crop injured by the roots having thrown out a second growth of little tubers, I at once had all the haulm drawn to check such further growth. The Potatos had attained their ordinary size, but were not quite ripe. They were left in the ground undisturbed by the operation until the end of September, when they were harvested. Every Potato was examined during that process, and orders were given to cast aside every one showing any symptom of unsoundness, complaints of disease having become general throughout the country, and especially in this neighbourhood. On this storing, and on a subsequent removal of the store in November, under cover for the winter, a similar examination of the crop was undertaken, when twenty-three tubers only were brought for my inspection out of the crop of 72 bushels. The haulm having been drawn in this case before a single spot of disease had appeared on it, to that process it seemed reasonable to assume that the absolute freedom from the disease in this particular case had been attributable to that measure. The faulty Potatos were such only from partial rotting through wet and attacks of insects. Having in June this season observed exactly the same degree of vigorous growth of the haulm as in 1876, in my own grounds—and this was generally reported elsewhere—I made a point of an almost daily inspection for the fatal spot on the foliage in my garden and field, and gave a similar order to my gardener and his assistant to do so also, and report to me immediately the first dark spot was observed on a single plant. In the absence of such spot existing on my crops, I observed in the *Gardeners' Chronicle* and other papers complaints of the occurrence of the disease in the last week of June. Under the apprehension of the attack reaching us I had one or two plants turned over, and, on finding the tubers of the ordinary size, determined on immediate action. I set my men to work the first week in July, and sent you a communication on the subject, which you were good enough to insert in the *Gardeners' Chronicle* of July 10 last, from which the following is an extract:—"The present state of this crop being just as luxuriant in this month as it was in July, 1876, I shall have the growth above ground carefully drawn before the slightest symptom of the disease is apparent, and harvest the crop beneath just in the same mode as that which was adopted late in the autumn of 1876." The haulm of the early Potatos was first drawn, and the tubers dug as required for daily use. This crop produced 18 bushels. Twelve Potatos only were laid aside, on the digging for use, as unsound, of which seven were partially rotted by wet; the remainder were partially eaten by insects. The main crop was left in the ground, as in 1876, undisturbed until October 8, consisting of No. 1, the Magnum Bonum; No. 2, the Scotch Champion; No. 3, Paterson's Victoria. No. 1 produced 12 bushels, not one laid aside on storing as unsound. No. 2 produced 37 bushels, 1 peck unsound, in the same field as No. 1, but on a lower, damper portion. Nearly all of this peck consisted of tubers more or less rotten by wet, the others damaged by wireworm. No. 3 consisted only of a few Potatos left for seed, quite sound. In the autumn of 1876 I was disappointed at not observing in the *Gardeners' Chronicle* any such reports as I had suggested in 1875, except my own, before referred to; neither have I observed attention called to this important subject worth notice in the *Gardeners' Chronicle* in any communications by your correspondents, with the exception of the instructive articles over the signature of Mr. D. T. Fish. *Charles Lawrence, Cirencester.*

**The Potato Crop of the Past Year.**—The past season, as regards the Potato crop, must be acknowledged to have been the best both in quantity and quality that we have had for several years; although the blight appeared pretty strong in several places and in some particular kinds, still a good crop was stored, and where dug early and care taken in storing, not many rotted afterwards. Some of the best kinds grown here were Myatt's Prolific Ashleaf, Veitch's Improved Ashleaf, Gilbert's Selected Myatt's, and Covent Garden Perfection; these were all a heavy crop, and nearly all sound. Carter's Ashtop Fluke is also very good, and should be in every gentleman's garden, being A 1 at table. International is a heavy cropper and produces fine tubers, so that it is a general favourite for exhibition purposes. Pride of Ontario crops heavy and large: I cannot distinguish this from Bresee's Prolific and Carter's Breadfruit, and believe them to be identical. The heaviest cropper of all was Sutton's Magnum Bonum; from a single row, 25 feet long, or twenty-four sets, the produce was nearly one sack—no waste, and only one was blighted. This is much in favour of planting another year; but it has one drawback which makes it unfit for garden purposes, as it grows too much haulm. Those I have alluded to were kept up by stakes and rods, and grew to the extraordinary height of 7 feet. At the latter part of the season the leaf was much blighted and crumbled away, but the stems being hard and tough, were not affected, and were green at the time of litting. Hooper's White Round is a second-crop variety of good quality, of which I hope to plant more another season. Soils have a great effect on the quality of Potatos; the best are always from poor ground, but the quantity is less. I would always prefer having those for planting from poor soil if possible, as I consider them to be of better constitution than those highly cultivated with manure. This season must have left a different impression on the minds of those who thought the Potato was fast wearing out, and advocated the raising of new varieties from seed. I do not believe in the wearing out of races, either in fruit or vegetables, if they are properly cared for. I have grown Myatt's Prolific Ashleaf for nearly twenty years from the same stock of seed, and this year have grown as good a crop as at the first. I think many of the old kinds which are now lost would well compare with most of the new kinds now sent out. Many of them are handsome for an exhibition table, but wont dress fit for an employer's table; of this I have had ample proof, having grown a great many varieties on trial. My advice to all would be—when they find a good one to stick to it. *W. Divers, Wierton.*

**Early Peas.**—I have read with some interest the remarks made by Mr. E. Morgan on the productiveness of early and second early Peas, at p. 792, vol. xiv., but am somewhat surprised that he omits any mention of William I. As an early Pea I think it has no rival for earliness, flavour and productiveness. It is, in fact, the best early Pea that has come under my notice, and I think it will be very difficult to surpass it in all points. There may be others quite as early, but they do not possess the qualities of flavour and productiveness to so great an extent as the one in question. I have grown William I. as an early and second early Pea every year since it was first distributed to the public, and I intend to do so until I have seen something better. I have sown it by the side of nearly all other earlies, and I have invariably been able to pick it as early as the earliest of other sorts with three times the crop. It is rather a strong grower, from 3 to 4 feet high, covered with pods in pairs to the ground, and I have frequently found as many as ten Peas in a pod. *W. Callop, Bradford, Dorchester.*

**Lapageria alba.**—The neighbourhood of Liverpool is daily becoming more famous and noted as a centre of horticultural and botanical pursuits. Amongst those who have in a large measure assisted to the attainment of this important position mention may be made of the liberal owner and resident of Wyncote, Allerton, near Liverpool—C. W. Newmann, Esq. It was my good fortune a short time ago to have a stroll through the beautiful grounds and glass erections, and in a future article I purpose, with your permission, giving a few notes of the things to be met with in this well kept establishment. One fact, however, is deserving, I think, of present mention. In the conservatory adjoining the mansion a Lapageria alba is planted out and trained up the sides of the glass roof. At the time of my visit I was informed that just a day or two before my calling 470 perfect blooms had been counted upon the plant. It was a sight that gave me much pleasure, and as the gardener, Mr. W. Mease, pointed to it, I am sure the pride and satisfaction observable in his countenance were pardonable, in fact, were honestly justifiable. *W. Swan.*

**Ruscus aculeatus—Butchers' Broom.**—Seeing that many of your correspondents have remarked the rarity of berries on the Holly this year, I would be glad to learn from some of them who may be dwelling at Lewes, Brighton, or elsewhere, in the neighbourhood of Hailsham Forest, whence the markets at Christmas are supplied with fruit-bearing stems of Butcher's Broom for decoration, whether the crop of berries on this plant has been equally scanty? *Diss.* [In our limited experience the berries of this plant are very scarce this year. EDS.]

**Honeydew.**—I see from a recently published text-book of botany that the nature of honeydew is not clearly ascertained. As it is possible this may arise from observers not being at one regarding the condition of things that usually gets this name, it may be advisable to define the condition I allude to as a sweet syrup-like liquid that appears on leaves and young branches, at first in minute drops, then, in extreme cases, covering the whole of the leaf, often accompanied by aphis in unusual numbers and a derangement of the plant's action shown by imperfect fruit or flowers. I have long had an impression that the presence of aphis in extra numbers was an effect of the insects finding favourable circumstances for multiplying. Perhaps the following facts, from personal observation, may assist investigators to arrive at a satisfactory conclusion on the subject. In Western India, if cloudy weather comes on while the

Mango trees (Mangifera indica) are in flower, the flowers fall off without "setting," and soon after the leaves are covered with honeydew; this occurs locally more or less every year, but several times during my own experience it has occurred over large tracts of country to such an extent that not a single tree of the varieties that were in flower when the peculiar atmospheric condition occurred would be found bearing fruit, while other varieties that flowered earlier or later fruited abundantly. In this instance was it not the sap that was stored up for the formation of fruit being forced to find egress through unusual channels? *G. M. W.*

**Linum flavum and Linum arboreum.**—Not long ago it was stated by a correspondent in a gardening journal that Linum flavum is not hardy. There is sometimes a confusion between two very similar plants—Linum flavum, a hardy plant from Central Europe, and Linum arboreum, a native of the Levant, the hardiness of which in England is doubtful, or it would be more often seen in our gardens. About thirty years ago, at Eton, in the garden of the house which was formerly Dr. Keate's, the gardener, a good florist, used always to have a spring bed of what he called Linum flavum. The plants were wintered in a cold frame, and the pots containing them were plunged in the bed about the beginning of April, when their first flowers were opening. The bed was a blaze of clear yellow till the middle of June, when the plants were removed and cut back and stored away for another year. When the house changed hands and the gardener left, I lost sight of the plant until, in the revival of herbaceous gardening, the name Linum flavum became common in nursery catalogues. Still I failed to recognise in it my old friend, which I accidentally discovered in a greenhouse in this county last spring, and succeeded in obtaining a plant, which is now in flower in my greenhouse. I believe it to be the true Linum arboreum, having compared it with the figure given in the *Botanical Magazine* for the year 1794, by Curtis. He says that it was then a recent introduction of Sibthorpe's, who also figures it in his *Flora Græca*. When in flower it so nearly resembles L. flavum that the two might easily be taken for the same species, even when seen together. But Linum flavum is less shrubby in its habit, and flowers two or three months later. To increase the confusion Ware sends out L. flavum by the name of L. luteum: but L. flavum is the more common and the older name. Curtis tells us that he was the first to cultivate L. flavum in England, having raised it from seed sent from Switzerland about the end of last century. I enclose a piece of what I believe to be L. arboreum, and should be glad to know if I am wrong. It grows about 1 foot high; and I am told is hardy in favourable situations in England. *C. Wolley Dod, Edge Hall, Malpas, Cheshire, Dec. 27.*

**Autumn-bearing Raspberries.**—In reply to "Diss," at p. 819 of the *Gardeners' Chronicle* of December 25, I have to state respecting Belle de Fontenay Raspberry, that it is neither necessary nor desirable for them to be taken up and replanted every year. The variety, like other autumn-bearing kinds, should have the canes cut down to the ground in February—a week or two earlier or later is not of much consequence; where, however, fine large fruits are an object, a new plantation might be made every three or four years with satisfactory results. If "Diss" will refer to Messrs. Charles Lee & Son's Fruit Catalogue, p. 22, or Mr. Charles Turner's Catalogue of Fruit for 1876, at p. 36, he will there find Belle de Fontenay mentioned, as also, I believe, in other nurserymen's catalogues. *W. Hinds.*

**Poinsettia pulcherrima plenissima.**—To show the extraordinary development this attains under good cultivation, I send you size and particulars of a head I had forwarded me to-day, which was grown by Mr. Latter, gr. to — Booth, Esq., ex-Mayor of Ipswich. The coloured leaves, large and small, numbered fifty-five, and the distance across them was 19 inches, so that it can be readily imagined what a magnificent display a few plants with inflorescence like this must produce. Besides having such large bracts, this superb variety appears brighter than the normal form, and therefore, when better known, is likely to supersede it altogether. Those who are not so fortunate as to possess the new kind, will find the early part of the year a good time to obtain it, as they will then be able to take off cuttings or eyes, and work up a stock. *J. S.*

**Heating by Hot Water.**—Your article on heating by hot water, which appeared in the *Gardeners' Chronicle* a few weeks ago, is worthy of every attention. Allow me to say, in reference to "dips" that, as you say, instances may be found where the circulation is quite as good apparently with a dip as where no such obstruction exists, but I think those most experienced in such matters will bear me out in saying that, while in a small apparatus with a fair amount of heat which gives the motive-power, the obstruction of one or more dips may be overcome without any apparent difficulty, if similar dips exist in a large apparatus they prove fatal to its proper working. Dips act as obstructions in two ways: first, by the imprisonment of a quantity more or less of air behind the dip; and second, by causing the hot water to descend and replace what must be a colder and heavier portion lying in the bottom of the dip. The first can be got over by the insertion of air pipes, but the second is inherent, and cannot be got quit of. I would say to all, Avoid dips in every case if at all practicable, but in large apparatus, with a number of circulations at various elevations, have none upon any consideration. The question of a number of flow-pipes, or, as you suggest, two 6-inch flows in a large apparatus, with a number of houses to heat, requires to be considered from two stand-points. First, the amount of heat lost through having, say, one 4-inch flow-pipe and return supplying a number of houses, by reason of the additional friction caused by the necessarily rapid motion of the water in the flow and return, and the slow motion of the same water in the heating pipes in the houses. Admitting the loss from these two causes to be considerable, is it more than would be caused by having two flows of 6-inch pipe, and, I presume, also two returns 6-inch? Let us take an apparatus of, say, 4000 feet of 4-inch piping, and of this let us assume there are 500 feet arterial pipes for no other use than the conveyance of the hot water to and from the various houses; the boiler in this case has not only to supply the 3500 feet of pipe which are giving off the heat, but the 500 feet as well, and these last will necessarily be the hottest. That is so much additional work the boiler has to perform more than it would have to perform were the 3500 feet close to it. But in addition to the work of warming the water in these 500 feet, there is more or less loss of heat by the retardation of the current, consequent upon the friction and the prevention of the cooled water getting quickly back to be reheated. The question is, What is the value of the loss in such a case? Now suppose there were, instead of one flow 4-inch, 250 feet, and one return 4-inch, 250 feet, two 6-inch flows, 250 feet each, and two returns 250 feet each—total, 1000 feet of arterial pipe, 6 inches diameter—have we a gain or a loss? On one of the heads of loss with 4-inch arterials we have an enormous additional loss with the 6-inch, for whereas in the former case our total quantity is 500 feet 4-inch, in the latter it is 1000 feet of 6-inch; and as a 6-inch pipe contains two and a quarter times as much as a 4-inch, we have equal to 2250 feet of arterial or non-effective 4-inch pipe to keep heated, against 500 feet in the other—a difference of 1750 feet; thus increasing the total quantity of work to be done by the boiler from 4000 to 5750 feet. Admitting that in the matter of friction and the quick return of the water through the additional facility offered by the large flows and returns a gain is obtained, is the gain more than sufficient to counterbalance the cost of heating an additional quantity of water sufficient to fill 1750 feet of 4-inch pipe? I do not mention meantime the additional cost of the 6-inch double service and casing, but this also may be an element of consideration. That large apparatus do work and work well with one 4-inch flow and return, serving a dozen or more houses, is beyond dispute; and what a correspondent says about his knowledge of apparatus being made to work by large arterial pipes being put in, simply shows how ready people are to jump at conclusions and accept as real what is only apparent and on the surface. The same may be said about the idea some people have of the waste of heat going up the chimney. A strong heat in the chimney is frequently a sign, not of waste but of real economy, causing a powerful current and combustion of the gases which would otherwise be allowed to escape at a temperature far below the point of combustion, serving no purpose whatever, neither heating boiler nor chimney. The question of the one-boiler system, with of necessity in large establishments many hundreds of feet of arterial, and of course as far as heating the houses is concerned, perfectly useless pipes, is worth consideration. In a large range, such as I have referred to, suppose instead of there being one boiler in the centre there were two at, say, a distance of 75 feet apart: this would effect a saving of 150 feet of pipe reducing the work of the boiler from 4000 to 3850, or a little more than 3¼ per cent. of a saving. If we assume the quantity of coal consumed in such an apparatus to be 85 tons of coal in the year, the saving would be 3 tons. This is, of course, not taking any saving which might or might not be effected by having two fires instead of one, and by reason of the water not having to travel so far from the source of heat. But in any case I apprehend the saving in most cases would not be so decided as to largely compensate for the additional trouble and expense of forming two stokeholes and chimneys, providing and building, in two boilers instead of one, and the constant time and trouble in attention. It is, however, a matter fairly open to argument, and both it and the large arterial pipes deserve more attention than has hitherto been given to them. What you say as to valves, air-pipes, &c., illustrates what is the practice amongst the best heating engineers and gardeners at the present time, and should be carefully followed. I hope the idea of a boiler contest will not be lost sight of; gardeners and heating engineers who have no boiler of their own are continually being badgered about new and improved boilers, and any means that could be used to settle the merits of their respective claims would be a benefit to humanity: but if this is not done until the twelve points of the charter laid down by Mr. Deal are discussed, I am afraid it will not be on this side of the millennium. I would suggest that a prize be offered for the best boiler to heat 1000 feet of 4-inch piping, price, including all fittings and building-in, not to be above £25, every competitor to provide and fit up his own 1000 feet of 4-inch pipes in four rows of 250 feet long, the boiler to be placed at the one end. Let three thermometers be placed in each apparatus, one on flow-pipe immediately as it leaves the boiler, one at far end, and one in return close to boiler. Let the pipes be fitted up exactly in the same way, and the thermometers exactly at same spot in each apparatus. Give each competitor a certain quantity of coal, say 4 cwt. for a four hours' trial, and let there be independent trustworthy persons appointed to take the temperatures indicated on the thermometers every quarter of an hour from the beginning when the fires are lighted to the end of the four hours, each competitor to fire his own boiler. The trial could be repeated on three separate days, at the end of which an average could be struck; and I cannot see that any difficulty could arise to prevent a fair and satisfactory conclusion being arrived at. I have often wondered why those people who are continually inventing the best boiler do not get up such a thing at their own expense, to show a deluded public how much they lose by not having their boiler. *A. D. Makenzie, 2, Grove Terrace, Edinburgh.*

—— As neither manufacturers, engineers, or gardeners seem inclined to take notice of the formidable list of questions put forward at p. 684, vol, xiv., or the editorial remarks appended, it must be because it is not quite clear whether the discussion proposed is to be merely as to the conditions of a public test, or as to what is considered the best boiler that can be got irrespective of such competition. If the latter be intended, it is utterly impossible to arrive at any definite results, as every boiler that has been or can be made—from the "guinea suspension" to the "Duplex Diaphragm," "with a great big D"—can be proved to have answered perfectly to the satisfaction of interested admirers, and to have replaced some other equally well (or little) known boiler supplied by another highly respectable firm. This is evident from the controversy going on at this time last year, and will account for the absence of letters so far, as many of your valued correspondents having then given their opinions and experience feel that advantage is taken of an open general discussion to "puff" some special manufacturer, whereas the recommendation of the simple ordinary boilers—belonging to no one in particular, but used by the majority of gardeners—benefits nobody. I will take the questions submitted by Mr. Deal and make a few remarks thereon, that must, however, in the nature of things, be "a mere expression of opinion," which, he says, "cannot be considered satisfactory;" but if there are already "ascertained facts" to go "in the face of," why not state the facts and his arguments therefrom, instead of starting a discussion to get the opinions of others? No. 1. I presume by "best mode of determining the size of boilers," that a fixed rule for comparing one with another, in order to calculate their power to heat so many feet of 4-inch pipe, is meant; if so, the surface exposed to direct action of the fire is the simplest for any one to measure from, though the (minimum of) water contents as compared therewith would have to be taken in consideration for after-choice in selecting one by a purchaser. Weight of metal is useless. 2. A "given body of water will heat more quickly," in a many-chambered or tubed vessel than in "a washing copper or plain saddle boiler," though possibly the copper might win if really of that metal and the tubes of cast iron. 3. The "extent of difference in time" cannot be precisely stated, as there are so many varieties or modifications of either class of boiler; the "cause" is simply the minimum of water to the maximum of heating surface in tubular forms producing a rapid circulation. 4. "Horizontal or perpendicular." Hot water must ascend, consequently the upright position is the better in theory, but an upright cylinder will not heat more quickly than a horizontal one, because the fire-heat will ascend also and rapidly pass out at the top of a cylinder without imparting its full power to the sides as in the horizontal or cannon form; while in high tubulars the greatest heat is where the flame and hot air find a vent into the side or tubes farthest from that, getting very little heat except low down against the burning fuel where it has a great weight of cooler water to force before it continually. 5. The "useless surface" in a boiler varies with the

method of setting it; for instance, the common upright cylinder is usually placed so that the fire passes up its inner surface only, which—if 12 inches diameter and the outer ring 17 inches—is in the proportion of 40 per cent. of the whole, but if the cylinder is so supported or hung in the fire that the fuel burns all round it, you have the maximum of heating surface, but a great waste of heat against the outer flue walls. 6. I cannot gauge the benefit of hollow fire-bars; they may add to the power of the boiler, but not in proportion to their surface. Many think there should be the greatest difference in the heat of water at bottom and top to ensure a rapid circulation. Their chief use is in utilising the great heat passed into solid fire-bars and by radiation into the ash-pit. 7 and 8 I cannot answer, but which form of boiler does corrode quickest? 9. There will be a quicker circulation in the 2-inch waterway of a boiler than in a 4-inch space, as in the latter you have double the water to heat with precisely the same heating surface; the average is about 20 per cent. more calculated power in a 4-inch over a 2-inch water space. No. 10, I take it, is only Nos. 2 and 3 in another form; but taking it with No. 12 as to flued saddle or similar many-chambered boilers in layers, I would say that the multiplication of these layers is wrong, as the greatest fire-heat is expended on the layer or chamber immediately over it, and the heated water has to force the dead weight of water in upper layers (amounting to over 60 per cent. of the boiler contents in some cases) before it gets to the outlet or flow-pipe much cooler than if taken off at once from the lower layer. The idea is that the flue heat of fire is utilised and not passed directly into the chimney as in most upright tubular forms, but the outer surface of boiler (heated by the hottest water passing up there) is considerably increased, and this surface-heat also passes up the chimney, cooling the water inside immensely at its highest or theoretically hottest point. Now if there is a layer or chamber underneath the fire, and the flue heat passed through or under that, this flue air parts with its heat to the coldest water, and so passes into the chimney almost cold. 11. It is not possible, "regardless of time and fuel consumed," for a one-chambered boiler, with same water contents as a many-chambered one "to produce parallel results," but it is possible for a double-chambered boiler with the same direct heating surface as a tubular to produce parallel results with the same quantity and less quality of fuel. Having gone through the questions *seriatim*, I must say that the first one only can be of use to discuss and settle for a competition—the tendency of the other eleven being to pile up theoretic evidence as to the superiority of one particular form of boiler. If a satisfactory decision as to the best boiler could be arrived at by correspondence, these questions might be of service. I can invent questions of equal moment for a purchaser—the most important person, after all, to consider, such as—Will a boiler, theoretically and practically perfect for quick heating, cost more in first instance, and for after-fuel, and wear out more quickly than one of a simpler make, that is, a small percentage slower in heating its first hundred feet of pipe? If so, which is the more economical? And so on. But assuming that "the proof of the pudding is in the eating," what is the best way to make up the pudding? or, in other words, what are the chief points to decide on as a preliminary to the suggested public trial—the method of measuring or calculating the power of competing boilers so as to apply to all alike uniformly by one fixed and rigid rule? This is the first and most important matter to settle, as without it two makers may say theirs are to heat 1000 feet and no more, while if the same rule be applied to both, one may be only 800 and the other 1200 feet power. Unfortunately for its proper discussion, there are probably not more than three or four engineers (who are also boiler-makers) that will see this paper; and the bulk of manufacturers will not discuss, and yet would not like to have one or two forms of their boilers specially patronised by some engineer beaten by another engineer's choice from a rival manufacturer. If certain conditions can be decided upon, and a committee formed that will print and send them to the chief boiler-makers of the country, asking them to reply as to their concurrence in these conditions, or to state in turn their opinions of the proper basis of measurement, this committee can then report to the gardening papers the definite terms for such competition. As a rule, it will be found that boiler-makers (and some inventors) do not care to compete, having a score or more varieties of boilers that now sell equally well, but which would probably be discarded afterwards. I would suggest that there should be two classes of boilers, one to heat 500 to 600 feet of 4-inch pipe, the other class for, say, 3000 feet, the actual sizes of various forms of boiler being made to fit the standard of measurement to be decided on as to power, and not to have one at 500, another at 1500, and half a dozen others between these extremes, as no rule of calculating and averaging results to decide finally would be cordially accepted. Of course many details will have to be considered ultimately. For the present, if Mr. Deal will give superficial area of direct heating surface, and also the water contents of one of his boilers, say 2000 feet estimated power by his list, and some other firms will kindly give the same for one or two of their specialities, there will be a comparison and basis for discussion as to the safest and most correct uniform rule of measurement. Being an interested person in hot-water heating, I do not wish to advertise my business gratis by appending name and address in full, so subscribe myself simply *Ben*.

## Obituary.

WE have to announce with regret the death of Mr. ANTHONY PARSONS, gardener to Captain Blake, at Danesbury, Welwyn, Herts, which took place, after a painful illness, on December 25. Mr. Parsons had just reached the alloted age of "threescore years and ten," having been born in 1810. He was the son of a small farmer residing at Merton in Surrey, and received his initiation into horticultural ranks at Stanmer Park, near Brighton. In 1831 he became gardener to J. Ricardo, Esq., and in 1833 was engaged by A. R. George, Esq., of Ponder's End, shortly after which we find him entering the lists at the various horticultural exhibitions, and winning many prizes at Chiswick and other metropolitan

shows. Here he took up the culture of florists' flowers, raising many new varieties amongst the Dahlias, Pansies, Verbenas, and Petunias of that day. Later on he made his mark as a raiser of Hollyhocks, "letting out through Mr. Chater twelve fine varieties in one season—1851." After the death of Mr. George in 1851 he removed to Danesbury, where he well sustained his reputation as a first-class practical gardener, and where besides other improvements he constructed an extensive and picturesque hardy fernery, which was stocked with a magnificent collection of these lovely plants.

At Danesbury his *penchant* for the improvement of cultivated plants found expression in the raising of new Indian Azaleas and Achimenes, and he was successful in originating some fine new varieties of British and other Ferns, one finely-crested dwarf golden Fern of his origination being named in his honour Gymnogramma chrysophylla Parsonsi.

Through his early experiences in the growth and improvement of florists' flowers, he became one of the best Southern judges of these flowers; his keen appreciation of merit as developed amongst his seedlings, made him an excellent arbitrator of the merits of new plants; and his own proficiency as a cultivator taught him how to estimate the cultural merits of the exhibits set before him. These combined qualities constituted him one of the soundest of the judges engaged at the various metropolitan shows, and for many years past, down to the present time, his services in this capacity have been constantly in requisition. As a frequent colleague in the performance of these onerous duties, we may truly say of him that we have never met with a more straightforward, honest, and intelligent judge of the merits of horticultural productions generally. Latterly, from his failing health, he has been a less frequent attendant at our London shows and meetings than was once his wont. He was a sound practical gardener of the old school, and in the memoir accompanying his portrait published in our volume for 1875, and here reproduced, he has remarked that besides devoting attention to the improvement of flowers, he has found opportunities from time to time to attempt the amelioration of vegetables, "several of which," he says, "I have had the satisfaction of improving." *M.*

## Forestry.

ORNAMENTAL AND SHELTER PLANTING.—Now is the planting season, and time should be taken by the forelock for its execution, for it is often matter of deep regret that season after season is allowed to pass without the desired work being overtaken, and this applies even more to ornamental than to plain and profitable planting. Besides the value and importance of forest trees in many other ways, there is the shelter, beauty, and richness manifested in endless variety, and no landscape would please the taste of the man of culture and refinement without having in its composition trees of some kind. The wide and expansive area and comprehensive landscape requires its forest subjects to be in keeping and proportion with its conformation and extent. It is quite possible and not at all uncommon to have too many trees in the landscape, and where their distribution is in the form of lines, rows, and single trees, it is quite easy to see how the whole district may be made to assume the general appearance of one vast straggling wood or plantation. General mixing, like general distribution of trees, is a subject which requires more attention than is generally bestowed upon it. What should be aimed at is distinctness and well-defined features in the various aspects, without formality or stiffness. The trees should not be so distributed as to present an irregular, undefined, and incomprehensible mixture, either of species brought together or in the distribution and arrangement of the trees upon the ground. One thing that often leads to corruption and disfiguration of the landscape is the manner and form in which the planting is originally done. I know Abbotsford well, a place the most historical in Scotland on account of its once celebrated proprietor, which, although originally laid out with the best possible skill and taste, under the guidance and direction of the greatest of poetical and literary geniuses, is now altogether irregular and incomprehensible. The mistake was easily made, and is repeated daily by others. It consists in not calculating to what height and proportion the trees will attain when mature and full grown. In planting shrubs or trees which bear cropping and keeping in subjection, there is little hazard or likelihood of going wrong, because in such cases the means of cure are kept in hand. If the shrub rises too high it can be headed-back, and if too broad it can be reduced to the desired circumference. With medium-sized trees, as the Hawthorn, Laburnum, Mountain Ash, and small-leaved Maple, &c., a similar mode of treatment may be applied without prejudice. Where the fields are small and the whole domain of circumscribed and limited extent, the whole arrangement and distribution of the trees should be in proportion. Where the villa garden, paddock, and pleasure ground are all comprised within a small area it is often under such circumstances found necessary to plant medium instead of primary forest trees. By doing this the same effect is produced as by large trees in an extensive domain. Attention should also be paid to the distance the trees are planted from the garden walls, the mansion or dwelling, or to any other object with which they might interfere when grown up, and in no case should a tree be so planted, that in case of a gale blowing it down it would fall upon an edifice or at least a human habitation. The north and east sides of a house and premises should always be well planted, so as to afford the greatest amount of shelter, and the west and south sides should be left open to the sun. This in all planting should be adhered to, and the cases are extremely rare and exceptional where the rule should be departed from. The kinds or species

of trees to plant have entirely to be regulated by circumstances; for the soil, situation, altitude, and climate so greatly vary in different places, that what would be suitable in one place would not be so in another. As a general rule or guide, however, the following suggestions may be useful. We all like to see the bud and leaf expanded in early spring, and few are so unsusceptible as not to enjoy the pleasant emotions awakened by the cheering voice of spring as displayed in the foliation of our early leafing trees. For this purpose, then, at any cottage, homestead, villa, and mansion, a few specimens of the Balsam Poplar should be planted. The tree possesses several pre-eminent qualities for such places: it grows fast, flourishes in many varieties of soil, is by no means tender, is the earliest foliating tree in the forest, gives out a delicious odour, especially after a shower; the green is of a soft and pleasing shade, and it bears pruning to any extent. The Sycamore is also a tree that should be planted in all severe exposures, and it seldom disappoints those who plant it. The Beech and Lime are also excellent trees and accommodating in many respects, for small plantations, belts, and single trees. As evergreens I would recommend the common Silver Fir, and especially in all severe exposures and inferior soils the Picea Nordmanniana, Pinus maritima, and P. austriaca. *C. V. Michie, Cullen House, Banffshire.*

## Florists' Flowers.

On New Roses.—It is less easy this year than usual to speak with any degree of confidence as to the merits of the new Roses, on account of the unfavourable state of the weather during the time they usually put forth their first and best blooms. Still this, like most other matters, is easy or difficult only by comparison, and the practised eye which has been accustomed to watch and judge is likely to come near the mark even under the most limited opportunities. Certainly it would not be well to shirk the responsibility of an opinion because the light under which it was formed was obscure, especially when more than usual pains were taken to penetrate the mystery, and to arrive at correct conclusions. We shall then, as usual, name those Roses which appear to us to be the best novelties of the last two years, and afterwards give an alphabetical list with the raisers' descriptions of the announcements, so far as they have reached us, for the present year.

Of the novelties of 1878-9, we have a good opinion of the following:—Hybrid Perpetuals: Barthelemy Levet, Claude Bernard, Comtesse de Choiseuil, Jules Chrétien, Léon Renault, very fine; Louis Dore, good; Madame Auguste Perrin, Madame A. Baltet, Madame A. Lavallée, Madame Pierre Oger, Panachée d'Angers, good and distinct; Paul Jamain, very promising; Pierre Carot, good; Préfet Limbourg, Princess Marie Dolgorouky, Souvenir de Madame Robert, a good light Rose; Souvenir de Victor Emmanuel (Moreau), Souvenir de Victor Verdier, brilliant and good, Wilhelm Koelle. Noisette and Tea-scented: Alphonse Karr, Innocenta Pirola, a grand acquisition; Joseph Bernacchi, Madame Etienne Levet, Reine Marie Henriette, a red Gloire de Dijon, William Allen Richardson, orange-yellow, desirable for its colour.

Of the novelties of 1879-80 the following have pleased us best:—Hybrid Perpetuals: Catherine Soupert, Comte de Mortemarte, Ennemond Boule, Gloire de Bourg-la-Reine, Henriette Pettit, Julius Finger, Madame Ducher, Madame Oswald de Kerchove. Bourbon: Jules Jurgensen. Tea-scented: Jean Lorthois, distinct and good; Jules Finger, Madame Angèle Jacquier, promising, in the way of Rubens; Madame Barthelemy Levet, Pierre Guillot, good and distinct.

Of the English-raised Roses of that period Countess of Rosebery and Duchess of Bedford are pre-eminently the best.

The following is an alphabetical list of the new Roses for 1880-81:—

1. *Anicet Bourgeois* (H.P.).—Flowers bright cherry-red, cupped, large, and full, produced in clusters; growth vigorous.

2. *Antoine Devert* (Tea-scented).—Flowers white-centres sulphury-white, reverse of petals salmon-rose, with large well rounded outer petals, large, full, and of good form; very sweet; flowers freely; growth very vigorous; flower-stalks firm.

3. *Auguste Buchner* (H.P.).—Flowers bright scarlet, shaded, large and full; growth vigorous.

4. *Baron Alexander de Vrints* (Tea-scented). — Flowers delicate rose, striped with red and white, of medium size and fine form, produced freely and in clusters; growth vigorous; flower-stalks firm.

5. *Blanche Moreau* (Perpetual Moss).—Flowers pure white, large, full, and of perfect form, the buds and flowers produced in clusters, and freely furnished with deep green moss; growth very vigorous.

6. *Comte Frederic de Thun-Hoheinstein* (H.P.).—Flowers deep crimson, shaded with carmine, large, full, and of good form; growth vigorous.

7. *Comtesse de Camando* (H.P.).—Flowers bright rose, shaded with violet, very large and full; growth vigorous.

8. *Comtesse Nathalie de Kleist* (H.P.).—Flowers coppery-yellow, reverse of petals reddish-lake, new colour among hybrid perpetuals; large, full, and cupped.

9. *Dumnacus* (H.P.). — Flowers reddish-carmine, shaded, very large, full, form of the Cabbage Rose, blooms freely; growth very vigorous.

10. *Empereur du Brésil* (H.P.).—Centre of flowers magenta and lake, shaded with blackish-crimson, exterior petals brownish-violet, very large, full, and globular; growth very vigorous.

11. *Fiançailles de la Princesse Stephanie* (Tea-scented).—Flowers salmon-yellow and orange, of medium size and climbing habit. A seedling from Gloire de Dijon.

12. *François Levet* (H.P.).—Flowers clear pale rose, of medium size, blooms freely; growth vigorous.

13. *Georges Moreau* (H.P.).—Flowers bright glossy red, shaded with vermilion, globular, very large and full, foliage ample and beautiful; growth very vigorous.

14. *Guillaume Gillemot* (H.P.).—Flowers delicate rosy-carmine, reverse of petals silvery-rose, very large, form globular, habit perfect, blooms freely; growth vigorous.

15. *Madame Alfred Leveau.*—See Mr. Alfred Leveau.

16. *Madame Amadieu* (Tea-scented).—Flowers brilliant rose, centres white, tinted with carmine, very large, almost full; growth vigorous.

17. *Madame Caro* (Tea-scented). — Flowers salmon-yellow, of good form, medium size, full; growth vigorous.

18. *Madame Chedanne Guinoisseau* (Tea-scented).—Flowers canary-yellow, beautiful in bud, large, full, and of fine form; growth vigorous.

19. *Madame Isaac Perière* (Bourbon Perpetual).—Flowers vivid carmine, very large and full, blooms constantly; growth vigorous.

20. *Madame Joseph Schwartz* (Tea-scented).—Flowers white, tinted with flesh-coloured rose, changing to flesh, of medium size, good form, and full; growth vigorous.

21. *Madame Julia Weidman* (Hybrid Tea).—Flowers silvery rosy-salmon, centres carmine and yellow, reverse of the petals violet, large and full, petals also large; flowers freely.

22. *Madame Maxime de la Rocheterie* (H.P.)—Flowers flesh-coloured rose, of medium size, full, of good habit, and blooms freely; growth vigorous.

23. *Madame Montet* (H.P.).—Flowers delicate rose, with large petals, very large, almost full, of fine form and habit; growth very vigorous.

24. *Mdlle. Cécile Brunner* (Polyantha Perpetual).—Flowers fine bright rose, the base of the petals yellowish, produced in clusters, very sweet, of dwarf but free habit. Offered as a bedding Rose.

25. *Marie Paré* (Bourbon).—Flowers flesh coloured, with deeper centres, of medium size, full, and of good form and habit, produced freely; growth vigorous.

26. *Mr. Alfred Leveau* (H.P.).—Flowers bright carmine-rose, large, full, and of good form, blooms freely; growth vigorous.

27. *Mr. Thouvenel* (H.P.).—Flowers fine velvety-red, large, full, slightly flat, flowers freely, very effective; growth very vigorous.

28. *Prince Prosper d'Aremberg* (Tea-scented). — Flowers reddish-salmon, centres and reverse of petals carmine, of medium size, full; growth very vigorous.

29. *Reine Maria Pia* (Tea-scented).—Flowers deep rose, with crimson centres, large and full; growth very vigorous. A seedling from Gloire de Dijon.

30. *Rosieriste Jacobs* (H.P.).—Flowers bright velvety-red, shaded with blackish-crimson, large, full, of fine globular form, and produced freely; growth vigorous.

31. *Souvenir de Madame Alfred Ly* (H.P.).—Flowers bright deep gooseberry-red, of medium size, full, and of good form and habit, produced freely; growth vigorous.

32. *Souvenir de M. Droche* (H.P.). — Flowers rosy-carmine, large, globular and almost full, fine habit; growth vigorous.

33. *Souvenir du President Porcher* (H.P.).—Flowers deep rose, lighter edges, larger, full, blooms freely, very effective; growth vigorous.

Of new English Roses of 1880-1, Pride of Waltham promises to stand at the head; Mrs. Sanford, as shown at Torquay, was very fine, being a dark Dupuy Jamain; Mrs. Jowitt, carmine, the flowers large, smooth, and full, the habit and foliage good, was much admired when shown at South Kensington; Mary Pochin, Mr. Baker, and Mrs. Harry Turner, also promise to be useful varieties.

With regard to the "pedigree" Roses, I have seen all of them blooming, both in the open air and under glass. Most of them are pretty, and some flower freely, but as new Roses I am not favourably impressed by them. It will be a great point in their favour if they are of hardy constitution, and this can scarcely be proved except by time. It may be said they have not had a fair trial yet, taking into account the rapid propagation new Roses are generally subjected to, and the unfavourable season for flowering that we have just passed through, and then they have a pedigree! The pedigree is amusing, but there is nothing new in it; further, I have a very decided opinion that they will not be ultimately judged by their pedigree, but by the constitution of the plants and the quality of the flowers. *From the "Rose Annual," by William Paul.*

## EXHIBITIONS, Etc., OF 1881.

January.

11.—Royal Horticultural Society's Meeting of Fruit and Flora Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
20.—Linnean Society's Meeting, at 8 P.M.

February.

8.—Linnean Society's Meeting, at 8 P.M.
,, Royal Horticultural Society's Meeting of Fruit and Flora Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
17.—Linnean Society's Meeting, at 8 P.M.

March.

3.—Linnean Society's Meeting, at 8 P.M.
8.—Royal Horticultural Society's Meeting of Fruit and Flora Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
15.—Floral Exhibition in Town Hall, Manchester.
17.—Linnean Society's Meeting, at 8 P.M.
22.—Royal Horticultural Society's Meeting of Fruit and Flora Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
30.—Royal Botanic Society's First Spring Show.

April.

6 and 7.—Royal Caledonian Horticultural Society's Spring Show.
7.—Linnean Society's Meeting, at 8 P.M.
12.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
19.—National Auricula Show, at South Kensington.
21.—Royal Horticultural Society of Ireland's Spring Show.
,, Linnean Society's Meeting, at 8 P.M.
26.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
,, Floral Exhibition in Town Hall, Manchester.
27.—Royal Botanic Society's Second Spring Show.

May.

5.—Linnean Society's Meeting, at 8 P.M.
19.—Royal Horticultural Society of Ireland's Spring Show.
20.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
24.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
,, Linnean Society's Anniversary Meeting, at 3 P.M.
25.—Royal Botanic Society's Summer Show.

June.

2.—Linnean Society's Meeting, at 8 P.M.
3.—Royal Horticultural Society's Great Summer Show commences.
3 to 9.—Annual National Horticultural Exhibition at Manchester.
14.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
15.—Royal Botanic Society's Evening *Fête*.
16.—Linnean Society's Meeting, at 8 P.M.
28.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
,, Royal Horticultural Society's Rose Show and Evening *Fête*.
,, Pelargonium Society's Show at South Kensington.

July.

2.—National Rose Society's Show at the Crystal Palace.
7.—Royal Horticultural Society of Ireland's Summer Show.
12.—Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
14.—National Rose Society's Show at Sheffield.
19.—Carnation and Picotee Society's Show at South Kensington.
26.—Beekeeper's Exhibition at South Kensington commences.
,, Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.

August.

1.—Artizans' Horticultural Show at South Kensington.
9.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.
10.—Royal Botanic Society's Annual Meeting.
23.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.
24 to 27.—Great International Horticultural Exhibition at Manchester.

September.

7 and 8.—Royal Caledonian Horticultural Society's Autumn Show.
8.—Royal Horticultural Society of Ireland's Autumn Show.
13.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.

October.

6.—Woolhope Club Foray commences at Hereford.
11.—Royal Horticultural Society's Meeting of Fruit and Flora Committees, at 11 A.M.

November.

8.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
22.—Chrysanthemum Show in the Town Hall, Manchester.
25.—Royal Horticultural Society of Ireland's Winter Show.

December.

13.—Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
FOR THE WEEK ENDING WEDNESDAY, DEC. 29, 1880.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dec. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 23 | 29.27 | −0.59 | 53.0 | 47.0 | 6.0 | 50.1 | +11.7 | 44.3 | 81 | S.W.; WSW | 0.00 |
| 24 | 29.12 | −0.74 | 51.0 | 37.0 | 14.0 | 44.0 | + 5.8 | 38.6 | 81 | S.W.; WSW | 0.03 |
| 25 | 29.43 | −0.44 | 39.0 | 30.0 | 9.0 | 34.3 | − 3.7 | 27.0 | 74 | WSW: W. | 0.00 |
| 26 | 29.48 | −0.40 | 37.0 | 30.5 | 6.5 | 34.1 | − 3.7 | 28.9 | 80 | WSW: S.W. | 0.00 |
| 27 | 29.30 | −0.59 | 50.6 | 32.5 | 18.1 | 42.4 | + 4.8 | 39.8 | 90 | S.W.: N.W. | 0.31 |
| 28 | 29.43 | −0.47 | 53.4 | 47.0 | 6.4 | 52.5 | +13.0 | 47.4 | 89 | WSW: S.W. | 0.06 |
| 29 | 29.43 | −0.77 | 51.0 | 41.0 | 10.0 | 46.4 | + 9.0 | 42.8 | 88 | S.S.W.: S. | 0.22 |
| Mean | 29.31 | −0.57 | 47.0 | 37.9 | 10.0 | 43.1 | + 5.3 | 38.4 | 83 | WSW: S.W. | sum 0.62 |

Dec 23.—A fine bright day. Partly cloudy. Windy. Quite warm.
— 24.—A fine bright day. Rain in early morning, Cloudy at times. Temperature decreased towards night.
— 25.—A fine, cold, frosty day. Sky clear throughout. Air dry. Pleasant.
— 26.—A fine day, but somewhat dull and cloudy. Thaw set in at night. Cold.
— 27.—A dull, misty, foggy day. Rain and sleet in early morning. Frequent thin rain till night. Mild.
— 28.—Generally overcast. Frequent rain. Fine at times. Very mild.
— 29.—A dull, overcast, miserable day. Very mild. Wet. Colder at night.

LONDON: *Barometer.*—During the week ending Saturday, December 25, in the suburbs of London, the readings of the barometer at the level of the sea increased from 29.50 inches at the beginning of the week to 29.60 inches by the afternoon of the 19th, decreased to 29.46 inches by the afternoon of the 20th, increased to 30.17 inches by the night of the 21st, decreased to 29.18 inches by the morning of the 24th, and increased to 29.75 inches by the end of the week. The mean reading for the week at sea level was 29.60 inches, being 0.20 inch below that of the preceding week, and 0.43 inch below the average.

*Temperature.*—The highest temperatures of the air observed by day varied from 53° on the 23d to 37½° on the 20th; the mean value for the week was 45°. The lowest temperatures of the air by night varied from 29° on the 22d, to 47° on the 23d; the mean for the week was 34½°. The mean daily range of temperature in the week was 10½°, the greatest range in the day being 23¾° on the 22d, and the least 4½°, on the 20th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—19th, 39°.8, −0°.2; 20th, 35°.1, −4°.6; 21st, 35°.0, −4°.3; 22d, 42°.6, + 3°.8; 23d, 50°.1, + 11°.7; 24th, 44°, + 5°.8; 25th, 34°.3, −3°.7. The mean temperature of the air for the week was 40°.1, being 1°.2 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 77° on the 24th, and 67½° on the 23d; on the 20th and 21st the readings did not rise above 50°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were below 27° on the 21st, 24th, and 25th, but on the 23d the lowest reading was 45°; the mean of the seven lowest readings was 31½°.

*Wind.*—The direction of the wind was generally S.W., and its strength moderately strong.

The weather during the week was somewhat dull and changeable, though fine at times. Snow fell on the 20th.

*Rain.*—Rain fell on three days, and the amount measured was 1.23 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, December 25, the highest temperatures of the air observed by day was above 54° at Truro, Plymouth, and Cambridge, and below 50° at Hull, Bradford, and Sunderland; the mean value from all places was 52°. The lowest temperatures of the air by night were below 29° at Cambridge, Wolverhampton, Nottingham, Sheffield, and Hull, and above 33° at Truro and Plymouth; the mean from all stations was 29¾°. The extreme range of temperature in the week was more than 26° at Cambridge and Nottingham, and less than 20° at Bradford and Sunderland; the mean range from all stations was 22¼°.

The mean of the seven high day temperatures was above 51° at Truro and Plymouth, and below 42° at Hull and Sunderland; the mean value from all stations was 45°. The mean of the seven low night temperatures was below 32° at Wolverhampton, Nottingham, Sheffield, and Hull, and above 40° at Truro and Plymouth; the mean from all stations was 35°. The mean daily range of temperature in the week was more than 12° at Sheffield, and less than 8° at Sunderland; the mean daily range from all places was 10°.

The mean temperature of the air for the week from all stations was 40°, being 5° higher than the value for the corresponding week in 1879. The mean temperature was above 45° at Truro and Plymouth, and below 37° at Wolverhampton and Hull.

*Rain.*—Rain fell on every day in the week at Plymouth, and on five or six days at most other places. The heaviest falls were at Liverpool, 2.24 inches; Plymouth 2 inches; Truro, 1.86 inch; and Bradford, 1.59 inch; and the least at Cambridge, 0.76 inch; and Hull, 0.88 inch; the average fall over the country was 1.31 inch.

The weather during the week was generally dull and changeable.

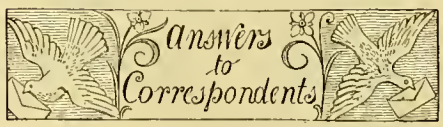
*Snow* fell at various places.

SCOTLAND: *Temperature.*—During the week ending Saturday, December 25, the highest temperatures of the air observed by day varied from 46° at Glasgow to 37° at Perth; the mean from all stations was 43°. The lowest temperatures of the air observed by night varied from 22° at Aberdeen and 23° at Perth to 30¼° at Leith; the general mean from all places was 26½°. The mean range of temperature from all places was 16½°.

The mean temperature of the air for the week from all stations was 34°, being 6° below that of England and 5½° below the value for the corresponding week in 1879. The mean temperature was above 35° at Glasgow, Greenock, Paisley, and Leith, and below 30° at Perth.

*Rain* or *snow* fell to the amount of 3.55 inches at Glasgow, 2.92 inches at Paisley, and 2.53 inches at Aberdeen; at Dundee the amount was 1.10 inch; the average fall over the country was 2¼ inches.

JAMES GLAISHER, F.R.S.




BALSAM: *Young Nurseryman.* The Balsam you refer to is probably, judging from your description, the Impatiens glanduligera, a tall Indian specimen not uncommon in gardens.

CHRYSANTHEMUM PRINCE OF WALES: *W. Robertson.* An incurved flower, dark purplish-violet in colour.

DEFORMED VIOLETS: *D. T. F.* The distortion is owing to the growth of a parasite fungus (Pucciniæ violæ).

LEEK AND ONION: *Young Nurseryman.* You might grow Leek and Onion seed near together without detriment. At least this is our experience. They are distinct species, and will not be likely to intermix.

MELON PITS: *S. W. S.* writes:—"I am about to erect a range of Melon pits. They will be well heated by surface-pipes. Is it essential to have bottom-heat to ensure success in early forcing?" To which we reply, Certainly, yes.

NAMES OF PLANTS: *G. M.* 1, Syngonium albo-lineatum; 2, Russelia juncea; 5, Cyrtomium Fortunei; 6, Rhodea japonica variegata. The rest too imperfect.—*J. Day.* 1, Epidendrum ciliare; 2, Zygopetalum Mackayi; 3, Ophiopogon Jaburan variegatus; 4, Peristrophe salicifolia aureo-variegata; 5, Campylobotrys refulgens; 6, Peperomia arifolia.—*A. B. H.* 3, Gesnera oblongata. The others not recognised.—*R. D.* Cestrum aurantiacum.

PLANTING ON CLAY: *B.* Under the circumstances you mention you cannot do better than plant Black Italian Poplar. The leaf you send from Northern France is from the same species of tree that grows on your own estate.

POTATO DISEASE: *S. Bide.* In August, 1845, in the Isle of Wight.

ROSES: *H. M. E.* If the soil is heavy or damp, the bed to be prepared for Tea Roses should be well drained. They should not, however, be planted out till the winter is past. We should prefer them on the Dog-rose stock, but you might plant some on their own roots, and be guided in future by the results obtained.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## Enquiries.

*He that questioneth much shall learn much.*—BACON.

EMIGRATION.—*Eblana* would be thankful to learn whether Australia, or some of the Mid or Western States of the United States, presents the better field for a situation in the seed trade for a steady, sober man, unmarried, and who knows the seed and nursery business well? No choice of country, only as health is somewhat threatened, a rather warm, equable, dry climate, if it could be managed, would be preferred.

HEMP.—*A. W. F.* asks:—1. Is the plant a profitable one to grow in this country? 2. Will it grow in Ireland? 3. What return is the yield per acre? 4. Price in the market? 5. Is there any work on the subject, or any in which Hemp is fully treated on?

WOOD FOR ORCHID BASKETS.—*Novice* asks:—"Which are the best kinds of wood from which to make plant baskets for Orchids. I have heard Teak recommended, and also Hazel sticks. If Teak is preferred, please give reason why, and say if it is better to plane the bars and blocks smooth, or leave them rough as they come from the saw. Should blocks have a number of holes bored in the face of them to give the plants better hold for the roots?" Perhaps some of our Orchid-grower readers will give their experience on these points.

## CATALOGUES RECEIVED.

CHARLES SHARPE & Co., Sleaford, Lincolnshire—Seed List for 1881.

FRIEDRICH SPITTEL, Arnstadt, near Erfurt, Germany—Flower and Vegetable Seeds, Plants, &c.

DICKSON, BROWN & TAIT, Corporation Street, Manchester—Vegetable and Flower Seeds.

J. L. SCHIEBLER & SON, Celle, Hanover—Trees and Shrubs, Roses, Fruit Trees, &c.

THOMAS METHVEN & SONS, 15, Princes Street, Edinburgh—Garden, Flower, and Agricultural Seeds, Implements, &c.

EDWARD WEBB & SONS, Wordsley, Stourbridge—Flower and Vegetable Seeds, Bulbs, Roots, &c.

H. & F. SHARPE, Wisbech, Cambridge—Wholesale List of Garden and Agricultural Seeds.

DIED, on Christmas Day, after a painful illness, ANTHONY PARSONS, gardener to Captain A. M. Blake, Danesbury, Welwyn. Friends will please accept this intimation.

—— On Sunday, December 26, at Tiptree Hall, Kelvedon, Essex, Mr. J. J. MECHI, aged seventy-nine.

COMMUNICATIONS RECEIVED.—D. T. F.—R. D.—W. G. S—A. D.—G. D.—W. H. D.—A. F.—J. V. & Sons.—F. W. M.—W. A. T.—E. B.—J. C.—Hortensius.—B. F.—G. M. B—H. W. W.—W. H.—J. P.—W. Kerr.—W. O. Gronen (thanks).—G. W.—G. N.—A. J. C. & Sons.—E. A.—P. W.

## Markets.

*COVENT GARDEN, December* 30.

This being holiday week we have nothing to report. Virtually no business has been done. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 1 6– 5 0 |
| Grapes, per lb. | 3 0– 6 0 | Pine-apples, per lb. | 1 0– 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Horse Radish, p. bun. | 4 0– .. |
| Asparag., Fr., bndl. | 25 0– .. | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| — Sprue, per bund. | 1 6– 2 0 | — Cos, each | 0 6– 1 0 |
| Beans, French, p. lb. | 0 9– .. | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Parsley, per bunch | 0 4– .. |
| Celery, per bundle | 1 6– 2 0 | Radishes, per bun. | 0 2– .. |
| Chilis, per 100 | 3 0– .. | Rhubarb, per bund. | 1 0– .. |
| Cucumbers, each | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| Garlic, per lb. | 1 0– .. | Spinach, per bushel | 4 0– .. |
| Herbs, per bunch | 0 2– 0 4 | Tomatos, per lb. | 0 9– 1 0 |
| | | Turnips, new, bunch | 0 4– .. |

POTATOS:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 45*s.* 6*d.* to 80*s.* 6*d.*; Belgian Kidneys, 35*s.* 9*d.* to 45*s.* per bag. Trade still bad, and prices 10*s.* to 20*s.* per ton lower than above quotations.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Begonias, per doz. .. | 6 0–12 0 | Ficus elasticus, each | 1 6– 7 6 |
| Cyclamen, per doz.. | 12 0–18 0 | Foliage Plants, various, each .. .. | 2 0–10 6 |
| Cyperus, per dozen | 6 0–12 0 | Hyacinths, per doz.. | 10 0–12 0 |
| Dracæna terminalis | 30 0–60 0 | — Roman, doz. .. | 15 0–18 0 |
| — viridis, per doz... | 12 0–24 0 | Lily of the Valley, per pot .. .. | 4 0– 6 0 |
| Epiphyllum, per dozen .. .. | 18 0–30 0 | Myrtles, per doz. .. | 6 0–12 0 |
| Erica gracilis, dozen | 9 0–18 0 | Palms in var., each | 2 6–21 0 |
| — caffra, per doz.. | 8 0–12 0 | Poinsettia, per doz.. | 9 0–18 0 |
| — hyemalis.. .. | 12 0–36 0 | Primula, single, per dozen .. .. | 5 0– 6 0 |
| Euonymus, various, per dozen .. .. | 6 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Evergreens, in var., per dozen .. .. | 0–18 0 | Tulips, 12 pots .. | 8 0–12 0 |
| Ferns, in variety, doz. | 4 0–18 0 | | |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Narcissus, Paper-White, 12 sprays.. | 1 0– 2 6 |
| Bouvardias, per bun. | 1 0– 3 0 | Pelargoniums, 12 sprays .. .. | 1 6– 2 0 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Poinsettia, 12 blooms | 3 0– 6 0 |
| Chrysanth., 12 bun. | 6 0–12 0 | Primula, double, per bunch .. .. | 1 0– 1 6 |
| — 12 blooms .. | 1 0– 3 0 | — single, 12 sprs. | 0 6– 1 0 |
| Cyclamen, 12 blms.. | 0 3– 0 6 | Roses (indoor), doz. | 2 0– 6 0 |
| Epiphyllum, 12 blms. | 1 0– 1 6 | — yellow Fr., doz. | 1 0– 2 0 |
| Eucharis, per doz... | 4 0– 9 0 | — red French, doz. | 1 6– 2 6 |
| Euphorbia, 12 sprays | 3 0– 5 0 | — Christmas, 12 bl. | 1 0– 2 6 |
| Gardenias, 12 blms.. | 15 0–30 0 | Stephanotis, 12 spr... | 12 0–18 0 |
| Heliotropes, 12 sp... | 0 6– 1 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Hyacinth, Roman, 12 sprays .. .. | 1 6– 2 0 | Tuberoses, per dozen | 4 0– 8 0 |
| Lapageria, white, 12 blooms .. .. | 4 0– 6 0 | Violets, 12 bunches.. | 1 6– 2 6 |
| — red, 12 blooms.. | 1 0– 3 0 | — Neapolitan, Fr., per bunch .. .. | 3 6– 5 0 |
| Lilac, Fr., per bunch | 8 0–10 0 | — Czar, Fr., bunch | 1 0– 2 0 |
| Lily of the Valley, 12 sprays .. .. | 2 0– 5 0 | | |
| Marguerites, 12 blms. | 0 4– 0 9 | | |

## SEEDS.

LONDON: *Dec.* 29.—The market to-day, as was expected, proved of quite a holiday character, and the business doing was extremely small. Further American advices, just received, confirm the earlier estimates as to the extreme shortness of the Clover crop, not only throughout the States, but also in Canada. Values on this market for all varieties keep exceedingly firm. Hemp seed is now unprecedentedly cheap. Peas and Haricots are neglected. Spring Tares, being good in quality and low in price, are in favour. Linseed is slow. Other articles unchanged. *John Shaw & Sons, Seed Merchants*, 37, *Mark Lane, London, E.C.*

## CORN.

No business was transacted at Mark Lane on Monday, it being a holiday. On Wednesday rather a depressed tone was noticeable; trade, however, partook of a holiday character, and no material change was quoted in prices. Wheat, Maize, and Oats, were all cheaper to sell, but there was hardly sufficient doing to test prices. Supplies fresh up to the market were moderate.

## CATTLE.

At the Metropolitan Market on Monday trade was active for choice qualities, and a fair clearance was made of all kinds. Prices were quite as good as on Monday se'nnight, and in some instances exceeded. Choice qualities of sheep were quickly sold at higher rates. Calves were scarce and dear. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 7*s.*; calves, 5*s.* 6*d.* to 7*s.*; sheep, 5*s.* 6*d.* to 6*s.*, and 7*s.* to 7*s.* 4*d.*—On Thursday trade was quiet, but fairly steady. Both beasts and sheep moved off slowly, but prices were maintained for choice breeds. Calves were unaltered.

## HAY.

There was no market at Whitechapel on Tuesday.—On Thursday the moderate supply of fodder on sale met with a very dull trade. Prices were as follows:—Prime Clover, 100*s.* to 117*s.*; inferior, 60*s.* to 96*s.*; prime meadow hay, 80*s.* to 98*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 39*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 92*s.* to 105*s.*; inferior, 50*s.* to 80*s.*; superior Clover, 110*s.* to 120*s.*; inferior, 84*s.* to 95*s.*; and straw, 36*s.* to 40*s.* per load.

## COALS.

The following are the prices current at market during the week:—Bebside West Hartley, 14*s.* 9*d.*; East Wylam, 16*s.* 6*d.*; Walls End—Hetton, 17*s.*; Hetton Lyons, 15*s.* 6*d.*; Hawthorns, 15*s.* 3*d.*; Lambton, 16*s.*; Wear, 15*s.*; South Hetton, 16*s.* 6*d.*; Tees, 16*s.* 9*d.*

**Government Stock.**—Monday being a holiday no business was transacted on the Stock Exchange. On Tuesday the closing prices of Consols were, for delivery, 98¾ to 98⅞, and 98⅞ to 99 for the account—both ex div. The same figures were quoted on Wednesday. The final quotations on Thursday were, for delivery, 98⅞ to 99, and 98 15/16 to 99 1/16 for the account, both ex div.

—— PETIVERIA ALLIACEA.—Although possessing no beauty to recommend it this merits mention on account of the properties it really possesses, and perhaps also for those it is supposed to possess. It is widely distributed throughout the tropics of the New World. In Brazil it is put into warm baths to restore motion to paralysed limbs. In some countries it is regarded as a valuable specific for the cure of toothache. The leaves are certainly acrid, and exhale a garlic-like odour when bruised; the small inconspicuous flowers are borne in long whip-like spikes. A good plant of this peculiar species is now blooming in the Palm-house at Kew.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As a variety for salads and culinary purposes, the Omega Beet must excel all others. It will not be useful as a decorative plant (the foliage during the greater part of the season being green in colour), but one trial will be sufficient to commend itself to all who desire a really rich flavoured and handsome Beet. It is quite distinct, and has been carefully selected by ourselves for many years. The chief characteristics of this Beet are: the remarkably handsome and even shape of its roots, which are of medium size; its colour, which is of the richest crimson; and more especially its flavour, which is delicately sweet, and will be found far superior to any variety yet introduced.

**In sealed packets, post-free, 1s. 6d.**

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## NEW DWARF FRENCH BEAN,

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Although Dwarf Beans are already numerous, this variety will prove to be a great acquisition. Quite distinct in seed and growth to any other variety, habit dwarf and compact, very delicate in flavour, and very early; as a forcing variety we believe it will have no equal. It is enormously productive, both indoors and out; ninety-three pods were at one time gathered from a pot containing three plants last spring. Under the name of Cooling's Early Forcing Bean, it was awarded the only First-class Certificate at the Chiswick Trials in 1877, when nearly 200 varieties of Beans were grown. We have placed samples for trial in the hands of the leading Gentlemen's and Market Gardeners in this neighbourhood; all are unanimous in opinion that it is in all respects the finest Dwarf Bean they have ever grown.

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| DANIELS BROS. .. .. .. | Norwich. |
| DICKSON, BROWN & TAIT .. | Manchester. |
| DICKSON & ROBINSON .. | Manchester. |
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| DOWNIE & LAIRD .. .. | Edinburgh. |
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| GARAWAY, JAS., & CO. .. | Bristol. |
| GENERAL HORTICULTURAL CO. | Regent Street, W. |
| GRAYSON & CO. .. .. | Bury St. Edmunds. |
| HARRISON & SONS .. .. | Leicester. |
| HURST & SON .. .. .. | Houndsditch, E.C. |
| KEYNES & CO. .. .. .. | Salisbury. |
| LAWSON SEED CO. .. .. | Edinburgh. |
| LEE, CHAS., & SON .. .. | Hammersmith, W. |
| PAUL & SON .. .. .. | Cheshunt. |
| POPE & SON .. .. .. | Birmingham. |
| SAMSON, W., & CO. .. .. | Kilmarnock. |
| SMITH, W., & SON. .. .. | Aberdeen. |
| SPENCE, E. B. .. .. .. | Darlington. |
| WATKINS & SIMPSON .. .. | Savoy Hill, Strand, London, W.C. |
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THOMAS METHVEN AND SONS beg to intimate that their Descriptive Priced CATALOGUE of Kitchen Garden and Flower Seeds, Implements, French Hybrid Gladioli, &c., for 1881 is now ready, and may be had post-free on application.
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Grows 3 feet high, and is completely covered from top to bottom with large compact sprouts. It has received special commendations at Liverpool and Manchester exhibitions, and is without doubt the very finest Brussels Sprouts ever offered.

*From* R. C. RODGERS, *Nurseryman, Staple, near Wingham February* 7, 1880.—"Thanks for your Catalogue. I was thinking of sending for some Lowndes' True Aigburth Giant Brussels Sprouts Seed, like last year's; it was without doubt the best I ever grew or saw. I gave plants to several friends, and they likewise praised it highly."

*From* Mr. JAMES LAWSON, 10, *Rectory Buildings, Sunderland, February* 6, 1880.—"I had from you last year two packets of Brussels Sprouts, Selected Giant, Aigburth Stock; they have been the best that I have ever grown. I would like to grow a quantity of it this year."

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Trade terms on application.
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ROSES, 15,000 Dwarf, on Manetti, 35s. per 100, £7 per 500, £14 per 1000; the best that money can procure. Well rooted and good plants, and all first-rate sorts. For cash only with orders. 10,000 1-yr. Seedling Cultivated BRIERS, 20s. per 1000.
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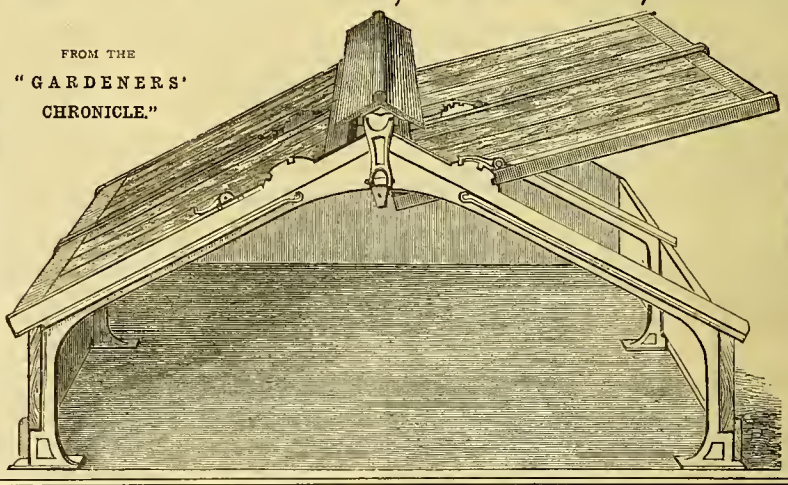

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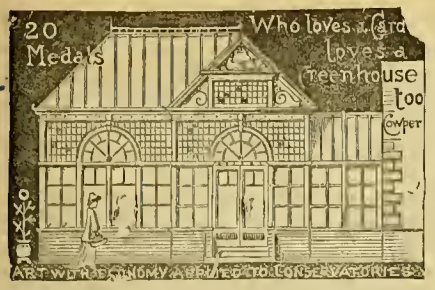


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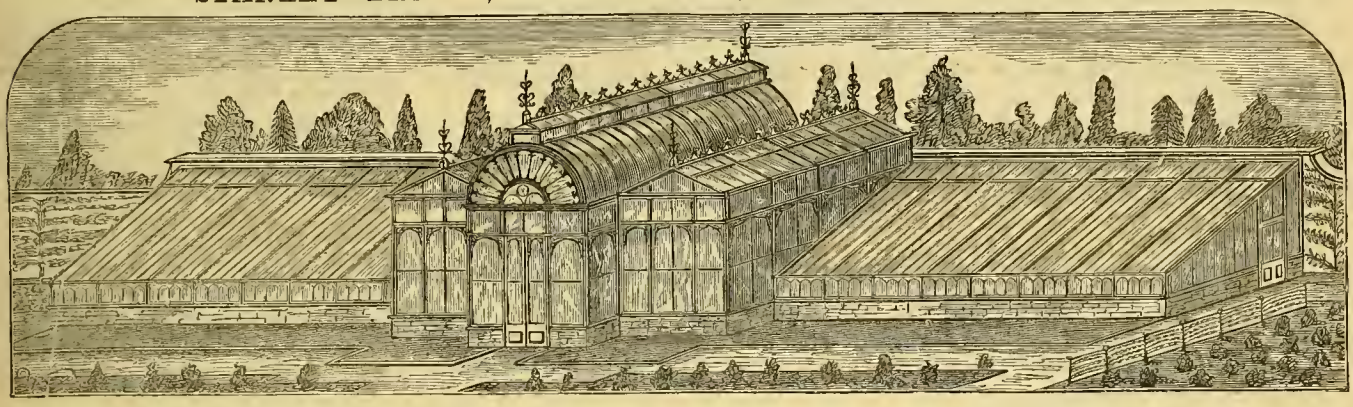

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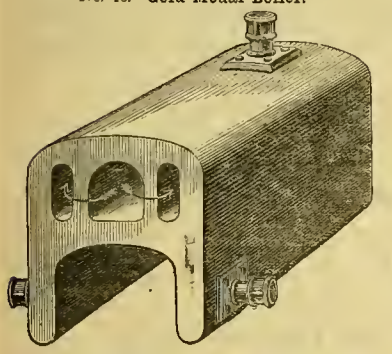

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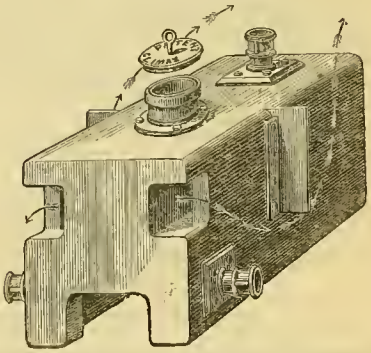
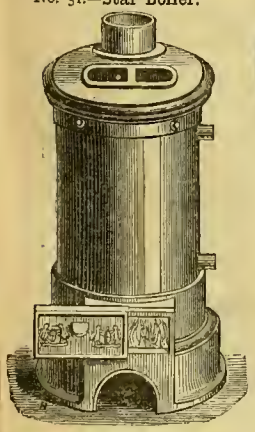
No. 47.—Climax Boiler.

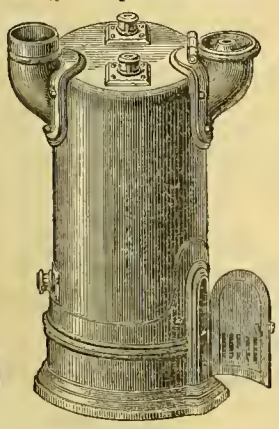


This being the Season for Hot-water Work, we beg respectfully to call attention to our Stock, which is the largest in London, of

No. 51.—Star Boiler.



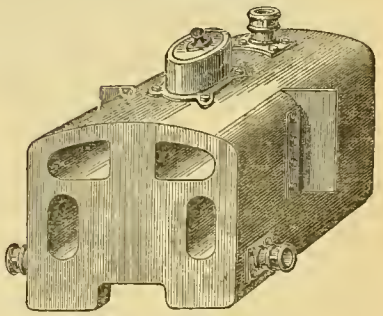
No. 43.—Independent Boiler.



HOT-WATER PIPES,
CONNECTIONS, BOILERS
(Wrought and Cast),
*COIL CASES, FURNACE FITTINGS,*
And all Requisites for
HORTICULTURAL PURPOSES.

We shall be glad to forward Illustrated PRICE LISTS, on application, or to quote Special Prices for Quantities, if required.

No. 50.—Imperial Boiler.



AWARDED THE "ONLY GOLD MEDAL" EVER OFFERED FOR BEST BOILER IN WORKING COMPETITION

**Rockeries, Ferneries, and Ornamental Gardening.**

FOR SALE, a quantity of ORNAMENTAL ROOTS, suitable for the above.
Apply to Mr. CARL, Foreman at Timber, Kensington Gardens (Black Lion Gate Entrance), Bayswater Road, W.

VEGETABLE & FLOWER SEEDS
SEED POTATOS. TOOLS &c
*BEST QUALITY—CARRIAGE FREE.*
*PRICED CATALOGUE—POST FREE.*
JAMES DICKSON & SONS
SEED-GROWERS.
108 EASTGATE ST. CHESTER

GARDEN REQUISITES.

**COCOA-NUT FIBRE REFUSE,**

3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

**H. G. SMYTH,**
17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

PEAT, for Rhododendrons, &c., of excellent quality, on rail, Ringwood Station, Hants, in trucks of 4 tons, £3; do., coarse and fine SAND, 25*s.* per truck; selected Peat and compost for choice plants. Fresh gathered SPHAGNUM, &c. Chief Office and Depot, Ringwood Station, Hants.
F. G. GATERELL, Manager.

**Fibrous Peat for Orchids, &c.**

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.
Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per bag.
WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1*s.*; 15 bags, 12*s.*; 30 bags, £1, bags included; or van load of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15*s.*; truckload of about 250 bushels, free on to rail, £1 3*s.*
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COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons, Invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1*s.* each; 15 Sacks, 12*s.*; 30 Sacks, 20*s.* (all Sacks included); Van-load at Works, 4*s.*; ditto delivered within 5 miles, 10*s.*; Truck-load (about 300 bushels when dry), free on rail, 25*s.* Terms cash with order.
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GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen in Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*

**GISHURSTINE.**

Preserves Gardeners' Boots; keeps Feet Dry; is perfect Dubbin. In Boxes, 6*d.* and 1*s.* each. Wholesale by
PRICE'S PATENT CANDLE COMPANY (Limited).

SOLUBLE
FIR TREE OIL INSECTICIDE

THE CHEAPEST and BEST of all INSECTICIDES. Sold by all Seedsmen and Chemists. Bottles, 1*s.* 6*d.*, 2*s.* 6*d.* and 4*s.* 6*d.*; Gallons, 12*s.* 6*d.*; Casks, 11*s.* per gallon.
Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.
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Dublin: TAIT AND CO., Seedsmen, Capel Street.

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MAW AND CO., Benthall Works, Broseley, Shropshire.

WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers,
FISHER, CLARK AND CO., Boston.

**Gentlemen's Gardeners, Amateurs, and Others**

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REQUIRING GARDEN POTS of best quality are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List on application.

LONG TOM.

GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest Prices of
WATSON AND SCULL, 90, Lower Thames St., London, E.C.

**Under the Patronage of the Queen.**

J. SMITH'S IMPERISHABLE STRATFORD LABELS.

The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

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**MAT MERCHANTS and IMPORTERS.**

All the usual kinds at reduced rates. SACKS and SEED BAGS, new and second-hand, of every description. RAFFIA FIBRE, NETTING, and TIFFANY, TARPAULINS, RICK COVERS, HORSE-CLOTHS, ROPES, LINES and TWINES. Price LIST on application to
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TRAINING STICKS and LABELS,
*Bamboo Canes, Virgin Cork, &c.*

C. J. BLACKITH AND CO.,
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RUSSIA MATS
For COVERING, TYING and PACKING.
The largest assorted stock in London to select from.
RAFFIA FIBRE at a further reduction in price.
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THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

| Inches. | Inches. | | | | | |
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| 15-oz., 6 × 4 to 7½ × 5½, | 9*s.*, | 10*s.*, | 11*s.*, | 12*s.* | | Per 100 ft. Box. |
| 8 × 6 to 10 × 8, | 9*s.* 6*d.*, | 10*s.* 6*d.*, | 11*s.* 6*d.*, | 12*s.* 6*d.* | | |
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| 21-oz., Orchard House, 20 × 12, | 20 × 15, | | | | 16*s.*, 17*s.* 3*d.*, 18*s.* 3*d.*, 20*s.* | |
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15-oz., for Cutting up, 34*s.*, 41*s.*, 42*s.* 6*d.*, 53*s.* per 300 feet case.
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**THE BEST IN CULTIVATION.**

*From the following Extract from the "Gardeners' Chronicle," August* 17, 1878, its great beauty as an out-door summer decorative plant will be apparent. Grown as a pot plant for greenhouse decoration during the winter and early spring months the spikes are not only larger but the individual flowers are more double and of a much purer white, rendering it undoubtedly the best variety for winter blooming.

**1s. 6d. per Packet.**

"*The White Mignonette.*—Judging of Messrs. Garaway's white Mignonette as we recently saw it planted out in their nurseries at Bristol, it is a very different thing from what the impression conveyed by an ordinary plant grown in a pot would lead us to conclude. Here the contrast betwixt its very double white highly perfumed flowers, and the stout deep green leaves with which the sturdy bushy-habited plants were clothed, was apparent. It is evidently a fine variety, with an absence of the olive-yellow hue in the foliage which detracts so much from the appearance of this sweet-scented favourite."

JAS. GARAWAY & CO.,
DURDHAM DOWN NURSERIES, CLIFTON, BRISTOL.

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SCOTTISH CHAMPION
MAGNUM BONUM
VICTORIA
DALMAHOY,
SCHOOLMASTER

SMITH'S EARLY
ASHLEAF KIDNEY
FORTYFOLD
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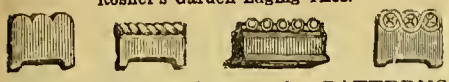
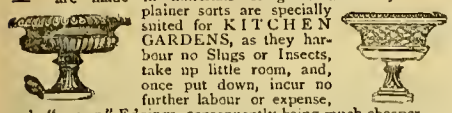


THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



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KENT PEATS or LOAM supplied at lowest rates to any quantities.

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**6 feet by 3 feet,** BEST PINE, Primed and Glazed,

**15-oz., 9s.,**

**21-ounce, 10s. 6d.** each.

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**FARRINGDON GLASS WORKS**

**LONDON, E.C.**

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*MIDLAND COUNTIES*

**HORTICULTURAL WORKS, BANBURY.**

We are prepared to deliver, within fifty miles, our New Style

GREENHOUSES,

at the following exceptionally low prices:—

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| Size, 15 feet by 10 feet .. .. .. .. | £21 | 0 | 0 |
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Half-span and Quarter-span Houses at an increase of 10 per Cent. Front Stage and all Ventilating Movements included in these charges.

All descriptions of Hot-water Work, Boilers and Fittings, at exceptionally low prices.

*If desired, workmen sent to fix the above at moderate charges.*

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*Is now ready, and will be sent, post-free, on application.*

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**TOMATO, EXCELSIOR.**—This is a most superb variety, of immense size, weighing over three-quarters of a pound, with beautiful smooth skin of dark red colour; cannot be surpassed. Per packet, 1s.

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**CELOSIA PYRAMIDALIS PLUMOSA, AUREA, and RUBRA.**—Saved from one of the finest strains in cultivation. Per packet, 2s. 6d. and 5s.

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**DELPHINIUM, BLUE.**—This is a splendid strain, and saved only from the finest varieties. We exhibited a large number of spikes at the Royal Caledonian Society's Show in July last, which were very much admired. Per packet, 1s.

**STOCK, EAST LOTHIAN, SCARLET, NEW CRIMSON, PURPLE, and WHITE, true.**—Per packet, 1s., 2s. 6d., and 5s.

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**Nurseries—CRAIGLEITH, COMELY BANK.**

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HORTICULTURAL BUILDER,

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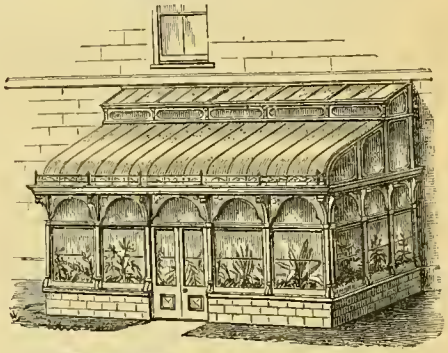
Special DESIGNS and ESTIMATES given for Ornamental CONSERVATORIES, without charge, and for all Horticultural Work of all kinds.



GARDEN BOXES and LIGHTS are generally kept in Stock, and WOODEN HOUSES suitable for Store-houses, Tool-houses, &c.

Illustrated Sheets sent, post-free, on application.

# TEBBS' UNIVERSAL FUMIGATOR.

**No Greenhouse is perfect without one.**

*Are fast superseding all other apparatus or contrivance for the purpose.*

They have proved to be the best, and offer the following advantages over all others yet introduced:—

**NO SPECIAL PAPER required; NO ATTENTION after being lit; NO FEAR OF FLAMING; NO SULPHUR GIVEN OFF, as NO CINDERS are used in lighting; NO WASTE; all the material is consumed and given off in a dense cool smoke; and with ordinary care**

**WILL LAST FOR YEARS.**

THEY WILL BURN ANY KIND OF

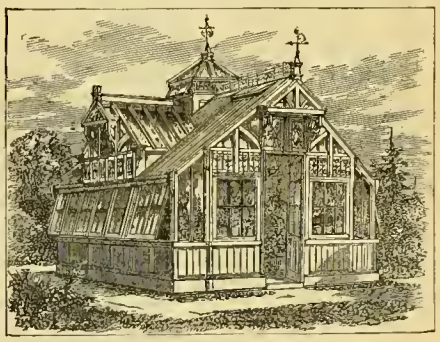
*Tobacco Paper, Tobacco Rag or Cord, Tobacco Leaf, Common Tobacco, Cigar Ends, or any other Fumigating Material.*

**Price, Retail, 3s., 4s. 6d., and 7s. 6d. each.**

(Packing 6d. extra).

Wholesale of FLANAGAN AND SON, Seedsmen, 98, Cheapside, London, E.C.; and of CORRY, SOPER, FOWLER AND CO., Shad Thames, S.E.

**N.B.—Please order early, to insure prompt supply.**



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Conservatories and Greenhouses of every description from £4 10s. upwards.

Portable Melon Frames, 8 feet by 6 feet, £2 10s.

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| 8 " | 0 5 0 | | | 19 " | 0 10 6 | | |
| 9 " | 0 5 6 | | | 20 " | 0 11 0 | | |
| 10 " | 0 6 0 | | | 21 " | 0 11 6 | | |
| 11 " | 0 6 6 | | | 22 " | 0 12 0 | | |
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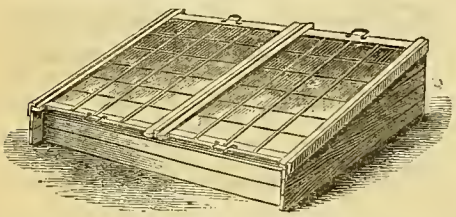

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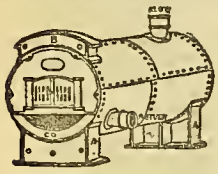

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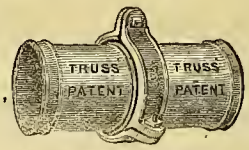


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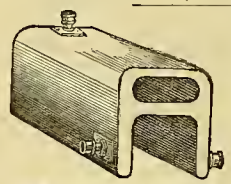

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## THE FULHAM NURSERIES, LONDON, S.W., and at SUNBURY, MIDDLESEX.


Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, January 1, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 367.—Vol. XV. { New Series. } SATURDAY, JANUARY 8, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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***IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.***


ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific, at 1 P.M.; GENERAL MEETING for Election of Fellows, &c., at 3 P.M., on TUESDAY NEXT, January 11. Admission 1s.

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GRAND INTERNATIONAL HORTICULTURAL EXHIBITION, 1881. TWO THOUSAND POUNDS in PRIZES. Schedules will be ready for distribution on and after the 15th inst. The Exhibition will be held on AUGUST 24, 25, 26, and 27. The Schedule for the ANNUAL NATIONAL HORTICULTURAL EXHIBITION will be ready the latter end of this month. This Exhibition will open, as usual, the Friday before Whit-Sunday.
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MESSRS. PROTHEROE AND MORRIS will sell at the Mart, Tokenhouse Yard, opposite the Bank, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, a splendid assortment of Hardy English Grown LILIES, CALOCHORTI, GLADIOLUS, AMARYLLIS, LILY of the VALLEY, and other miscellaneous ROOTS and BULBS, together with a consignment of 4000 double Italian TUBEROSES, unusually fine bulbs, received direct from Philadelphia.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

N B.—Messrs. P. & M. regret to announce that the whole of the 6000 L. AURATUM and KRAMERI advertised for sale on this date were found to be rotten.

**The Clapham Road Nursery, Stockwell, S.W.**

MESSRS. PROTHEROE AND MORRIS have received instructions to offer for SALE by AUCTION, in FEBRUARY NEXT (unless previously disposed of by private contract), in consequence of the continued failing health of the proprietor, the BENEFICIAL INTEREST in the LEASE of the above NURSERY, which has been established forty years, together with the GOODWILL, STOCK, and UTENSILS, as a going concern, doing a good Furnishing, Cut Flower, and Jobbing Trade. The property fronts the main road, and is well situated for the business; comprises nearly an acre of ground, with about 14,000 feet of Glass, all Heated by Hot-water Piping; Stabling, Sheds, &c.

Particulars and terms of Private Sale on application to the Auctioneers, 98, Gracechurch Street, E.C.

**6000 Lilium auratum, just received from Japan** in fine condition.—(Sale No. 5766.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, January 10, at half-past 12 o'Clock precisely, an importation of 6000 LILIUM AURATUM, just received from Japan in fine condition; also fine English-grown Bulbs of Lilium Washingtonianum, L. purpureum, L. Wilsooi, L. Brownii, L. giganteum, and many other rare Lilies; a quantity of exceedingly rare HARDY PLANTS, some offered for the first time, consisting of Nuphar polysepalum, Eremurus Olgæ, E. robustus, Thamnocalamus, Rosa rugosa, &c.; a consignment of 2000 fine bulbs of double Italian TUBEROSES from America; 100 fine plants of ARAUCARIA EXCELSA; several thousand bulbs of TIGRIDIA grandiflora, T. conchiflora, and GLADIOLI from New Jersey; fine flowering bulbs of CALOCHORTI, the wonderful Butterfly Tulip, and a great variety of choice HARDY BULBS and PLANTS from all parts of the world.

May be viewed the morning of Sale, and Catalogues had.

**Hardy Plants and Bulbs** —(Sale No. 5769.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, January 12, at half-past 12 o'Clock precisely, first-class STANDARD ROSES, including most of the leading kinds; Pyramid and Dwarf-trained FRUIT TREES, all first-rate sorts, from a well-known English nursery; also CURRANT BUSHES, RASPBERRY CANES, RHUBARB ROOTS, hardy GRAPE VINES, &c; a consignment of BULBS and PLANTS from Germany; a choice assortment of hardy HERBACEOUS PLANTS for the open border; GLADIOLI, LILIUMS, TIGRIDIAS, and other BULBS for Spring planting, &c.

May be viewed the morning of Sale, and Catalogues had.

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MR. J. C. STEVENS has received instructions from Mr. F. Sander, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 13, at half-past 12 o'Clock precisely, about 30 lots of LÆLIA ANCEPS ROSEA; a grand importation of MASDEVALLIA TOVARENSIS (this is, on account of its easy flowering habit and its pure white flowers—produced as a rule in pairs—one of the very best Masdevallias grown); a fine and healthy importation of EPIDENDRUM WALLISII—one of the finest and rarest of its class (for full description see *Gardeners' Chronicle*, July 17, 1875, p. 66); an unusually healthy lot of the rare ODONTOGLOSSUM RAMOSSISSIMUM (white variety), MASDEVALLIAS, fine lot of CYPRIPEDIUM SCHLIMII, ANTHURIUM ANDREANUM, three other ANTHURIUMS, ODONTOGLOTS, CATTLEYAS, and other ORCHIDS—the Sale also including an immense mass of LÆLIA ANCEPS DAWSONI. Flowers, &c., will be on view the day of Sale, &c.

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MESSRS. READER AND SON have received instructions to SELL by AUCTION, on the Premises, on THURSDAY, January 20, at 12 for 1 o'Clock, the above well-known COLLECTION, embracing 200 NIGHT FLOWERING CERUS, in tubs, boxes, and pots (some being from 10 to 14 feet high); upwards of 500 CACTI of various species, and many beautiful hybrids; ORCHIDS, FERNS, and miscellaneous plants; with the SPAN-ROOF and LEAN-TO HOUSES, PITS, FRAMES, BOILERS, PIPES, and FITTINGS, all in excellent order.

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G. Gray, Jun.'s Estate.—Gray *v.* Gray. Brox Nursery.

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PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

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JAMES SMITH, Nurseryman, Haughton, Birkenhead.

**Onion Seed.—To the Trade.**

MESSRS. HARRISON AND SONS, SEED MERCHANTS, Leicester, have a good stock of several kinds of the above, which they are prepared to offer. Their Trade List is now ready, and will be sent on application; it has been posted to all their regular customers, but should it have miscarried, on intimation of the same another copy will be sent.

**Roses, Fruit Trees, &c.**

WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.
Ottershaw Nurseries, Chertsey.

**Cherries and Black Currants.**

B. WHITHAM, The Nurseries, Cheadle, Cheshire, has a large stock of the above on sale.
CHERRIES, extra fine, in all the best varieties, Standards and Pyramids, at 9s. per dozen, 60s. per 100.
BLACK NAPLES CURRANTS, extra fine, 80s. per 1000.

FOR SALE.—Maiden PEACHES, APRICOTS, and PLUMS. Good trees.
For LIST of Sorts and Price apply to—
CRANSTON'S NURSERY AND SEED CO. (LIMITED), King's Acre, Hereford.

SPECIAL TRADE OFFER, for Cash.
HEPATICA, single Blue, extra strong blooming crowns, single, 5s. per 100; plants with 3 to 6 crowns, 10s. 6d. per 100; extra large clumps, 4s. per dozen.
PRIMROSES, double Yellow, strong blooming plants, 7s. 6d. per 100; extra strong, 10s. 6d. per 100.
PINUS EXCELSA, 3 to 4½ feet, five times transplanted, beautifully furnished, 12s. per dozen.
BALM of GILEAD FIR, same size and quality, 7s. 6d.
PRIVET OVALIFOLIUM, of various sizes.
B. R. DAVIS, Yeovil Nurseries, Yeovil, Somerset.

GARDEN BEETROOT.—About 10 Tons of Garden Beetroot for Sale. Apply to Mr. C. ATKINSON, Hilldyke, Boston, Lincolnshire.

TO THE TRADE, and Others.
LIMES, 12 to 18 feet, 24s. per dozen, with stout straight stems, good heads, and well rooted.
" 8 to 12 feet, 12s. per dozen, with stout straight stems, good heads, and well rooted.
CHESTNUT, HORSE, 7 to 10 feet, 9s. per doz., 50s. per 100.
BEECH, 6 to 8 feet, 20s. per 100.
SPRUCE, 6 to 8 feet, 9s. per dozen, 50s. per 100.
LILACS, Common, 3 to 6 feet, 15s. per 100.
FIR, Silver, 1½ to 2 feet, 3s. per 100.
HENRY MAY, The Hope Nurseries, Bedale, Yorkshire.

# ARTHUR VEITCH MEMORIAL

Amongst Gardeners who had the privilege of being personally acquainted with the late Mr. ARTHUR VEITCH, there is a very general expression of opinion that something ought to be done to perpetuate the memory of his innumerable acts of kindness to every gardener, young and old, who came in contact with him, and therefore, after consulting with and obtaining the consent of the widow, the undersigned have undertaken to receive the names of friends who would be willing to assist them in the promotion of a MEMORIAL worthy of so good a man. It is believed the form of Memorial proposed—viz., the raising of a Fund for the Gardeners' Benevolent Institution (such Fund to bear our honoured friend's name)—will commend itself to all, as being in every way a suitable Memorial to one who was eminent for charity. Subscriptions (not to exceed a Guinea from Head Gardeners) will be received and acknowledged by any of the undersigned, or may be paid to friends whose names will be hereafter advertised as collectors in their various districts. No List of Subscribers will be published, but as soon as the fund is closed, each subscriber will be furnished with a full statement of particulars.

J. ROBERTS, The Gardens, Gunnersbury Park, Acton, W.
J. HUDSON, The Gardens, Gunnersbury House, Acton, W.
J. AUSTEN, Ashton Court Gardens, Bristol.
W. WILDSMITH, The Gardens, Heckfield, Winchfield

SUTTON'S POTATOS for PLANTING.
SUTTON'S DISEASE-RESISTING POTATOS.
SUTTON'S LIST of CHOICE SEED POTATOS.
Gratis and post-free on application.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

STRAWBERRIES IN POTS. Crop at once.
Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.
H. CANNELL, Swanley, Kent.

**Very Choice Home-grown**

SEED POTATOS.—Mona's Pride Kidney, true, early, large and productive (few growers have this this kind right); Royal Ashleaf Kidney, Snowflake, Covent Garden Perfection, Monarch Kidney, Myatt's Kidney, best variety, and others. A select stock of the above, all grown in the Nurseries at Cross Lanes, and free from disease. For particulars and prices, apply to
W. JACKSON AND CO., Bedale, Yorks.

**To the Trade.**

EDWARD HOLMES, Whittington Nursery Lichfield, offers the following, all good plants:—
IVY, Irish, transplanted.
" " in pots.
" deltata, in pots.
" obovata, in pots.
" sagittæfolia, in pots.
" maculata major, in pots.
VIRGINIA CREEPER, strong, transplanted.
BRAMBLE, Parsley-leaved, in pots.
ROSES, Climbing, Victor Verdier, in pots.
" Madame Levet, in pots.
Price on application.

SEED POTATOS.—
MAGNUM BONUM, £7 per ton.
EARLY MYATT'S, £6 per ton.
EARLY ROSE, £6 per ton.
FLUKES, £7 per ton.
All grown from selected stocks, warranted true to name.
JOHN AND GEO. BELL, Salesmen, South Side, Covent Garden, W.C.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

POTATOS FOR SEED.
20 Tons of SUTTON'S MAGNUM BONUM POTATOS, at £5 5s. per ton.
20 Tons of MYATT'S PROLIFIC, at £5 5s per Ton.
20 Tons of CHAMPION, at £4 4s. per ton.
4 Tons of VEITCH'S IMPROVED ASHLEAF KIDNEY, at £7 per ton.
10 Tons of EARLY ROSE, at £4 per Ton.
Free on rails. Cash.
Also 10,000 CROWN BOBS and WARRINGTON GOOSEBERRY TREES; 2000 BLACK GRAPE and NAPLES CURRANT TREES. Apply to
W. COCKS, Monk's Hall, Gosberton, Spalding.

STANDARD ORNAMENTAL TREES.
CHESTNUT, Common, clear stems and fine, 40s. per 100.
" Scarlet, budded, very fine, 6 to 7 feet, clear stems, 50s. per 100.
" extra selected, 60s. per 100.
ELM, English, grafted, splendid stuff, 75s. to 100s p 100.
LIMES, prime stuff, stout stems, 50s. to 100s. per 100.
SYCAMORE, variegated, very fine, 60s. per 100.
THOMAS PERKINS AND SONS, 34, Drapery, Northampton.

EVERGREEN HEDGES, in great variety, very cheap.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

BARTO VALLE AND CO. have just received in good condition their double Italian TUBEROSE ROOTS: 3s. 6d. per dozen.
21, Haymarket, S.W.

**Spring Flowers.**

RODGER McCLELLAND AND CO.'s New Special LIST of above, including double and single Primroses, Hepaticas, choice Pansies and Violas, Daisies, Phloxes, and all kinds of Spring-flowering Plants and Spring-blooming Trees and Shrubs, is now published, and will be forwarded on application to all applicants.
64, Hill Street, Newry.

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LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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**Illustrated Catalogue of Ferns.**

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

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NURSERY STOCK OFFERED at Reduced Prices to effect a Clearance;—Abies americana alba, 2 to 2½ feet, 12s. per 100; 2½ to 3½ feet, 15s. per 100. A. excelsa, 2½ to 3 feet, 10s. per 100. A. Douglasii, 2½ to 3 feet, 6s. per doz. A. Menziesii, 1½ to 2 feet, 3s. per doz.; 2 to 4 feet, 6s. per doz. Cedrus atlantica, 1½ to 2½ feet, 12s. per doz. C. Deodara, 2 to 2½ feet, 12s. per doz.; 2½ to 3 feet, 18s. per doz. Cupressus Lawsoniana, 1½ to 3 feet, 4s. per doz. Picea concolor, 9 to 14 inches, 5s. per doz. P. lasiocarpa, 1 to 1½ foot, 12s. per doz. P. macrocarpa, 1½ to 2½ feet, 9s. per doz. P. nobilis, 6 to 12 inches, 4s. per doz.; 1 to 1½ foot, 6s. per doz. P. Nordmanniana, 8 to 12 inches, 4s. per doz.; 12 to 18 inches, 6s. per doz. P. Pinsapo, 4 feet, 30s. per doz. Pinus Strobus, 1 to 2½ feet, 4s. per doz. Taxus (Yew), English, 2 to 3 feet, 8s. per doz. Irish Yew, 1½ to 2½ feet, 6s. per doz.; 2½ to 3 feet, 9s. per doz.; 3½ to 4 feet, 18s. per doz. Thuja elegantissima, 1½ to 2 feet, 12s. per doz. T. chinensis, 3 to 4 feet, 10s. per doz. T. semperaurescens, 1 to 1½ foot, 18s. per doz. Wellingtonia gigantea, 2 to 3 feet, 24s. per doz.; transplanted, 3 to 3½ feet, 3s. each. Berberis Aquifolia, extra strong, 2 to 2½ feet, 5s. per doz.; Catalpas, 6 to 7 feet, 9s. per doz. Cornus sanguinea (scarlet-twigged), extra strong, 3 feet, 4s. per doz. Weigela rosea, 3 feet, 4s. per doz. Ribes sanguinea and aurea, 3 to 3½ feet, 4s. per doz. Virginian Creeper 3 feet, 4s. per doz. Laburnum, 6 to 7 feet, 6s. per doz. Acacias, 6 to 7 feet, 3s. per doz.; 10 to 15 feet, 12s. per doz. Acer Negundo, 8 to 9 feet, 4s. per doz. Beech, 3 to 4 feet, 5s. per 100; 6 to 8 feet, 5s. per doz. Birch, silver, 8 to 10 feet, 3s. per doz., 20s. per 100; grand specimens, 14 feet, 3s. each. Chestnut, Horse, 4 to 6 feet, 20s. per 100. Sweet Chestnut, 2 to 3 feet, 3s. per 100. Elm, Wych, 7 to 10 feet, 10s. per 100. Limes, fine crimson-twigged and orange-twigged, 8 to 10 feet, 15s. per doz. Poplars, 11 to 13 feet, 25s. per 100.
T. L. MAYOS, Highfield Nursey, Hereford.

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THE MOST SUPERB ROSES that money can buy.
Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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RARE and CHEAP LILIES, including that lovely Lily, LILIUM AURATUM, are offered at prices which will command patronage. Finest possible Roots of auratum, Size No. 1, 6d.; No. 2, 1s.; No. 3, 1s. 6d.; and No. 4, 2s., with liberal discount to Trade. CATALOGUE free on application to
W. GORDON, New Plant and Bulb Importer, Office, 10, Cullum Street, London, E.C.

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TUBEROSE, LILIES OF THE VALLEY, CHRISTMAS ROSES, &c. — 50 Double American TUBEROSE Pearl, and how to grow them, for 25s. 100 Berlin LILIES of the VALLEY, single crowns, and how to grow them, for 15s. 25 Christmas ROSES for 12s. 6d. LAURUSTINUS, fine bushy plants and well rooted, 1½ to 2 feet, 50s. per 100; 2 to 3 feet, 75s. per 100. On receipt of Post-office Orders the above will be forwarded to any address carriage paid.—R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

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**Planting Potatos.**

JOHN AND GEORGE McHATTIE, SEED MERCHANTS, Chester, have fine selected stocks of the following:—
RIVERS' ROYAL ASHLEAF KIDNEY
MYATT'S PROLIFIC ASHLEAF
MAGNUM BONUM
SCHOOLMASTER
PORTER'S EXCELSIOR
GRAMPIAN
PATERSON'S VICTORIA
SNOWFLAKE
And several other favourite kinds. Prices on application.

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GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, short jointed and well ripened: Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.
Descriptive Price LIST for 1d. stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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JOHN GRIGOR AND CO., The Nurseries, Forres, N.B., beg to intimate to Planters generally, that their Stock of SEEDLING and TRANSPLANTED FOREST TREES—including the True Native Highland Scotch Pine, for which they have been so long and so well known—is this season particularly fine. All in splendid condition for safe removal. Price LISTS and Samples free on application.

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**New Catalogue.**

WILLIAM BARRON AND SON'S New Descriptive CATALOGUE of Coniferæ, Hardy Ornamental Trees, and General Nursery Stock, may now be had on application. A personal inspection of their unrivalled Stock solicited. The Nurseries are three minutes' walk from the Borrowash Station on the Midland (Derby and Nottingham) Railway.
Elvaston Nurseries, Borrowash, Derby.

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CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s, and 24s. per dozen.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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# PLANT FRUIT TREES EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.

We beg to invite Inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

*Descriptive Priced CATALOGUE, free on application.*

**CRANSTON'S NURSERY & SEED CO.**
(LIMITED),
KING'S ACRE, HEREFORD.

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VINES—VINES—VINES.

W. G. CALDWELL AND SONS, The Nurseries, Knutsford, are now offering their celebrated stock of FRUITING and PLANTING CANES of the above, which are unusually fine, and thoroughly well ripened, consisting of:—

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|---|---|
| Black Hamburgh. | Black Alicante. |
| Buckland Sweetwater. | Duke of Buccleuch. |
| Foster's Seedling. | Golden Champion. |
| Golden Queen. | Lady Downe's. |
| Madresfield Court. | Mrs. Pince. |

Muscat of Alexandria, &c.
The Trade supplied. CATALOGUES free.

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SPRING, 1881. SPRING, 1881.

*NOW READY.*

*Price 1s., post-free 1s. 2d. Gratis to Customers.*

One hundred pages of beautifully illustrated Letterpress, with numerous superb original Coloured and other Engravings. The most complete and splendid edition of this popular work yet published.

**DANIELS BROS.,**
THE QUEEN'S SEEDSMEN, NORWICH.

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**PLANTING SEASON.**
100 Acres to Select from.

FOREST TREES
OF ALL SIZES, CONSISTING OF
FIRS, LARCH.
,, SPRUCE.
,, SCOTCH.
ASH, SPANISH CHESTNUT, QUICKS, &c.
Samples and prices forwarded. Also Descriptive Priced CATALOGUES of Ornamental Trees, Roses, &c.
**HOLLAMBY'S NURSERIES,**
GROOMBRIDGE, TUNBRIDGE WELLS.

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**THE LARGEST ROSE GARDENS IN ENGLAND.**

CRANSTON'S NURSERIES.
(ESTABLISHED 1785.)
*New Rose Catalogue for* 1880-81,
now ready and may be had post-free on application.

**Awarded over 60 First Prizes for Rose Blooms this season.**

CRANSTON'S NURSERY and SEED CO. (LIMITED),
King's Acre, Hereford.

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**Grape Vines.**

B. S. WILLIAMS has still on hand a good stock of all the leading kinds, including the Alawick Seedling, which has proved the best late black Grape in cultivation. Strong Planting and Fruiting Canes.
A LIST of kinds and prices on application.
Victoria and Paradise Nursery, Upper Holloway, N.

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CHRYSANTHEMUMS.—CHRYSANTHEMUMS.—Strong stock plants to furnish cuttings, our selection from 300 of the best varieties grown, 4s. per dozen, 25s. per 100.
Strong cuttings of the best large-flowered ANEMONE or POMPON CHRYSANTHEMUMS, 12 varieties, our selection, 1s. 6d.; 50 varieties, 5s. 6d.; 100 varieties, 10s., post-free. Cuttings of JAPANESE varieties, 2s. 6d. per dozen.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

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SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

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RASPBERRY CANES.—100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30s. per 1000; samples of 100 for 4s., free in London, no change of rail. Also 100,000 FASTOLF, price 10s. per 1000; samples of 200 for 2s. 6d, free on rail, sent to any station in Great Britain. Payments to accompany order. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to
A. AND E. BATH, Colgates Farm, Sevenoaks, Kent.

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FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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**To the Trade.**

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
Seed Growing Establishment, Wisbech.

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FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
,, Golden, many thousands, 3, 4, 5 to 10 feet high.
,, Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
,, laurifolia, myrtifolia, Scottica, Hedgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
,, Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
,, Golden Queen, 4, 5, 6 to 10 feet high.
,, Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
,, ,, ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA FISIFERA AUREA, 3, 4 and 5 feet hundreds.
THUIOPSIS BOREALIS, 4, 5 to 10 feet.
,, DOLABRATA, 3, 4 and 5 feet.
THUJA AUREA, 2, 3 and 4 feet high.
,, SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

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LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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RARE AMERICAN SHRUBS, &c. NIVIUSIA ALABAMENSIS, lately figured in *The Garden*, 5s. each, £2 10s. per dozen.
ANDROMEDA ARBOREA, a beautiful but rare small tree, 2s. 6d. each, £1 5s. per dozen.
FRANKLENIA PUBESCENS, a charming shrub, 3s. 6d. each, £1 15s. per dozen.
STYRAX GRANDIFOLIUM, a rare shrub, 2s. 6d. each, £1 5s per dozen.
HESPERALOE YUCCAFOLIA, red Yucca from Texas, 7s. 6d. each, £4 per dozen.
Can be forwarded at low rates by steamer from Baltimore to Liverpool. Packet free
JOHN SAUL, Washington, D.C., United States, America.

WILLIAMS' for GARDEN and FLOWER SEEDS and HORTICULTURAL SUNDRIES.

WILLIAMS' NURSERIES are at all times worthy of a visit from all lovers of plants.

WILLIAMS' PLANT HOUSES are constructed both for convenience and comfort, and Parties about Constructing and Furnishing Conservatories, Stoves, &c., will do well to pay a visit to these Nurseries, where any advice will be gladly given.

WILLIAMS' for all kinds of FLOWERING STOVE and GREENHOUSE PLANTS. Specimens a speciality.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

QUICKS, 2 to 3 feet, 17*s.* per 1000, extra strong. Strong PEAR STOCKS, to graft, 30*s.* per 1000. Strong PLUM STOCKS, 30*s* per 1000. Common LAUREL, bushy, 1 to 2 feet, 80*s.* per 1000
W. JACKSON, Blakedown, near Kidderminster.

FRUIT TREE STOCKS. CRAB APPLES, or APPLES from seed, 1-yr. old, extra, £12 per 10,000; first choice, £10 per 10,000.
PEARS, 1-yr. old, extra fine, £15 per 10,000; first choice, £13 per 10,000.
QUINCE, extra transplanted, £15 per 10 000; first choice, £13 per 10,000.
PLUM, Myrobalan, extra, 1-yr., £10 per 10,000; first choice, £8 per 10,000; transplanted, extra, £12 per 10,000.
MAHALEB, extra, 1-yr., £6 per 10,000; first choice, £5 per 10,000.
CATALOGUES of Ornamental Trees and Shrubs, Stocks and Plants, Roses, Pæonies, Magnolia Lenné, and others, will be sent on demand. FRESH FLOWERS of VIOLET sent every day to all parts of Europe. Orders to
L. PAILLET, Nurseryman, Vallée de Chatenay, par Sceaux, près Paris, France.

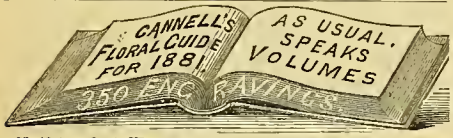
**Grapes this Year.**

FRUITING CANES, thoroughly ripened without bottom-heat, 7*s.* 6*d.* to 10*s* 6*d.* each. PLANTING CANES, 3*s.* 6*d.* to 5*s.* each. Leading kinds
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**To the Trade.**
MUSSEL STOCKS.

MESSRS. JOHN STANDISH AND CO. have from 15,000 to 20,000 EXCEPTIONALLY fine grown MUSSEL STOCKS to offer. They are straight, clean grown, and beautifully rooted. Price 40*s.* per 1000.
Royal Nurseries, Ascot, Berks.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30*s.* per dozen, £10 per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.




**Nothing but Flowers.**
**Two beautiful Coloured Plates.**

H. CANNELL AND SONS beg to announce that the above is in the press, and will be issued shortly to all applicants on receipt of twelve stamps. *Free to Customers.*

It has been enlarged to such an extent that its postage will probably exceed 3*d.*, and the information it contains totally surpasses anything of the kind ever issued, and will certainly be acknowledged throughout the world (as previously) to be an absolute necessity to all possessing flowers.
SEED LIST post-free.

THE HOME FOR FLOWERS SWANLEY KENT

SEEDLING and TRANSPLANTED FOREST TREES, &c.—The subscribers shall have pleasure in forwarding Trade CATALOGUE of above on application.
JOHNSTONE'S ST. MARTIN'S RHUBARB, earliest and best in cultivation, 1*s.* each, and 9*s.* per dozen, trade price on application.
W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

**Quality and Price unequalled.**

ENGLISH YEWS, 4 to 5 feet high, 12*s.* per doz., 80*s.* per 100; 5 to 6 feet high, 18*s.* per doz, 125*s.* per 100.
PORTUGAL LAURELS, 2 to 3 feet high, 25*s.* per 100, 200*s.* per 1000; 3 to 3½ feet high, 50*s.* per 100.
All well rooted and uninjured by frost.
THOS. PERKINS AND SONS, 34, Drapery, Northampton.

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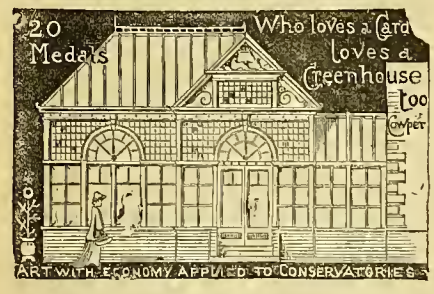


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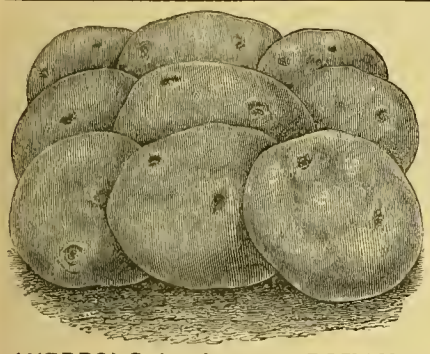

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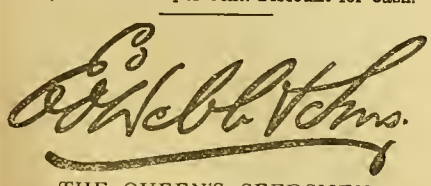

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ROYAL BERKS SEED ESTABLISHMENT, READING.

THE
# Gardeners' Chronicle.

*SATURDAY, JANUARY* 8, 1881.

## FLOWER-LORE: JANUARY.

THE present season, popularly known as the "sleep of the year," is peculiarly destitute of vegetation, and hence we lack the presence of those countless flowers which in spring and summer-time clothe the earth with their unrivalled beauty. It is, indeed, no matter of surprise that from the very earliest period these fair objects of Creation's handiwork should have entered largely into the traditions and legendary lore of most countries, besides holding a prominent place among their religious and social rites. To write a detailed account of these would require a volume of no mean size; so, during the present year, it is proposed to give from month to month a brief history of the superstitions and popular fancies belonging to some of our favourite and well-known plants, following, as far as possible, the time of their flowering. Although, therefore, the present month is generally perhaps the most unpropitious one for vegetation, yet occasionally when the winter is mild there may be found in sheltered situations sundry flowers cheering the barren ground with their fragile gracefulness. Conspicuous among these is the Gorse, also known as Furze, Whin, or Fuzz, which, from its often being in flower all the year round, has been described as "the never-bloomless Furze," and given rise to the old proverb, "Love is out of season when the Furze is out of blossom." Its golden flowers are much in request in the North of England at Eastertide for the dyeing of the pasch or paste eggs. In days gone by it was a principal article of fuel, and, as late as the year 1730, "the privilege of casting his Whin" was reserved in leases of farms to certain specified persons. In some parts of Wales it is used when chopped and bruised for the winter fodder of horses; and in fox-hunting countries its growth is encouraged on account of the excellent cover it affords. Another plant which blooms nearly all the year round is the common Groundsel, thus spoken of in one of the popular rhymes of Scotland:—

> "Through storm and wind,
> Sunshine and shower,
> Still will ye find
> Groundsel in flower."

It is popularly nicknamed in the North of England "Grinning Swallow," and another name for it is "Grundy Swallow." It is known as "Fireweed" by the Canadians, being said to spring up from the ashes of the clearing fires. It is one of the few plants found among the ashes of Mount Etna; and Humboldt discovered it in the upper regions of the Andes, just below the limits of eternal snows, "where hurricanes are incessant, and not a tree can rear its head." One of the species, called sarracenicus, is supposed to be in memory of the Saracens, who are reported to have made use of it for healing wounds. A little plant, too, which displays its "modest crimson-tipped flower" the greater part of the year is the Daisy, formerly known as "Day's Eye." It is mentioned by Gerarde under the name of "Bruise-wort," as an unfailing remedy in "all kinds of paines and aches," besides curing fevers, inflammation or

the liver, and "all the inward parts." In Scotland it is termed "the gowan," and in this and other countries is associated with many superstitions. Thus it appears to have magical properties, for a correspondent of *Notes and Queries* informs us that early one morning a farmer in the neighbourhood of Birmingham, when walking round his corn-fields saw the first Daisy of the year. He immediately went down on his face, and bit it off, carefully preserving his mouthful; this eccentric ceremony being supposed to ensure good luck to agricultural pursuits. It is still the favourite plant of the German maiden in prognosticating her love affairs, and is even regarded by her with feelings of veneration. In Thuringia there is a notion that any one who has had a tooth extracted must eat three Daisies in order to ensure exemption from toothache for the future. According to an old Celtic belief each new-born babe taken from earth became a spirit which scattered down upon the land it had left some new kind of flowers to cheer its bereaved parents. Hence the following pretty legend is told in connection with the Daisy. The virgins of Morven, to soothe the grief of Malvina, who had lost her infant son, sung to her:—"We have seen, O Malvina! we have seen the infant you regret, reclining on a light mist; it approached us, and shed on our fields a harvest of new flowers. Look, oh! look, Malvina: among these flowers we distinguish one with a golden disc, surrounded by silver leaves, and a sweet tinge of crimson adorns its delicate rays; waved by a gentle wind, we might call it a little infant playing in a green meadow; and the flower of thy bosom has given a new glow to the hills of Cromler." Since that day the daughters of Morven have consecrated the Daisy to infancy. In Yorkshire it is recognised as the flower of childhood, and is called by the peasantry "Bairn-wort." One of its varieties is known as "Hen and chickens." According to a proverb common in some places, it is said that "It isn't spring until you can plant your foot upon twelve Daisies." In the comedy entitled the "Mock Marriage," 1696, among the many charms enumerated to cause a person to dream of his future partner in life occurs the following:—"Hide some Daisy roots under your pillow, and hang your shoes out of the window."

As early as January the flowers of Rosemary often begin to open; its appearance at this ungenial season being thus beautifully noticed by the poet:—

"Sad Rosemary,
Mocking the winter of the year with perfumes,
Which the first blast that blows will ravish from it,
And waste 'midst howling tempests."

This shrub has from time immemorial been superstitiously regarded for its supposed efficacy in comforting the brain and strengthening the memory, which has made it an emblem of fidelity in lovers. It was accordingly worn at weddings, and perhaps on the same principle at funerals, on which latter occasions it is even still in some parts of England distributed among the company, who throw the sprigs into the grave along with the corpse. As an accompaniment at marriage ceremonials we may note that its sprigs were interwoven in the coronal which bound the hair of the unfortunate Anne of Cleves on the day when she became the Queen-Consort of Henry VIII. It has been much used, too, in distilling Hungary-water, and was in days gone by taken as tea for the headache. Again, the blue Periwinkle is another charming flower, which gladdens this month when the season is warm. It was in olden times used for making chaplets, and is alluded to in the ballad against the Scots—"A garlande of Perevenke set on his heved." In France this plant has been made emblematical of the pleasures of memory from the circumstance of Rousseau's saying in one of his works that as he and Madame Warens were on their way to Charmettes she saw some of these flowers in the hedge, and exclaimed, "Here is the Periwinkle still in flower." Thirty years afterwards, as Rousseau was climbing a hill in company with M. Peyron, he caught sight of the Periwinkle in flower, which reminded him of the days gone by, when he was walking with Madame Warens, and he inadvertently cried out, "Ah, there is the Periwinkle." Rousseau records this anecdote as a proof of the retentive memory he had with regard to every incident which occurred at a certain period of his life, and hence the flower has been made to represent *les doux souvenirs*.

The common Coltsfoot, too, may occasionally be seen towards the close of this month preparing to open its flowers. The name is derived from its fanciful resemblance to the foot of a colt. In some places it is called Colt-herb, and by the Cumberland peasantry is termed "Cowt's-foot." As far back as the time of Pliny it was popular as a remedy for coughs and colds, and its seeds are still used by the Highlanders for stuffing mattresses. According to an old piece of weather lore, "If the down flieth off Coltsfoot when there is no wind it is a sign of rain." One of the hardiest flowers which enlivens our gardens at this season, and sends forth its blossoms from among its dark leaves is the Christmas Rose. It anciently enjoyed a high reputation as a medicinal agent. Centuries before the Christian era Melampus is reported to have employed it in the treatment of madness. This plant was supposed to ward off the evil influences of malicious spirits; and the ancient Gauls were in the habit of strewing its white blossoms over their floors that they might thus hallow their dwellings. As, however, the perfume of this plant is considered highly injurious to health, they, in the place of an imaginary evil, introduced a real one. The scattering, too, of these flowers was attended with no small ceremony, hymns of praise being sung to their Pagan deities, and invocations made that they might be defended and delivered from any ills that might befal them. The Gauls are also said to have dipped their arrows in the juice of this plant from its being regarded as a deadly poison.

The Plantain, which produces its foliage at an early period of the year, is a common indigen of meadows and pastures, and has been popularly termed Waybread, a corruption, no doubt, of way-bred, from its frequency by the wayside, seeming as if bred on the road. The Swedes call it Wägbredblad, and the German name is Wegetritt, *i.e.*, wagtread, because so constantly trodden under foot. A popular nickname for it is the "Englishman's foot," and by the North Americans it is styled "the footsteps of the white man." Curious to say it has a strange tendency to follow the migrations of man; and wherever our colonists have settled it is found thoroughly established.. This peculiarity is accounted for by the following legend:—The Plantain is said to have been once a maiden, who, when one day watching by the wayside for her lover, was suddenly changed into the plant which has ever since loved to attach itself to the beaten path. Once in seven years it is said to become a bird, either the cuckoo or the cuckoo's servant, "the dinnick," which is said to follow its master everywhere. In folk-medicine the Plantain is considered efficacious for various disorders; and in the Highlands of Scotland an ointment is made from its leaves, which is considered to possess excellent medicinal properties. In some places, too, the peasants use its leaves to heal the bites of stinging insects. Among other extraordinary properties with which this plant is credited may be mentioned one referred to in an old book, entitled *Natural and Artificial Conclusions*, by Thomas Hill, 1650:—"The virtue of a rare coal that is to be found but one hour in the day and one day in the year. It is only to be found on Midsummer Eve, just at noon, under every root of Plantain and of Mugwort, the effects whereof are wonderful, for whosoever weareth or beareth the same about with them shall be freed from the plague, ague, and sundry other diseases." Another species of this plant is the Ribwort Plantain. In the North of England it was formerly customary with children to challenge each other to try the "kemps." Of these an equal number was skilfully selected by the opposed parties. One was then held out to be struck at with one from the opponent's parcel, which was thrown aside if decapitated, but if not was used to give a stroke in return. Thus with alternate strokes they proceeded, until all the kemps but one were beheaded; and he who had the entire kemp in his possession was the victor. Hence kemp was regarded as synonymous with hero or champion. In the North of England this plant has, in consequence, been popularly called "Fightee cocks," and in Durham it is termed "Cock fighters." The word kemps is often used by romance writers, as, for instance, in the old ballad of King Estmere:—

"But in did come the Kyng of Spayne,
With kempes many a one."

*T. F. Thiselton Dyer.*

## New Garden Plants.

CŒLOGYNE (PLEIONE) ARTHURIANA, *n. sp.* (?) *

A very puzzling plant, with the most lovely flowers, very much like those of the well-known C. maculata, but with one or two long and conspicuous lines of mauve on the petals, with a deep purple-mauve continuous border to the anterior lobe of the lip, with an inconspicuous bract and a quite peculiar bulb, approaching that of C. lagenaria in its abrupt upper part, but with five strong blunt very conspicuous angles, which are far more developed than in any specimen of C. lagenaria or maculata that I have seen, and of a deep purple colour, with numerous small light green spots. Whatever may be the final decision about this novelty, when we have studied it a longer time, there is not the least doubt that in *point de vue* of horticulture it deserves a name of its own. I name the plant with great satisfaction in memory of our lost friend, Mr. Arthur Veitch. The species (mule?) is one of the last introductions of Messrs. Veitch, who kindly sent me a dozen of flowers and a bulb. *H. G. Rchb. f.*

ONCIDIUM BRIENIANUM, *n. sp.*†

This is a curious species, very distinct in its short small bulbs, compact nodding raceme, with very short flower-stalks. The flowers are of a clear light bright sulphur colour, the anterior blade at the lip is very small, and forms what is an especial peculiarity. There is a reddish variety, var. rufida, which is nearly covered with cinnamon colour, where the yellowish variety, flavida, has much broader flowers with distant cinnamon bars. It comes from Paraguay, and has lately flowered in the Pine-apple nursery, Maida Vale, of Messrs. Henderson. It is dedicated to Mr. James O'Brien, who immediately distinguished it from the species of the same affinity. *H. G. Rchb. f.*

CATASETUM TIGRINUM, *n. sp.*‡

A very curious Catasetum, with white sepals and petals, the last unusually broad, all with numerous cinnamon-coloured bars. The column and lip light whitish-ochre coloured. Lip thick, narrow, triangular, with thicker margins. There is a single tooth on one side of the base in a very irregular way, thus marking

* *Cœlogyne Arthuriana, n. sp.* (?)—Pseudobulbo obtuse pentangulo parte superiori conica insidente; bractea arcta ovario breviori; labelli carinulis longioribus. Reliqua Cœlogynis maculatæ, sed tepala lineis duabus violaceis munita et labelli lobus anticus purpureo continue prætextus. Cl. b. Arthur Veitch dicata. C. ill. Veitch. *H. G. Rchb. f.*

† *Oncidium Brienianum*, n. sp.—E grege Oncidii pubis, Lindl.; pseudobulbis clavatis brevibus diphyllis; foliis lanceolatis acutis; panicula densissima brachyclada secunda; sepalo inferiori connato bifido; tepalis valde dilatatis; labelli corpore crasso rugoso in tres sectiones diviso; divisione infima transverse rugosa, laciniis lateralibus semilunatis obtusis, lacinia antica parva firma trapezoidea tantum ima basi callosa columnæ auriculis semilunatis apice denticulatis omnino ciliolatis. Var. rufida-maculis confluentibus prope tecto flores gerit, dum var. sulphurea parce striolata. Ex Paraguay imp. dom Henderson et primus distinxit dom James O'Brien. *H. G. Rchb. f.*

‡ Monachanthus, sepalis ligulatis acutis; tepalis oblongis acutis, labello ligulato triangulo lateribus incrassato apice obscure sulcato ac lobulato, callo obscuro in ima basi ante angulum calcaris subevanidis. *H. G. Rchb. f.*

the undoubted affinity to the group of C. barbatum. The very broad petals are quite unique, so that the plant claims its especial position. Messrs. Veitch kindly sent it to me. It was grown by Mr. Dorey, gardener to — Williams, Esq., Sugnall Hall, Eccleshall, Stafford. *H. G. Rchb. f.*

Cypripedium tessellatum (*Rchb. f.*) porphyreum.

It is universally believed that the individual plants originating from the same cross fertilisation are identical in their features. Thus we have seen hundreds of flowers of Cypripedium Sedeni all alike. Such was not the case with Cypripedium Harrisianum. We know the lightest variety is not very highly appreciated, although the dark, almost black and gorgeous variety is one of the most expensive Orchids of the world. You might nearly be sure to extract any price for it from an enthusiastic and intelligent beginner.

There is now a fresh case of this kind before us, and a few others may be spoken of very soon. I have at hand a very great surprise, a variety *hors de ligne* of Cypripedium tessellatum. The showy flower (there is a bud of a second one) is suffused with the richest deep purple-brown on sepals and petals and border of the lip, and it has a much more robust habit, with very broad, finely painted leaves. It came from the very same pot of seedlings at the original place in the establishment of Messrs. James Veitch & Sons, thanks to Mr. Seden's perseverance. *H. G. Rchb. f.*

Cypripedium calurum (longifolium × Sedeni), *n. hyb.*

This is a mule between C. longifolium and Sedeni (longifolium × Schlimii). It is highly curious in its petals resembling, by-the-bye, those of the well-known C. longifolium, being, however, longer and twisted. The sepals are light yellowish olive-green with brownish-purple nerves. The lip is nearly as in the glorious C. Sedeni. The leaf at hand is considerably shorter and narrower than in C. Sedeni. Once more a Sedenian product of Messrs. J. Veitch & Sons' establishment. *H. G. Rchb. f.*

## ABNORMAL PEARS.

It will surprise some to be told that neither a Pear nor an Apple is a fruit; nevertheless, such is the actual fact. The true fruit of a Pear or of an Apple is the parchment-like core. The fleshy portion outside, which most persons would consider the fruit, is really the flower-stalk swollen out of all knowledge. That this is the true explanation may be seen by any one who will watch the growth from the first to last of an ordinary Pear. Moreover, every now and then we find abnormal specimens which show how the change is brought about, and furnish valuable means for unravelling the plan upon which flowers or fruit are built up. The illustration (fig. 7) is from a specimen kindly sent to us by M. André from Paris. It will be seen that a shoot is abruptly bent upwards, and that the upper side of it is swollen and overgrown till it forms a lobed fleshy mass, the lower portion remaining unaffected. The base of the leaf-stalks, too, in some cases is similarly hypertrophied, which is of the more interest botanically in that it may possibly serve to throw some light on the so-called calyx-tube. The mere fact of the branch becoming succulent is apparent, but it is not so clear how this has been brought about. We offer the following explanation as the only one that occurs to us from an examination of the specimen. Had we been able to trace its growth from the beginning the explanation might have been easy, but as it is we can only conjecture that the flower-stalks instead of being in tufts or trusses at the end of a thick spur, as they are generally, were in this case separated one from another by the unequal growth on one side of the stem. This rapid growth of the stem between the stalks would of course separate the flower-stalks and turn a tuft of flowers into a raceme. Let us further suppose that the stalks were, from some cause or another, not detached from but congenitally adherent to the main stem and hypertrophied by undue growth of the cellular tissue. By some such combination of circumstances we should have a structure like that now before us.

Fig. 7.—Abnormal growth of pear

Fish Culture.—*Land and Water* states that the late Mr. Frank Buckland has bequeathed his valuable Museum of Economic Fish Culture to the nation; and on the decease of Mrs. Buckland a sum of £5000 will revert to the nation, to be applied for the purpose of founding a Professorship of Economic Pisciculture in connection with the Buckland Museum and the Science and Art Department at South Kensington.

## THE KEW ARBORETUM.

### THE MAPLES.—II.

ACER VILLOSUM, *Wall.*, Plant. Asiat. Rar. ii.; Brandis, *Forest Flora of North-west and Central India*, p. 111; *Gardeners' Chronicle*, 1851, p. 791.—Himalaya at high elevations, 7000—9000 feet, not uncommon from the Jhelam to Khamaon, Chur, Deoban range. Introduced to this country by Osborn.

A large handsome tree with brown branches, the buds and young leaves covered with long silky hairs. The leaves are cordate, 5-lobed, and measure from 6 inches to 8½ inches in length, and about the same in breadth, the stout petioles being about 5 inches long. This species, although it experiences for long periods intense cold in its native mountains, is apt, like the splendid Himalayan Rhododendrons already in cultivation, to suffer from the frosts of our cold late springs. It is, however, worth growing for its bold and striking foliage, even although it should be injured now and then.

*Var.* THOMSONI, *Hiern*, Flora of British India, p. 695; *A. Thomsoni*, Miq. in *Archives Néérlandaises*, ii. 470. — Native of Sikkim and Bhotan, at elevations of from 7000—9000 feet.

In this variety the basal lobes of the leaf are altogether suppressed, and the remaining three lobes are small; the fruit is from 2 to 3 inches in length.

ACER RUFINERVE, *Sieb. et Zucc.*, Flora Japonica, v., ii., t. 158; Miquel, *Sur les Erables du Japon*, in *Archives Néérlandaises*, ii., p. 471, 1867.—A native of Japan.

A large tree. The leaves vary both in size and outline, they measure from 2½ inches in length by the same in breadth to more than 4 inches each way; they are from 3 to 5-lobed, with irregularly-toothed margins, glabrous above, but bear reddish hairs along the nerves beneath. The young branches are conspicuous on account of the bluish-grey glaucescence with which they are covered. The peduncles, petioles, and often midribs of the leaves below are pale red.

According to Messrs. Veitch—who have recently introduced the species from the mountains of Central Nippon, where it is found up to 4000 feet elevation—it is a rapid-growing tree, with the habit of the common Sycamore.

*Var.* ALBO-LIMBATUM, *Hook.*, Botanical Magazine, tab. 5793. *Var.* FOLIIS VARIEGATIS.

This was introduced from Japan by the late Mr. Standish. As figured in the *Botanical Magazine*, it is exactly like the type in size and form of leaf, but there is a distinct margin of white, which is very striking. The variegation, however, is not very constant, sometimes the white colour, which in the figure above quoted is confined to the border of the leaf, is irregularly distributed over its entire surface. In this condition we have seen plants bearing the second varietal name above given.

ACER STERCULIACEUM, *Wall.*, Plant. Rar. Asiat. ii., 3, tab. 105; Koch, *Dendrologie*, theil i., p. 521. *A. cultratum*, Hort. — Himalaya Mountains.

This approaches very closely to A. villosum, but differs from it in its glabrous leaves, which are conspicuous by the red colour of the prominent nerves and principal veins of the under surface. In Germany it is treated as a tender plant, and in the Botanical Garden, at Berlin, is cultivated in a cool house. Koch states that it was introduced into Germany by Prince Waldemar. Wallich calls attention to its affinity with A. villosum, and conjectures that its glabrous character may be owing to the fact of its growing at much less elevated situations than that species.

ACER PENNSYLVANICUM, *L.*; Loudon, *Encycloped. of Trees and Shrubs*, p. 81, fig. 125; Emmerson, *Trees and Shrubs of Massachusetts*, vol. i., p. 567. *A. canadense*, Duham.; *A. striatum*, Du Roi; *A. hybridum*, Bosc.

"Striped Maple, Moose-wood, Striped Dogwood. Lake Saint John, lat. 47° N.; southward through New England, and along the Alleghany Mountains to Northern Georgia, and west along the northern boundary of the United States to Wisconsin. Wood white, close-grained, very hard. A tree 20 to 30 feet in height, with a trunk 6 to 8 inches in diameter:' Sargent's *Catalogue of the Forest Trees of North America.*

If only on account of the great beauty of its bark this species should be in every good garden. Either as a member of the mixed shrubbery or plantation, or as a single specimen on a lawn, it is equally desirable. The young wood is green, beautifully striped with white and black. In English nurseries it is perhaps best known under the name of "Snake-barked Maple." The finely-serrated, glabrous, three-lobed cordate leaves are, when fully developed, about 6 or 7 inches long by 5 or 6 inches broad; when young they are hairy on both surfaces, the under-one particularly being clothed with a dull yellowish tomentum; later on they become nearly glabrous, especially on the upper surface. The petioles and veins are red. *G. Nicholson.*

## THE NEW PLANTS OF 1880.

(*Concluded from p.* 8.)

### GREENHOUSE PLANTS.

THE number of new greenhouse plants which has appeared during the past year is comparatively small. The most remarkable novelty is, doubtless, the South African terrestrial Orchid flowered at Glasnevin, and figured in the *Garden* under the name of Disa macrantha, but which Sir J. D. Hooker, who has determined it to be distinct from that species, has given the name of Disa megaceras. It is a noble plant of its class, fully equal in interest to D. grandiflora, though less showy. The numerous large flowers, which grow on a stout stem, form a spike 8 to 12 inches long, and are white spotted with purple, the upper sepal or hood being conical, and extended behind into a long slender greenish-white horn. The specimen figured in the *Botanical Magazine* was flowered by Mr. Elwes. One of the most useful greenhouse plants we have met with is Mr. Kaile's seedling Chorozema (cordatum) aureum floribundum, a remarkably free-flowering bush, distinct in colour and very attractive, the standard being of a deep orange-yellow, and both the wings and keel whitish; it will be a good exhibition plant as well as a pretty subject for greenhouse decoration, being bright, cheerful-looking, and novel. The North American Bignonia capreolata atrosanguinea is a very showy climber, almost hardy, having the flowers of a dark-red purple instead of the usual orange-yellow colour of the type. The Rutaceous Ravenia rosea would appear to be a plant of ornamental character, having the aspect of Choisya ternata; it is of shrubby habit, with opposite trifoliate-stalked leaves, and showy axillary Diosma-like rose-red flowers of considerable size. The Erythrina insignis, flowered in the Italian gardens, and of doubtful origin, with its dense many-flowered racemes of large brilliant scarlet flowers, though of arborescent character, must be a desirable subject for the cultivator who has the space for its accommodation, as, for example, a large warm conservatory. In Albuca Nelsoni the lover of bulbous plants will find a species equalling the Galtonias in beauty, with a scape 4 to 5 feet high, well furnished with large ascending white flowers, having a stripe of red down the back of each segment. The succulent Cereus Fendleri, from New Mexico, with flowers 3 inches across, of a bright purplish-rose, is not only distinct in character, but beautiful in appearance, and will be a welcome addition to this group. As a foliage plant Anthericum Maknyanum promises well, being of moderate size, with arching linear acuminate leaves of a dark green colour, margined and striped with creamy white, though its flowers are white, small, and unattractive. The feathery Asparagus plumosus is an exceedingly ornamental evergreen climber, the slender ramifications lying in one plane, and being exceedingly decompound, so that they resemble the fronds of a very finely-cut Fern. Finally, Delabechea rupestris, which in the young state has handsome digitate leaves, has reappeared under the name of Oleobachia, which is probably due to the mis-reading of some garden label.

Amongst greenhouse Ferns, the Natal Asplenium Sandersoni is a pretty little dwarf evergreen, forming tufts of narrow pinnate proliferous fronds, with small oblique pinnæ having a few rounded teeth on the anterior margin. A pretty multifid variety of the Australian Doodia aspera, with its arching, rigid spinulose evergreen fronds, delicately tinted with rosy-purple when young, is another gem of comparatively small growth. We have several good Ferns, new to gardens, lately introduced from Japan, and these are possibly hardy, certainly half-hardy or frame plants requiring very slight protection. Adiantum monochlamys, one of these, was shown last summer by the Messrs. Veitch, and forms a dwarfish tuft of some 6 or 8 inches high, the fronds ovate, with small wedge-shaped pinnules, which each bear a solitary large sorus at the tip. Of the same set and from the same source, comes Lastrea Maximowiczii, an evergreen leathery-fronded species of a bright glossy-green colour, and with some resemblance in the cutting to our familiar L. dilatata, but altogether a more refined looking plant. Another of these is the evergreen Polystichum tripterum, which has narrow equal-sided fronds, with falcate acute pinnæ, and bear at the base two branches of the same general character but smaller, one on each side, after the fashion of that variety of Blechnum Spicant which has been called trinervium. Mr. Bull has brought into notice the very pretty Japanese Selaginella involvens variegata, one of the rosulate habited species, which roll up ball-fashion when dry, and which in this variety has the fronds variegated by occasional white growths, after the manner of the variegation of such Conifers as Cupressus Lawsoniana.

### HARDY PERENNIALS.

There are several welcome additions to the group of hardy perennials—plants which are now receiving more of the attention their merits deserve, and of which fashion has for some years past to a considerable extent robbed them. Of the bulbous series a glorious crimson Tulip, Tulipa Gesneriana Stranwaysii, with very large deep crimson cups on tall scapes, was shown by Colonel Clark, and though not exactly new has been almost hitherto confined to his own garden. Lilium nitidum, a new and very distinct Californian Lily, with an erect paniculate inflorescence supporting a score or more recurved flowers, of a bright yellow copiously spotted with red-brown dots, has been exhibited in fine condition by Mr. Bull. Narcissus (Bulbocodium) citrinus, the largest known form of the Hoop-petticoat Narcissus, brought by Mr. J. D. Llewelyn from Biarritz—a form with beautiful sulphur-coloured flowers—was flowered in great beauty last spring by Mr. Barr, whose specimens were described by Mr. Baker in the *Florist*, where also appears an admirable drawing by Mr. Burbidge. Amongst the Fritillarias, Dr. Regel has figured a fine species from Alatau, named Fritillaria Walujewi; it grows 2 feet high, and has large solitary drooping flowers, greyish or lead-coloured exteriorly, and purplish-brown spotted with white within. Of the non-bulbous series, we may first note concerning the Spiræa nivosa referred to last year, that it is the Aruncus astilboides of Maximowicz, and will perhaps be best known here as Spiræa Aruncus astilboides; under whatever name it is grown, however, it will take rank as one of the finest things in its way, but whether for general purposes it may become as useful as the now well-known and highly popular Astilbe japonica remains to be proved. The Dracocephalum Ruprechtii, recently obtained from Turkestan, is a showy labiate, with long spiked whorls of large blue flowers, much in the same way as those of D. Ruyschiana japonicum. The Himalayan Gentiana Kurroo is a charming rockwork plant, forming a subrosulate tuft of linear-oblong leaves, from whose axils spring the slender flowering stems, bearing from one to five large funnel-shaped flowers spotted around the throat with blue on white, and margined with a band of resplendent azure. Primula Steinii × , a hybrid between hirsuta and minima, is another lovely rockwork subject, very compactly tufted, and almost smothered with bright rose-purple flowers. Haberlea rhodopensis, from the Balkan Mountains, is a charming alpine, with radical obovate toothed leaves, and three-flowered scapes bearing pale blue flowers with a yellow throat—in size and form very much recalling those of Chirita sinensis. Still another good alpine turns up in the case of Helichrysum frigidum, a native of Corsica, with slender, decumbent, freely branched stems, clothed with linear-oblong leaves, each branchlet terminating in a flower-head, of which the longer inner bracts are white, the heads being sufficiently numerous to give the plants a decorative character. Geranium atlanticum is one of the finer species of Crane's-bill, of which some are sufficiently weedy; it comes from Algeria, grows to a moderate stature, has palmately-cleft leaves, and largish purple flowers veined with red. The Bignoniaceous Incar-

villea Olgæ, of Turkestan, supposed to be a biennial, is said to be a showy plant, and is quite dissimilar from any of the hardy plants now in cultivation; it grows 3 to 4 feet, with a single stem, furnished with opposite pinnate leaves having long incised lobes, the upper part forming a large-branched panicle of pedicellate funnel-shaped purple flowers, each more than an inch long. Another good rock plant, forming large low cushions, is the Scabiosa pterocephala, or Pterocephalus Parnassii, from the mountains of Greece, perfectly hardy at Kew, and when in flower very ornamental, with its compact heads of pinkish-lilac flowers.

ARBORESCENT PLANTS.

Standing somewhat on the confines between the herbaceous and the woody plants come the Yuccas, one of which has been added to our collections by the Messrs. Veitch in the very effective Yucca gloriosa medio-striata, which has a broad whitish-green band down the centre of each leaf. We may here also mention the doubtfully hardy Ilex insignis, a grand evergreen shrub, with bold lanceolate elliptic leaves, figured in our vol. xiv., n.s., p. 297.

To the new Japanese Conifers referred to last year we have now to add, in name at least, the Picea ajanensis—(Note: Piceas are now the Spruce Firs)—sometimes known as Abies Alcockiana, one of the most beautiful and hardy of the Spruces (see our vol. xiv., n.s., 427, figs. 81, 82); and Picea Glehnii, a dwarf dense-growing Spruce with spreading branches (*Gardeners' Chronicle*, xiii., n.s., p. 300, fig. 54). Populus alba Bolleana, from Tiflis, is a fine tree of pyramidal growth, with the leaves silvery-white beneath. Alnus firma multinervis is a medium-sized Japanese tree, with the aspect of the common Alder, and, like it, is adapted for planting on the margin of ornamental waters. Quercus cuspidata variegata is an elegant evergreen Japanese tree, having the neat simple Myrtle-like leaves either margined or marbled with creamy-white. Bambusa Ragamoskii, from Turkestan, would seem to be one of the hardiest of the Bamboos, vigorous in habit, resembling Arundinaria japonica, but with larger leaves, and forming large compact tufts. Eucryphia pinnatifolia, introduced by Messrs. Veitch from Southern Chili, is a very handsome deciduous shrub, growing some 8 or 10 feet in height, with deep green, glossy, pinnate leaves, and large saucer-shaped white flowers; our figure at p. 544 (vol. xii., n.s.) bears out the remark, that in this shrub cultivators have one of the most beautiful hardy or half-hardy shrubs in existence. Cornus brachypoda, introduced by the same firm from Japan, a fine deciduous tabuliform tree, which has the trunk erect, the branches horizontal, and the flowers in cymes like those of the Elder, but whiter, must be quite a novelty, and is reported to be an acquisition. Finally, not to extend our list beyond the reasonable limits of a "selection of the best," we have Daphniphyllum glaucescens, which Messrs. Veitch describe as a beautiful dwarf dense-growing evergreen shrub, with bold spreading leaves 5 to 7 inches long, of a pale fulvous-green above, glaucescent beneath, the bark, footstalks and midribs being bright crimson, and the aspect such as to render it ornamental in small pots for decorative purposes, or as a lawn shrub, or for winter bedding. *T. Moore.*

TRADESMEN'S DINNERS. — On Thursday, December 23, the *employés* in the seed department of Messrs. Little & Ballantyne, of Carlisle, were entertained by their employers at the Bush Hotel. On the night following the nursery men, about eighty in number, had supper at the nursery. The chair and vice-chair were occupied by men who had both been forty-five years in the employment of the firm.

## NEW INVENTIONS.

WEEKS' SYSTEM OF HEATING AND VENTILATING. —Permit me a little space to question the novelty of a "Warming and Ventilating Apparatus," by Messrs. J. Weeks & Co., and noticed under the heading of "New Inventions" in the *Gardeners' Chronicle* of January 1, 1881. The following brief description of Tobin's Tube and A. L. Taylor's Patent Heating and Ventilating Apparatus will prove that Messrs. Weeks' plan is an inferior adaptation of both combined. The former is an air shaft and chamber, with a valve to open and close at pleasure at the top, which is about 5 feet from floor. This air-shaft may be plain or ornamental, and may be fixed in or against an external wall by preference, or may be placed in any other convenient position in the apartment, so that an air duct can pass from the outside of the building and be connected with its lowest extremity, for the purpose of admitting a constant supply of fresh air at such an elevation that no draught is felt by the occupants of the apartment. It is evident that Messrs. Weeks' air chamber in wall, and air duct through wall communicating at its lowest extremity, is identical with Tobin's Tube. Taylor's patent "Warming and Ventilating" apparatus or system, is obtained by placing the hot-water pipes in cases or air chambers having an air duct passing from the outside of the building to one end, if horizontal, or lowest extremity, if vertical, and an orifice of a proportionate size at the other end or upper extremity of such casing or chamber—the pipes being so arranged that the pure cold air in its passage through the chamber impinges upon their entire surface, and so becomes thoroughly warmed before passing into combination with the air of the apartment. Mr. Taylor also embraces in his patent the use of water in the horizontal cases or chambers for the purpose of vaporising the air without causing the slightest appearance of steam in the apartment. This system is automatic in its action, for the hotter the apartment becomes the greater is the inrush of cold air over the pipes, and *vice versâ*. I submit that Messrs. Weeks' plan of placing a coil of hot-water pipes within the air-shaft or chamber is an adaptation of Taylor's apparatus, but far inferior, inasmuch as the air in passing up the chamber only impinges upon the sides of the pipes instead of upon their entire surface; and their suggestion of using water in open trough pipes would undoubtedly cause an unpleasant amount of actual steam in the apartment. As to the position of their coil-pipes under the windows, I can only say that Messrs. Weeks could not have chosen a worse, for if the fresh air requires cooling by passing the glass, why go to the expense and trouble of warming it? Messrs. Fletcher, Lowndes & Co. (Limited), are the sole manufacturers of Mr. Taylor's apparatus, which they have fixed in public buildings and horticultural houses with the most marked success; the writer is, therefore, in a position to practically demonstrate his foregoing remarks. *F. W. Fletcher*, 13A, *Great George Street, Westminster.*

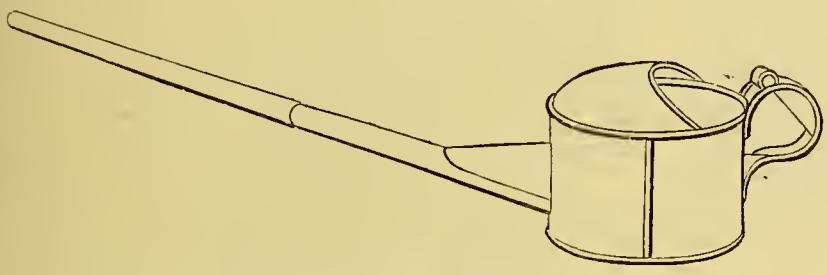


FIG. 8.—THE PERFECT WATERING-POT.

THE PERFECT WATERING-POT.—Every gardener who has had much watering to do in houses must often have felt a desire for a watering-pot capable of supplying water easily, but at such a pace as not to wash the surface-soil out of the pots which are in the back rows or elsewhere farthest away and difficult to reach. An experienced amateur friend of mine has not only felt that desire, but has gratified it, and it is now in every one's power to become possessed of a similar convenience. The outline of this watering-pot (fig. 8) shows it to be shallow in proportion to its diameter, and minus the top handle, so often inconveniently in the way of front row plants; the cover is a sufficient handle to carry the pot by when upright. The pot is 9 inches wide and 6 inches deep; it holds about 1½ gallon, and is about as large as can be used conveniently for watering pots at a distance. The spout is 25 inches long, with a ½-inch orifice 3 inches above the top level of the water when the pot is filled. These dimensions and the angle of the spout were fixed upon after many experiments, and much experience of the watering-pot in daily use justifies the statement, that for the particular kind of watering for which it is intended nothing can possibly be better; it is fully entitled to the distinctive name of the "perfect" watering-pot. It is made by an eminent firm at Birmingham—Messrs. J. H. Hopkins & Sons, Granville Works—of the best materials, and will stand plenty of hard usage. *E. W. Badger, Birmingham.*

## ORCHIDS AT MESSRS. VEITCH'S.

IT is not possible to visit a collection of Orchids at any season of the year and not find some choice specimens in flower, and more especially is this the case where every description of them are cultivated. There we always find something to please, and above all something to instruct us; neither can one exhaust the infinite variety of the Orchid family, nor attain to the *ultima thule* of their cultural requirements. Let us take the noble and stately Vandas for instance, and how many different systems of treatment are advised. Some growers advise a minimum temperature of 65°, others go as low as 50°. I tried the higher temperature for many years, but gave it up, and find they do better and flower more freely with a winter minimum of from 55° to 60°. The Aerides Fieldingii and others of that type succeed remarkably well in the same temperature. Mr. Spyers, in his Orchid Calendar in the summer, stated that when Vandas flower very freely they lose a certain number of the lower leaves afterwards, and at p. 787 of volume xiv. the same excellent cultivator gives various systems of cultivation, but I do not think either of them is quite right. I prefer the lower temperature to the higher, and disapprove of the plants being kept so dry at the root that the sphagnum dies for lack of moisture.

I have known the collection of Vandas at Chelsea for nearly twenty years, and believe they have never been so healthy as they are at present, and the house is kept at a minimum of 60°, or it may fall occasionally to 55° during the winter months, and the plants are liberally supplied with water over the sphagnum, quite sufficient to keep it in a healthy growing condition, and air is admitted very freely night and day; but it is heated before reaching the plants. The hot-water pipes are placed close to the side ventilators, which are always open. The heated air passes through a thick sheet of scrim canvas, which is frequently moistened. Thus, in a few words, the conditions are a moderately moist atmosphere, in which a constant circulation of air is kept up, and sufficient slightly warmed water sprinkled on the sphagnum to keep it growing, and furthermore, they are shaken out of their pots every year in February, and repotted with clean potsherds and sphagnum; under this system the plants do not lose their leaves even after flowering freely.

Next to the Vanda-house is a similar one for Aerides and Saccolabiums, which are treated much in the same way, except that the temperature is quite 5° higher. There is a noble specimen of Aerides Schröderi: it has two growths and thirty leaves. This, which is merely a good variety of A. maculosum, is very scarce, as the whole stock of it in existence has been propagated from one plant. There are some useful winter-flowering Orchids in this house, at present in great beauty; prominent amongst them are Saccolabium giganteum, which is not so much valued as it ought to be: its long racemes of delicate flowers are thickly placed, pure white, with a rosy-red lip, and delicately scented, much more so than any other of the species. It invariably flowers in mid-winter.

There is also a fine lot of the wonderful Angræcum sesquipedale, only imported last season; and many, even small examples, are flowering freely. A handsome specimen of the large-flowered variety has eight

flowers on two spikes. Some plants have flower-spikes not 6 inches high; their ivory-white flowers, with spurs a foot long, are unique on such small plants. Several species of Dendrobium rested in a cooler house have been placed here, and are now in flower or showing blossom. D. Findlayanum is in flower, and a pretty little thing it is. D. moniliforme has dense spikes of rosy-tinted flowers. D. endocharis is a very pretty hybrid, which improves very much as it becomes more developed. One plant with eight spikes was very beautiful, and its pleasing perfume is a strong point in its favour. D. Wardianum and D. crassinode have some of the most marvellous spikes I have yet seen. They have been well grown and ripened, they have had a short rest, and the buds are now bursting into life and beauty. The shallow pans of light, thin pottery have wrought quite a revolution in the culture of these and many other Orchids. The plants have very little organic matter to root into; the roots speedily lay hold of the sides and bottom of the pans, as there are few potsherds either: plenty of water during the growing season, and a warm, moist atmosphere do the rest.

In the Cattleya-house the rather difficult-to-manage C. maxima is flowering in a pot treated as one would C. Mossiæ. C. bulbosa or Walkeriana flowers in the little pans. The glories of C. Trianæ have so often been proclaimed, that it seems superfluous to say more. It is not only one of the best winter Orchids, but the finest of Cattleyas. One plant on a block has eleven growths, and most of them have flower-sheaths. Also in the Cattleya-house are fine flowering plants of Odontoglossum pulchellum: these and the major variety of it are most useful to work into bridal and other choice bouquets: their pure ivory-like flowers with yellow lip last long in beauty. Cœlogyne cristata is in flower in large masses. The recent C. barbata was said to rival or surpass this, but its sooty fringed lip does not contrast favourably with that of C. cristata, nor is it so easily managed. Lælia albida is a small but pretty thing in many varieties, and Barkeria Lindleyana is still flowering, and its rich purple flowers contrast admirably with the numerous white and delicately tinted ones.

Passing into another house—and this is the warmest of all, where the night temperature in winter ranges more nearly to 70° than 65°—there is a grand lot of Phalænopsis. The bulk of the collection is made up of P. amabilis, P. grandiflora and P. Schilleriana. Many persons have recommended a lower temperature for these in winter. P. Schilleriana might winter safely at 60°; but I have had good proof that so low a temperature as this is not safe for the other species. Here are from 450 to 500 spikes showing, and when all of them are in flower at once it will be a grand sight. Many are suspended close to the glass; more are placed on stages at a considerable distance from it: all are doing well, but they are best in the little pans. These are filled with roots, which have run over and cling closely to the outsides. They also are freely watered even in winter, and the small quantity of potting material, so thoroughly permeated with roots as it is, cannot become sour from too much water.

In a house rather cooler than the Cattleya-house, but warmer than the coolest department, are many fine species in flower. Pilumna fragrans with pure white flowers, sweetly scented; Oncidium cheirophorum has eight or nine spikes on a plant, the small primrose-coloured flowers are also scented, and as a plant it is very pretty. Masdevallia bella and M. macrura both flowering—the latter scarce, with broad glossy leaves and singular flowers. Odontoglossum blandum is flowering here and in the coolest house: this is a charming thing, the flowers in their rich spotting on a white ground resemble a good form of O. nævium, and they are scented like O. odoratum. In this house there is also a very noticeable plant of the pretty Brazilian Leptotes bicolor, a charming thing too, with forty of its flowers, white except the purplish rose base to the lip. It is pleasing to record the fact, that the cool-house gives us some of the finest winter-flowering Orchids. Under Mr. Seden's care are fine flowering plants of Odontoglossum crispum, O. Pescatorei, a fine form of O. Andersonianum, with fourteen flowers on a spike; O. Coradinii, yellow flowers, with brownish blotches, on a long spike; O. anceps, recently noticed, is still in flower; O. Chestertoni, evidently a form of O. Andersonianum. O. nevadense, O. prænitens and O. triumphans—a trio with yellow ground and blotched flowers—are showy; and the pretty O. cucullatum is so distinct, with its reddish-purple densely spotted lip.

The rather miffy Nanodes Medusæ is growing very freely in this cool house, and the botanical student may be charmed with a plant of the Stelis Bruchmulleri; it has Masdevallia-like leaves, and numerous peduncles of purplish-brown, very singular, three-lobed, densely hairy flowers. There are numerous other fine things still to notice, but Zygopetalum Mackayi is the most showy, and its flowers are also scented. Cymbidium Hookeri is singular in showing very frequently spikes of unexpanded flowers, which die off before they open. Calanthe Sieboldii, said to be hardy, is now in flower, and its spotted leaves, with yellow flowers and bright orange lip are very distinct, but it is not truly hardy. *J. Douglas, Loxford.*

## WINTER ROSE GRAFTING.

What a lot of new and useful ideas a gardener may pick up by paying an occasional visit to any of our numerous metropolitan and provincial nurseries. No matter what the time of year, there is always something good and practical to be noted for future use, and the information so acquired is invariably brought to bear directly upon the interest of employers, and this is only as it should be. I will, therefore, with your permission, proceed to give the readers of the *Gardeners' Chronicle* the result of such a visit to the Castle Street Nurseries, Salisbury. Winter Rose grafting is the mode adopted by Rose growers whereby to increase or get up a stock of Roses of the current year's raising, and it is truly marvellous with what despatch a large stock is worked up in this way. For this purpose the necessary number of Manetti cuttings, 9 inches long, are put in out-of-doors the first week in December in rows, all the eyes except the terminal one being cut clean away from each cutting as they are being made. These cuttings (which are to form the stocks for the Roses) are taken up and potted in small 60-pots the following March and plunged to the young growth in old tan out-of-doors until they are wanted, the first week in December, when they are, simultaneously with the Roses to be worked, introduced to the house in which they are to be joined together.

Previously to taking the stocks indoors they are cut down to the old wood at the surface of the tan, and made into cuttings to make stocks for next year. The stocks thus beheaded present, through the exclusion of light and air during the intervening months, the appearance of roots when removed from the tan; and so treated the wood is more fresh than if it had been exposed to the influence of light and air. The new Roses when received from France or elsewhere in October or November, are potted and then buried in spent manure to keep the wood fresh and the eyes plump. The operation or process of grafting is performed in the following way: The operator has a small keg filled with soil placed on the side stage of the house, upon which he places and steadies the pot containing the stock; then, holding the pot with the left hand, with the right he cuts the stock off about half an inch above the surface of the pot in an upward direction and at an angle of about 72°. The scion, which consists of one eye and half an inch of wood on either side, is cut with a corresponding angle to splice with the stock, which are then tied together with a small piece of soft matting and the process of grafting is completed.

In this way the Messrs. Keynes' expert grafter puts through his hands from 350 to 400 worked plants daily until the required quantity has been worked up. The first batch, which was worked during the first week of December, were at the time of my visit (a fortnight later) being gradually inured to the air of the outer house (they having been put into a shallow span-roofed frame fixed upon a bed of tan in the raised pits in the centre of span-roofed houses as soon as they were worked). They are callused nicely, and have made a very regular growth over an inch long. It is almost needless to say that a suitable growing temperature is maintained during the union of stock and scion, and that they are shifted into 5-inch pots as soon as they have started well into growth, and when being potted are lowered sufficiently in the 5-inch pot to bury the union of stock and scion, so that the latter may make roots for itself; they are then removed to a cooler temperature, where the growth becomes consolidated. These plants will be ready for sending out the first week in March, and those worked from green wood next month, which when shaded callus in a few days, in April and May. *Hortus.*

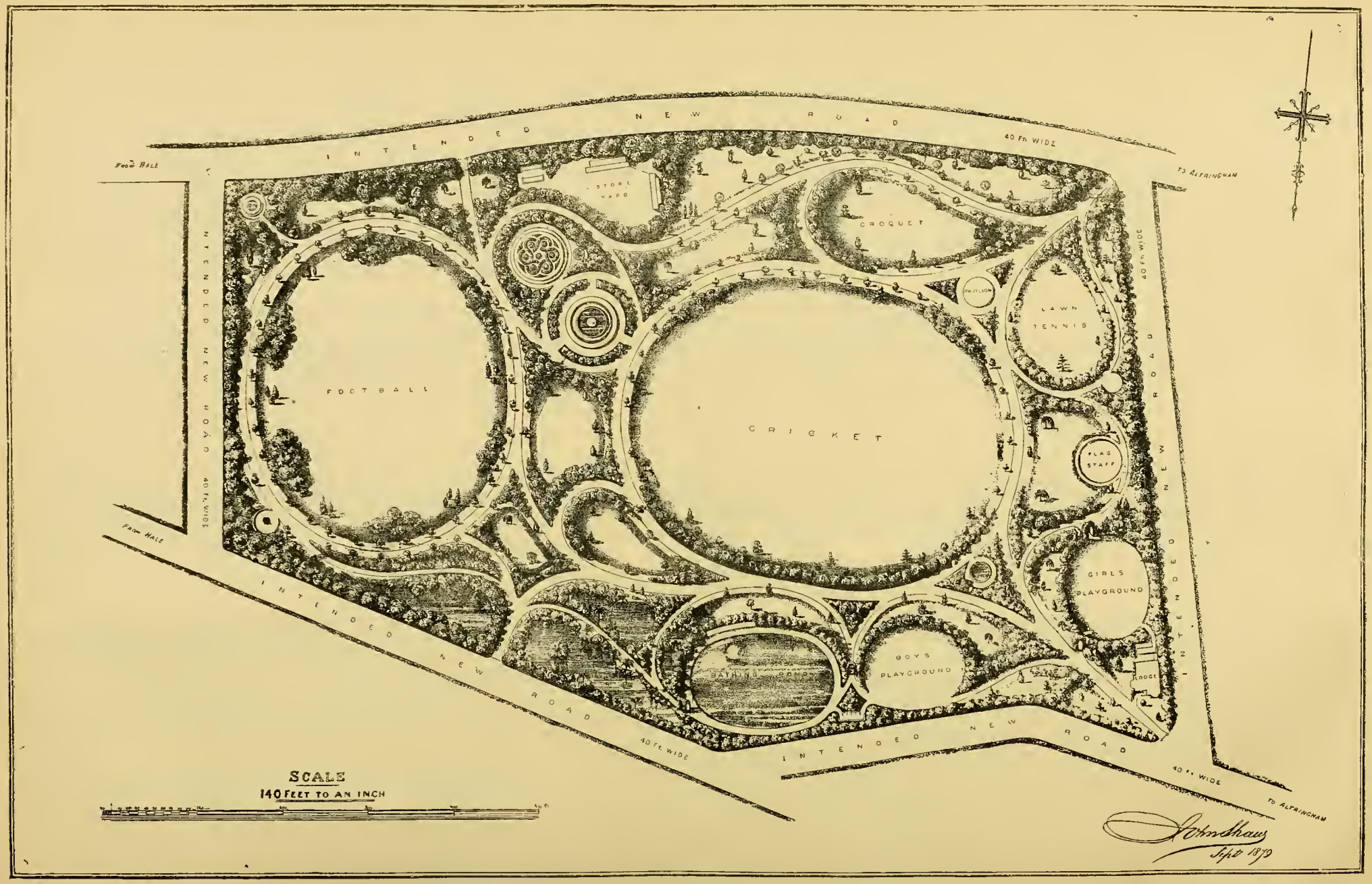
## THE STAMFORD PARK, ALTRINCHAM.

This Park, of which a plan (fig. 9) is given on p. 45, was designed by Mr. John Shaw, Sen., of Bowden, Cheshire, and executed by his son, Mr. John Shaw, Jun., for the Local Board of Altrincham. It covers an area of 16 acres of a piece of waste land, known as Hale Moss, which was presented to the inhabitants by Lord Stamford, and when completed by Mr. Shaw, was opened for the use of the public for ever, in October last. As we learn from the *Altrincham and Bowden Guardian*, the Stamford Park is situated to the south-east of Altrincham, and within easy distance of the most thickly populated part of the town. Like all low-lying waste lands on beds of quicksand, it contained large quantities of water, and the whole body of the soil being largely impregnated with iron, it was in a state of decomposition conducive to the abundant generation of noxious gases. This will be readily understood to be not only unfavourable, but actually destructive to plant life; but evils of this kind are soon overcome by drainage and exposure to the atmosphere, which deprive the soil of its poisonous qualities and render it nutritive and suitable to the growth of plants.

From a sanitary point of view the reclaiming of the land was a wise step, and must prove beneficial to the neighbourhood by the removal of stagnant water, and the deleterious gases arising from damp decaying vegetable matter. In the laying-out of the Park Mr. Shaw had in view not only its use as a place of recreation, but also took care that while not detracting from the useful it should be ornamental and pleasing to the eye. The surface has therefore been undulated as far as desirable; the walks are numerous and laid out in graceful curves. The plantations and shrubberies have been designed for shade and shelter, and are so distributed that views and objects of interest are multiplied. Independent of the open space for games and other amusements, the surface has been laid out so as to end in promontories, &c., broken up by clumps and specimen trees, with suitable sites for fountains, vases, statuary, seats, and summer-houses. The large quantity of water secured in draining has been utilised for the swimming bath, and the surplus fills up the lakes, basins, and watercourses. The rockwork, which has been formed into arches, so as to seclude the swimming bath and the playgrounds, is a capital idea, and when covered with creepers, mosses, and Ferns, cannot fail to prove most beautiful. The bridges are exceedingly simple, and are mainly useful in connecting the walks in their winding through the lakes.

The recreation of the youth of the town has been almost lavishly provided for. Spacious playgrounds for girls and boys are placed to the right and to the left of the main entrance, each having an area of 1047 square yards. They are oval in shape, and fitted up with gymnastic appliances of the most approved kind. The swimming bath, which is somewhat of an innovation in park adjuncts, is also oval in form and has an area of 1761 square yards and a holding capacity of 300,000 gallons of water. Separate dressing sheds are provided for men and boys, and the depth of the bath is arranged so as to suit both parties. Looking from the walks near the Lloyd Street entrance, the eye cannot fail to be struck by the magnificent cricket ground provided. It occupies a space of 14,700 square yards, and it is so arranged as to the level that it can be flooded in winter and form a grand skating rink. The ground for football is at the extreme end of the Park, and is somewhat smaller, but even this is a good size—10,300 square yards.

There are also open places suitable for lawn tennis, croquet grounds, quoits, flower gardens, and numerous recesses, which will be very picturesque. The walks are nearly 2 miles in length, divided into 891 lineal yards 12 feet wide, 1080 of 10 feet, and 1000 of 6 feet. To the right of the main entrance will be a lodge. The plants, trees and shrubs suitable to the soil and situation number 30,000. The drains are over 2 miles in length, and the size of pipe varies from 12 to 6 inches. The Park is surrounded by a handsome and substantial iron palisading.




The Gardeners' Chronicle.] FIG. 9.—PLAN OF THE STAMFORD PARK, ALTRINCHAM, CHESHIRE. (SEE P. 44.) [January 8, 1881.

## THE DOGWOOD AND GOLDEN WILLOW FOR WINTER EFFECT.

Some years ago I visited the Glasnevin Garden, Dublin, and was struck with the beauty of a Golden Willow tree, which, when seen from a distance, was a sheet of gold. It may have been worked upon some of the taller-growing Willows, and thus got a lift into notoriety. Under ordinary circumstances we see this tiny Willow the drudge of every nursery, used in packing, and twisted to bind most sorts of nursery stock. I was delighted to see in Dublin an old favourite treated with respect. When the tree gets old and stunted the young twigs get short and crowded, and fill up the centre of the tree, so that the sunshine is reflected as if from a plant of more pretension. It is almost the only one that rejoices in such a bark and at such a time.

I was forcibly reminded of my old acquaintance the other day—that is to say, on Christmas Eve, 1880—when travelling in the neighbourhood of Lancaster, to see some twenty or thirty fine bushes of the Red Dogwood, mostly 4 or 5 feet wide, and the same in height. It is a very twiggy shrub, filling well up the centre, and not unlike the Golden Willow in habit, but its twigs are red with a dash of brown and a smooth shining bark that reflects the sun's rays. Now, there is nothing to hinder these two from coming together and making one clump, for Dogwood plants are cheap and plentiful; and as for the Willow tribe, their easy cultivation is proverbial, since it has become an idiom in the language to grow "like Willows in a bog." How many bogs do we see that would grow Golden Willows to look cheerful in the very depth of winter, when flowers are gone, and its leaves are fallen to the ground, but yet having the bark beautiful. The Birch casts off its silvery bark, but were that silvery hue retained on its twigs it would be a winter favourite of no mean kind; the Birch, however, whether rod, twig, branch, or by whatever name it may be called, is after all but dull in colour—dull as the dunce on whom extreme measures have to be used. Should any critic carp at the idea of planting such common plants as I have named, I would retort by naming Cabbages—red, green, and freckled—for the background of flower borders. I have named the places where Dogwood and Golden Willow may be seen.

In the planting of such shrubs on the grass it will best harmonise to have the yellow nearest to the green; and, again, the yellow for the centre—that is, supposing the clump to be circular, with a Willow tree, like that at Glasnevin, for the centre; and as the plants are cheap there is no reason why they should not be thickly planted, and thereby produce immediate effect. Some stray lover of our good old forgotten things will be glad to see his first love fondly treated, but in the full pages of botany there is room for all. A grave author, treating on a grave subject, showed how tastes differ—

> "Whilst some affect the sun and some the shade,
> Their aims as various as the roads they take."

This caprice is nowhere more apparent than in the domain of plants and trees. *Alex. Forsyth.*

## Foreign Correspondence.

La Mortola, near Mentone: *Jan.* 1.—Copious autumn rains, and an exceptionally mild winter thus far, have done wonders for vegetation along the Riviera; never in an experience of over thirteen years do I recollect anything approaching the present floral abundance. The annexed list of plants now in flower is double the length of those you have published on previous occasions, and will give a good idea to your readers of the variety it is possible to have here in mid-winter under favourable circumstances. The Olive crop this season is almost a total failure; the fruit was abundant, and promised well to a certain point, when each berry was found to be attacked by a grub which caused it to fall before maturity. The yield of Oranges and Lemons is a fair average, but the vintage was not abundant, and the quality is rather poor. *Thomas Hanbury.* [The following is a list of plants in flower in the open air on January 1, 1881, in the garden of the Palazzo Orengo, La Mortola, near Mentone]:—

Abutilon Darwinii hybridum
,, vexillarium
Acacia iteaphylla
,, lophantha
,, ,, gigantea
,, ,, speciosa
,, longissima
,, ,, pendula
,, retinoides
,, saligna
Agave elegans
,, angustifolia
Agathea cœlestis
Aitonia capensis
Aloe ciliaris
,, africana
Antirrhinum (many var.)
Anemone coronaria
Aralia dactylifera
,, papyrifera
,, Sieboldii
Arbutus Andrachne
,, Unedo
Arum Arisarum
Aster muricatus
Baccharis halimifolia
Banksia marcescens
Bougainvillea glabra
,, spectabilis
,, ,, var.
,, Warscewiczii
Bouvardia carnea
,, leiantha
Bellis rotundifolia
,, perennis flore-pleno
Buddleia americana
,, auricoloides
,, Liodleyana
,, madagascariensis
,, salicifolia
Calendula officinalis
Camellia japonica
Campanula nobilis
Casuarina quadrivalvis
,, stricta
Catha edulis
Ceratonia siliqua
Cestrum aurantiacum
,, roseum
,, Parqui
,, vespertinum
Cheiranthus Cheiri
,, incanus
,, mutabilis
Chimonanthus fragrans
Chrysanthemum fœniculaceum
,, frutescens
Cineraria maritima
,, platanifolia
Citrus sp.
Clematis cirrhosa
Colletia bictoniensis
,, cornuta
,, cruciata
,, horrida
Conyza glutinosa
Cobœa scandens
Convolvulus mauritanicus
Correa alba
,, cardinalis
,, carnosa
Corylus Avellana
Coronilla pentaphylla
Cotyledon luridum
,, macranthum
,, coruscans
Crassula sp.
Cratægus glabra
Cuphea Galeottiana
,, platycentra
Cyclamen persicum
Cyperus alternifolius
Cytisus filipes
Datura alba
Dianthus Caryophyllus
Diosma alba
Diplopappus filifolius
Dolichos lignosus
Dodonæa Thunbergii
Duranta inermis
Echeveria carinata
,, colossea
,, ferrea
,, imbricata
,, metallica
,, rubescens
,, retusa
Elæagnus crispa
Ephedra altissima
Epiphyllum truncatum violaceum
Eriobotrya japonica
Eriocephalus africanus
,, filifolius
Escallonia rubra
,, grandiflora alba
Eucalyptus globulus
,, melanoxylon
Eupatorium micranthum
,, riparium
Euphorbia abyssinica
,, globulus
,, oxystegia
,, splendens
Euriops Athanasiæ
Eurybia lyrata
Fuchsia (many vars.)
Gasteria latipunctata
Genista linifolia
,, ferox
,, monospermum
,, Scorpius
Geranium (many vars.)
Globularia Alypum
Gnidia simplex
Gomphostachys arborescens
Grevillea Manglesii
,, rosmarinifolia
Habrothamnus fascicularis
,, magnificus
,, Tonelianus
,, Warscewiczii
Hakea eucalyptoides
Halleria lucida
Hardenbergia ovata alba
,, rosea
,, ,, violacea
Helichrysum rupestre
Heliotropium peruvianum
Helleborus viridis
Hyacinthus romanus
Hypericum canariense
Iberis semperflorens
Ipomœa Leari
Jasminum azoricum
,, grandiflorum
,, nudiflorum
Kennedya lucida
Kleinia articulata
,, ficoides
,, neriifolia
,, odora
Lantana Cammara
Lavandula multifida
,, pinnata
Lavatera californica
Libonia floribunda
,, penrhosiensis
Linum trigynum
Linaria alpina
Lobelia sp.
Lonicera semperflorens
Malva capensis
Maurandia Barclayana
Medicago arborea
Melianthus Trimenianus
Mesembryanthemum aureum
,, echinatum
,, emarginatum
,, filamentosum
Moricandia arvensis
Myrtus communis
,, grandiflora
Narcissus papyraceus
,, aureus
,, viridiflora
,, Tazetta flore-pleno
Neja falcata
Nicotiana glauca
,, virginiana
Olea fragrans
Osteospermum moniliferum
Othonna carnosa
,, triplinervia
Oxalis species
Pachyphytum bracteosum
Passerina hirsuta
Passiflora Imp. Eugènie
Pelargonium Endlicheri-
,, alchemilloides [num
Pentstemon hybridus
Pereskia subulata
Petunia
Phygelia capensis
Phylica ericoides
Pimelea decusata
Plumbago capensis
Primula sinensis
Polygala Dalmaisiana
,, Pourtaulensis
,, grandiflora
,, virgata
Polygonum platycentrum
Psidium pomiferum
Punica Granatum
Reseda odorata grandiflora
Rhaphiolepis indica
,, phæostemon rubra
Rhus trifoliata
Rosa Banksiæ fl.-pl.
,, berberidifolia
,, hybrida (many vars.)
Rosmarinus officinalis
Russelia juncea
Salvia azurea
,, boliviensis
,, coccinea
,, eriocalyx
,, farinacea
,, frutescens
,, gesneraflora
,, Grahami
,, Heeriana
,, lantanifolia
,, leonuroides
,, napifolia
,, princeps
,, Schimperi
,, semiatrata
Santolina viridis
Saxifraga crassifolia
Scabiosa maritima
Schinus Molle
Solanum laciniatum
Sempervivum arboreum
Senecio angulatus
,, longifolius
,, macroglossus
,, mikanioides
,, oxyriæfolius
Sida mollis
,, pulchella
Solanum cyananthum
,, jasminoides
,, verbascifolium
Sparmannia africana
Spartium junceum
Sphæralcea umbellata
Tacsonia ignea
,, mollissima
Tasmannia tephrosperma
Tecoma capensis
,, Stans
Teucrium fruticans
Thymus vulgaris [vars.)
Tropæolum majus (many
Ulex europæa
Veronica (many vars.)
Viburnum Tinus
,, suspensum
Vinca madagascariensis alba et rosea
,, major
Viola tricolor
,, odorata
Virgilia capensis
Visnea Mocanera
Vittadenia triloba
Westringia grandiflora

## COLONIAL NOTES.

The Lal-Bagh, Bangalore.—From time to time we have had occasion to mention the progress of gardening in Mysore, and as further evidence of the spirit in which things are done we subjoin the following particulars relating to instruction in Botany, Vegetable Physiology and Gardening, which have lately reached us:—

Lectures on the above subjects will be delivered at the Lal-Bagh, by Mr. Cameron, the Superintendent, commencing at 7 A.M. each day, the first lecture to be delivered on Monday, November 1, 1880:—Botany, on Mondays; Vegetable Physiology, on Thursdays; Practical Gardening, on Saturdays. The lectures are open to students and masters from Government and aided schools on payment of one rupee a month in advance, and to the general public on payment of two rupees a month in advance. The following is a syllabus of the proposed lectures:—

*Botany.*—(i.) Definitions and Descriptive Botany; (ii.) Classification or Systematic Botany; (iii.) Economic Botany: Plants yielding (1) food, (2) fibre, (3) dyes, (4) medicine, (5) oils, (6) timber, (7) starch, &c., (8) plants of scenic value. (iv.) Geographical Botany: (1) indigenous plants, (2) foreign plants, (3) acclimatisation of plants.

*Vegetable Physiology.*—(i.) structure and growth of the elementary tissues; (ii.) arrangement of the elementary tissues, or structure of the organs of plants; (iii.) growth of the organs; (iv.) functions of the organs; (v.) functions of flowers; (vi.) influence of temperature, electricity and light on plants.

*Practical Gardening.*—(1) the quality of soils and manures, (2) the rotation of crops, (3) the season of cropping, (4) the propagation of plants, (5) the culture of fruit trees, (6) the culture of vegetables, (7) the culture of flowers, &c.

## Garden Operations.

### *FLOWER GARDEN.*

Occasionally one meets with a friend who expresses it as his decided conviction that no one reads calendarial notes in the gardening papers, but forthwith that same friend begins to tell—not always in very complimentary terms—what So-and-so said in last Calendar: thus showing the value that is to be attached to his convictions in the matter. Doubtless there are many that do not, indeed that have no need to read them, but that many do I have, and am constantly receiving, indisputable evidence, or, I would refuse to write another line, for I am certainly possessed of sufficient ambition to wish that what I do write should at least be read, even if the hints, &c., tendered are not acted upon. Having this faith, I for another year undertake this department of Calendar, assuring my readers that every note written, every hint given, and all advice tendered, shall be simply the reflection of my own practice, expressed as concisely as lies in my power. There is always one great difficulty presented to my mind in writing these notes—it is that of locality, both as regards the most suitable time to do certain work, and the kinds of plants suited for flower garden purposes in a given district. The best solution of this difficulty I have as yet found, is to strictly keep to one's own doings, and, the locality being known, readers may draw their own conclusions as to whether the notes are seasonable in their case, and also whether certain plants named would be likely to succeed with them. In the flower garden proper there is as yet but little work requiring attention: spring bedding plants may need an occasional examination, particularly after sharp frost, to refirm them in the soil, and bulb beds should also be looked to, as they are liable to injury from rats and mice. Our worst enemies in this respect are the hares and rabbits, which as a matter of course we trap and shoot when we can, but often they prove too cunning for us, and so we have recourse to making their dainty morsels—our nicest Retinosporas and small Hollies—as disagreeable to their palates as possible by touching the tips and painting the stems of the plants with a strong wash made from Gishurst Compound—a plan that never fails to keep them at bay. Young Conifers, Hollies, or other shrubs that are being attacked by these pests, should have their stems thickly coated with this wash, which may be made adhesive by thickening it with cow-dung. Of course, wire-guards for each plant would be the most effective and permanent protection, and in small gardens perhaps desirable; but they are very ugly, looking like so many cages about the grounds, that their use should be discountenanced. We are favourably circumstanced as regards a soil that will work well even directly after the heaviest rain, and so, though at times very wet, the open season has enabled

us to top-dress such favourite trees and shrubs as seemed to need such help. For Hollies, Yews and those shrubs that thrive in loam or soil of a heavy texture, we use as surface-dressings the refuse soil from Vine and other fruit-tree borders, and for Conifers, Rhododendrons, Azaleas and all plants that do best in peat or light vegetable soil half-decayed leaves, intermixed with loam or peat, is used, the surface being forked before applying the soil, the more readily to allow of the new material reaching the roots at once. Shrubbery clumps and borders ought now to have their annual thinning-out either by transplanting, or else by cutting away such irregular branches as is needed to keep the plants from injuring each other; after which, "point" over the entire surface to get out Couch or other troublesome weeds, and then, if need be, and time and material allow, give a light soil-dressing over the whole. Recently transplanted trees should be thickly mulched with stable litter, which covering, by keeping out frost, tends to immediate root formation and progression, and is, therefore, of the greatest importance. Should we have a spell of hard weather and groundwork be impossible, then is the time to clip hedges of Beech, Thorn, Privet, and indeed all other kinds, as also to cut down trees, lop off boughs, and grub up roots, as well as to wheel soil and manure on to ground that has to be prepared for tree planting. Indoors a busy time is at hand, for propagation must be commenced. A preliminary step, however, is the making out a list of plants required, and working up stock accordingly, giving preference to the more lasting varieties and kinds, even at the risk of sacrificing some amount of flower. The seeds of slow-growing kinds of seedling plants that are used for summer bedding should now be sown in pans, and be plunged in a bottom-heat of 70°; amongst these may be named Cannas, Grevilleas, Centaureas, Wigandias, Ferdinandas, Ferulas, Sempervivums, and Echeverias. *W. Waldsmith, Heckfield, Hants.*

## *KITCHEN GARDEN.*

In taking a retrospective view of the year just ended, the supply in this department may be truly said to have been a good and plentiful one, and let us hope that at the conclusion of the year upon which we have entered, we may be in a position to make a like remark. If not already done, an early sowing of Peas should be made in pots without delay. For this purpose we use 60's, which are three-parts filled with light mould, into which about a dozen Peas are put, and then covered with some of the same soil, and the pots removed to an early vinery or Peach-house, and thence, when the Peas have made a couple of inches of growth, to a cooler and more airy house, where they can be gradually hardened off preparatory to being finally planted out in sunny borders later on. For this our earliest crop, and from which sowing we invariably gather our first dish from May 20 to 24, we sow Ringleader, William I. (in addition to this being an early variety it has size to commend it), Dickson's First and Best, Emerald Gem, and Sangster's No. 1. Concurrently with this sowing there should be one made out-of-doors in deeply-trenched and well-manured ground, of the following early and second-early varieties, in rows 10 or 12 feet apart (the intervening space being planted with four or five rows of Cauliflowers later on), viz., Ringleader, William I., Dillistone's Early, and Dickson's First and Best, Dickson's Favourite, Laxton's Supreme, and Culverwell's Telegraph. There can be no question as to the advantage gained by allowing a good distance between the rows, and the good results thereby obtained. There should also be made a sowing of Early Mazagan Beans in boxes, for transplanting in a favourable situation out-of-doors when it is considered safe to do so; at the same time a sowing should be made in a south border at 2 feet apart between the rows: these, like the Peas, will make a good succession to those raised in pots and boxes. Look over pieces of Cauliflower and Broccoli, and cut any heads that are fit for use and place them upon the floor in the Potato store or some other suitable place until required for table, and bend a couple of leaves over the heads of those not yet fit for use, which will be sufficient to protect them from a few degrees of frost. Have some dry Bracken at hand with which to protect Celery, Endive and young Lettuce plants in the event of frost; this, however, should be removed again on all favourable occasions, and *vice versâ*.

COLD PITS AND FRAMES.—These, in which are being wintered Cauliflower and Lettuce plants for planting out next month, should have the lights and shutters taken off daily in the absence of frost and snow. This remark applies also to plants growing under hand-lights.

FORCING DEPARTMENT.—Keep up a good succession of Rhubarb and Seakale by introducing an adequate number of roots into the Mushroom-house at intervals of a fortnight or three weeks. When preparing the roots of the latter for the forcing-pots save all thongs or extremities of the roots by cutting them into lengths of about 4 inches and placing them in a box intermixed with sand till the time of planting them arrives. Another frame of Asparagus should be got in to supplement that from which supplies are now being had, which should have sufficient air admitted to prevent the grass becoming spindly. For the forcing of Asparagus and Potatos we use pigeon-holed pits, upon which are placed several three-light boxes. This pit, of which each compartment is filled with leaves to within 1 foot of the top, which are well trodden as required for use, has an outer space for lining 3 feet wide and 4 or 5 feet deep enclosed by a 4½ inch brick-wall, which is covered with shutters made of Oak, with a little incline outwards to throw off the rain-water. A couple of inches of short dung are put over the leaves, which supplies and maintains a gentle and steady bottom-heat, and then an inch or two of soil, upon which the roots are placed closely together, and covered with a couple of inches of soil, and then 3 or 4 inches of sifted leaf-mould are put over all, and when the stems have grown a couple of inches through the mould they are cut, nicely blanched "grass," with green tops. Bottom and top-heat from 60° to 70°. French Beans.—Sow eight or nine seeds in 8-inch pots, a little more than two-parts filled with rich soil, and place them anywhere in heat until the plants come through the soil, when they should be placed near the light, and when sufficiently grown earthed up, and the points of the shoots pinched out to make them branch; syringe frequently to prevent the attacks of red-spider. Potatos, Carrots, Lettuce, and Radishes, set and sown as recommended in preceding Calendar, should receive due attention—the Potatos to be planted when the shoots are a couple of inches long on beds, those recommended to be made for this purpose and for the raising of young crops of the above named varieties, which so soon as they come up should be ventilated freely on all favourable occasions. Tomatos.—If not already done, a sowing of any of the favourite kinds should be made at once for early work, three seeds in a 60-pot—only one plant to be left in each pot, the others being pulled up as soon as they appear through the soil. Keep up a good succession of Mint, Tarragon, Mustard and Cress. *H. W. Ward, Longford Castle.*

## *FRUIT HOUSES.*

PEACHES AND NECTARINES.—In early houses started about the middle or end of November the buds should now be swelling fast. Keep the night temperature about 50°, with a rise of 10° or 15° by day. Should the weather be very cold and severe, allow the temperature to fall to 45° by morning. I have always found a low night temperature conducive to strong healthy blooms, providing the roots are in good condition. Keep pathways, borders, and every available surface well moistened; syringe the trees twice daily with tepid water about 9 A.M., and not later than 2 P.M., so that they may get dry before night. Where fermenting material can be used inside I have no doubt it is an advantage, giving a more genial growing atmosphere. I do not use it here, as our early houses are not adapted for its use. We have abundance of piping, which requires very little heating to keep up the desired temperature with a chink of air on all night as well as day. As the blooms expand keep the atmosphere somewhat drier; take advantage of bright sunny days to get a nice circulation of air all through. Where a continual supply is required the second house should be closed at once; any trees infested with scale should be thoroughly cleaned, and carefully dressed with a solution of Gishurst Compound, 6 oz. to the gallon. Where the trees have been heavily cropped, and the soil around the roots is consequently somewhat exhausted, they will be very much benefited by taking this away, and giving them a good layer of fresh turf chopped or pulled, and a few half-inch raw bones mixed with it. By doing this every year or on alternate seasons, as the case may be, it induces the roots to keep near the surface, where they are close at hand to receive any stimulant you may think well to give them, and are much more easily excited when called upon to make a move for another season. Before starting give them a thorough soaking of water at the roots at about 85°. Any roots in outside borders should be protected with a good covering of litter or leaves. Keep the night temperature about 45°, with a rise of 10° by day. Attend to pruning, cleaning, and training later houses, and above all things take special care that they do not get dry at the roots, as this is invariably the sole cause of buds dropping. If the borders are thoroughly well drained they cannot easily have too much water. *J. Wallis, Keele Hall Gardens.*

### MELONS.

The first Calendar for the year naturally suggests a few general observations upon the subject. Success in forcing early crops of Melons depends so much upon being in possession of suitable pits or houses having an abundance of top and bottom-heat, it would be well before beginning the season to have a proper estimate and appreciation of the means at command. A lean-to house or pit facing the south, having two rows of 4-inch piping for bottom-heat in a pit not more than 2 feet 6 inches in width, would afford the most promising conditions for an early crop. The top-heat would also require to be correspondingly efficient according to the size of the house, in order to admit of a steady equable temperature being kept up without overheating the pipes. I have grown early Melons for several consecutive years in two span-roofed houses, one running north and south and the other east and west. The former was well heated, the latter only moderately, but notwithstanding this our earliest fruit was always obtained from the south side of the house running east and west. This will indicate the importance of selecting a house or pit with a south aspect for the first crop, and the superior influence that solar heat has in forwarding crops over that which is artificially supplied. Where forcing has to be carried on with the aid of fermenting materials solely, or in conjunction with hot-water pipes, a heap of fresh stable dung and Oak leaves should be collected, and be frequently turned in the first stages of fermentation, so that the heat may be steady and lasting when the materials are finally put together. While this process is going on, the houses or pits intended to be used should undergo whatever repairs are necessary, and afterwards be thoroughly cleansed and disinfected. The woodwork, too, should be painted if the house has been previously occupied with diseased plants. The next matter of importance is to choose good seeds and suitable varieties. Good seeds are obtained from the produce of healthy well-nourished plants. It is not enough to possess seeds with the recommendation that the variety is good unless the fruits from which the seeds are taken have been fully ripened. One reason why Melon seeds fail to germinate may be ascribed to premature ripening of the fruit and the reprehensible habit that gardeners have of washing the "gluten" off the seeds at the time of harvesting. For the first sowing I can strongly recommend Malvern Hall, because of its grand constitution and free setting properties. The young Vines are produced firm and not liable to damp, and the leaves are hard, rigid, of only medium size, and require less nursing than any variety that I have ever tried. As a mid-season cropper Dell's Hybrid is *par excellence* the best. Other standard kinds are Gilbert's Victory of Bath, Eastnor Castle, and Read's Scarlet-flesh. The first sowing should be made about the middle of the month, but unless the facilities for forcing are good it will be better to defer the operation a week or two later. *W. Hinds, Canford Manor.*

### CUCUMBERS.

We are now approaching a time when Cucumbers are more difficult to manage than at any other period of the year. The strain upon the energies of plants, already partly exhausted by producing a crop of fruit, should be avoided as much as circumstances will permit, more especially where the main supply has to come from one house which has been bearing fruit all the winter. Already there are indications of fresh growth in plants that have been eased a short time ago, and these and such like, if encouraged and nursed gently, will soon become prolific again. An insufficient amount of heating surface, or a constantly saturated atmosphere caused by drip, are two potent enemies against Cucumber growing in the hazy months of winter. Both inflict serious damage upon the foliage, but if root-action is unimpaired the plants will soon recover under improved atmospheric conditions and more frequent opportunities of giving air. Insect pests are very troublesome at this season, and it requires great care and patience to eradicate them. Three consecutive applications of tobacco-smoke will keep greenfly in check until the plants begin to recoup themselves with improved root-action. In order, therefore, to hasten this desirable consummation, all affected or diseased leaves should be removed, and the surface soil should be taken from off the roots and replaced with a top-dressing of fibry loam and dung, in the proportion of two parts of the former to one of the latter. The heat of the bed should be taken by means of a ground thermometer, and the fresh compost should be warmed to the same temperature as that of the bed before it is laid on. The whole body of earth should then be watered with water at a temperature of 85°, and have a sprinkling of horse-droppings scattered over the surface as a healthy stimulant to surface root action. A night temperature of from 65° to 70°, with a corresponding rise through the day, and frequent sprinkling of tepid water will, with the assistance of more light and sun, soon improve the condition of plants that have any growth left in them. Where winter Cucumbers are not grown, and an early spring supply is required, it may be useful to mention that to have fruit ready for cutting early in April the seeds should be sown at the turn of the year, and growth encouraged by means of a steady top and bottom heat. *W. Hinds, Canford Manor.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| MONDAY, | Jan. 10 | Sale of English-grown Lilies, Italian Tuberoses, &c., at the Auction Mart, by Protheroe & Morris. Sale of Lilium auratum, &c., at Stevens' Rooms. |
| TUESDAY, | Jan. 11 | Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. |
| WEDNESDAY, | Jan. 12 | Sale of Roses, Hardy Plants, &c., at Stevens' Rooms. |
| THURSDAY, | Jan. 13 | Sale of Imported Orchids, at Stevens' Rooms. |
| SATURDAY, | Jan. 15 | Sale of Hardy Plants and Bulbs, at Stevens' Rooms. |

HYBRIDISING was formerly regarded as a sacrilegious subversion of Nature, and those who practised the art were stigmatised as mischievous intermeddlers with the works of the Creator. Most botanists entertained a dislike for cultivated exotic plants, as there was always a danger of their not being "true species;" and some writers would have consigned all hybrids to the rubbish-heap as being of impure descent. But in spite of the opposition and contempt of some botanists, gardeners did not stay their hands in the work of rearing novelties, heedless of the "confusion" they were causing. In time, too, some botanists began to appreciate the fact of the existence of hybrids in a natural state, and now the general conception of a species, even by those who do not accept the doctrine of evolution in its entirety, is so different that the interest attaching to a plant is in proportion to what is known of its origin.

The late Dr. LINDLEY was an enthusiast on the subject of hybridisation, and Dean HERBERT was one of the earliest practical expositors of what could be effected by intercrossing in the vegetable kingdom. The former, we presume, was the author of a series of articles treating on the subject in one of the early volumes of this journal. In the opening article the writer says:—"Though hybridising has already led to important results, they are probably nothing compared to what may be expected to come of it. We anticipate through its assistance a change in the whole face of cultivated plants, and we shall be much surprised if even a few years do not bring us acquainted with races of trees, esculents, corn and forage plants, of at least as much importance in their way as those which have already appeared among fruits and flowers. All that is wanted is to call attention to the subject, and to point out what the principles are which the experimenter has to bear in mind." At the same date (1844) the Editor of the *Agricultural Gazette* was urging upon farmers the desirability of endeavouring to improve the races of farm plants by means of selection and hybridisation. Two or three years previously Sir F. A. MACKENZIE, some time President of the root and seed committee of the Highland Agricultural Society, pointed out in his reports the absurdity of the Society allowing only £5 for the discovery of new and superior kinds of grain or roots, whilst hundreds of pounds were voted as premiums for animals whose very existence and superiority depended entirely on the quality and quantity of the neglected roots and grains. Whilst a 100-guinea prize was offered for a Shorthorn bull, a more perfect or earlier kind of Wheat, Barley, or other kind of grain, or a superior Turnip, Potato, or Carrot, was almost totally neglected. Sir F. A. MACKENZIE'S proposals to devote more money to the promotion of improvement in the varieties of grain, roots, &c., were at first unheeded, but the change came in time. Of course, the improvements in farm plants have been the result more of selection and intercrossing rather than of actual hybridisation.

With regard to hybridising generally, it is as true now as when Dr. LINDLEY wrote forty years ago—that much more remains to be done than has already been done. It is noteworthy in passing that Dr. LINDLEY particularly mentioned the genus Clematis. "Can anything," he says, "be more worthy of attention than this charming genus, which nobody seems to have thought about?" Whether we owe the magnificent race of varieties now in cultivation to his suggestion we cannot say—probably not, as they were not raised until many years after it was offered; but, there it is on record. Having called attention to this, we are bound to point out a statement in the same place that is less flattering to the writer. It is this: that Thuja filiformis is a hybrid between the Red Cedar and the American Arbor-vitæ, whereas it is a variety of the Chinese Arbor-vitæ. An important contribution to the literature relating to hybridising has given rise to the foregoing remarks.* This work, as far as we have been able to test it, is accurate, and if not exhaustive it is probably nearly so. It contains a vast assemblage of facts useful to the practical man and interesting to the naturalist. Following a brief introduction is a systematic enumeration of the better known hybrid plants. This is not merely a bare list, as may be gathered from the fact that it occupies 428 pages. It is succeeded by chapters on the history of the knowledge of hybrids, on their origin, properties and nomenclature, their importance in the economy of Nature and mankind, &c. Altogether it is a book that we should like to see in an English dress; for if it contains a large number of problematical wild hybrids, it also contains a large amount of trustworthy information.

Persons unacquainted with foreign botanical serials will be surprised at the number of reputed wild hybrids. There are wild hybrids, more or less authoritatively proved to be such, in almost every natural order represented in the European flora, independently of those raised in gardens from exotic plants. A glance through FOCKE'S book gives one the impression that Englishmen have been the most active in hybridising, and Continental botanists the most acute in detecting wild hybrids. One of the first hybrids, if not the first on record, was raised by an English gardener named FAIRCHILD, between Dianthus caryophyllus and D. barbatus. This was raised before 1719, and was known in English gardens as FAIRCHILD'S Sweet William a century later, and may, as FOCKE observes, still exist. MILLER mentions it as FAIRCHILD'S mule. LINNÆUS succeeded in raising a hybrid between Tragopogon pratensis and T. porrifolius, which flowered in 1759; but JOSEPH GOTTLIEB KOELREUTER was the first botanist who seriously studied the art of intercrossing plants. His first hybrid was between Nicotiana rustica and N. paniculata, which flowered in 1761. Subsequently he raised a number of hybrids, chiefly between species belonging to the genera Aquilegia, Matthiola, Dianthus, Melandryum, Linum, Malva, Lavatera, Lobelia, Nicotiana, Datura, Lycium, Verbascum, Digitalis and Mirabilis. KOELREUTER'S contemporaries, however, gave him little credit, being for the great part intent upon disproving sexuality in plants. While KOELREUTER was still engaged on his experiments, and without any knowledge of him, our own countryman, THOMAS ANDREW KNIGHT, began his labours in raising improved varieties of fruits and vegetables by mens of intercrossing—labours that have made his name famous in the annals of gardening.

In the year 1800 appeared Sir J. E. SMITH'S *Flora Britannica*, in which work is the first record of a hybrid of wild origin, namely, Verbascum pulverulentum × nigrum. About 1808, R. J. GOWEN, gardener to Lord CARNARVON at Highclere, and Dean HERBERT, commenced their successful experiments in crossing, particularly between species of Erica, Gladiolus, Amaryllis, and Rhododendron. T. MILNE raised the first hybrid Passiflora, and SWEET was active with the genus Pelargonium. The elder ROLLISSON alone raised nearly ninety hybrid varieties of Heaths between 1790 and 1841, a list of which will be found in the *Gardeners' Chronicle* for 1843, p. 461. We have not space to follow the history of this subject on the Continent, where numerous botanists have conducted experiments from a purely scientific standpoint, chiefly since the expiration of the first quarter of the present century.

The most interesting of recently raised hybrids are the Nepenthes, Sarracenias, and numerous Orchids, which have rewarded the labours of DOMINY, SEDEN, and others. In conclusion, we may note that while hybridism is common in some natural orders (both spontaneous and artificial), other orders offer few or no instances of undoubted crosses between different species or genera. It would appear that the first step is the most difficult, but, that overcome, a numerous progeny of diverse crossbreds is readily obtained. Hybrids between remotely connected plants—that is to say, between the most remotely connected that will intercross—are commonly sterile, and often malformed as to the organs of reproduction.

* *Die Pflanzen-mischlinge, ein Beitrag zur Biologie der Gewächse.* Von W. Olbers Focke. 8vo, pp. 569. Berlin: Borntraeger. (Williams & Norgate).

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—— M. HILDEBRANDT.—We are glad to learn from Prof. EICHLER, of Berlin, that the rumour of the murder of this energetic collector proves not to be true. He was laid up with serious illness, but is now quite well, and continuing his successful explorations.

—— PROFESSOR STRASBURGER.—We learn with great satisfaction that this acute observer has been appointed to the Professorship of Botany at Bonn, in the place of the late Prof. HANSTEIN.

—— M. VAN HULLE.—On the occasion of the twenty-fifth anniversary of the commencement of his professorate in the School of Horticulture at Ghent, now forming part of the University, M. VAN HULLE was, on the 26th ult., presented with a testimonial at a public banquet at Ghent. The proceedings were of the most cordial character.

—— COCOA CULTIVATION IN CEYLON.—Mr. J. ALEXANDER, writing from Kandy under date of December 9 with reference to his letter of December 3, which was published on p. 12, says:—"I find that Cocoa was introduced into the island by the Dutch about forty years ago, as a few of the trees are now growing in native gardens at Kalutara and Mātāle. Attention was not given to its cultivation, the natives not knowing its commercial value."

—— THE CHARLEVILLE GRAPES.—Mr. BALFE, Secretary of the Royal Horticultural Society of Ireland, and Mr. ROBERTS, gardener to the Countess of CHARLEVILLE, write to say that the exact weight of the bunch of Gros Guillaume shown by the last named gentleman at the last winter show in Dublin was 21 lb. 6 oz., and not 26 lb. 6 oz., as was misprinted in the local journal from which we quoted at p. 8.

—— THE HORTICULTURAL CLUB.—We are informed that the annual dinner of the Horticultural Club will take place at the Club house on Tuesday next, the 11th inst., JOHN LEE, Esq., in the chair.

—— SPECIAL PRIZES.—Messrs. SUTTON & SONS offer a series of prizes for competition, under various conditions, at shows and meetings of the Royal Horticultural Society to be held on June 3 and 28; August 1 and November 8; at the great show to be held in August at Manchester, and at the International Potato Exhibition. Those who are interested in such competitions should send to Reading for a schedule.

—— ÆCHMEA FASCIATA.—In this Bromeliad, which is now flowering in the Palm-house at Kew, the coloured bracts of the inflorescence are rather more showy than the flowers themselves. The upright scape is clothed with leafy bracts of a rosy-pink colour, and each of the pink blossoms in the dense, conical head is subtended by a narrow, spiny-edged, similarly coloured bract considerably longer than itself.

FIG. 10.—SALVIA PETHELLII. (SEE P. 51.)

—— ORANGE CULTIVATION IN JAFFA.—Oranges are grown on a large scale in the neighbourhood of Jaffa, where it is calculated as many as 400 Orange gardens exist. The irrigation is managed on a very primitive system: each garden has a well to which machines are attached turned by mules; from three to four animals have to be continually at work, day and night, for seven months in the year. The average expense of working and watering an orchard is estimated at about £35 or £40 per annum. It is said that if irrigation could be done cheaper it would have the effect of doubling the number of gardens in a very short time. About 5000 men are employed daily in picking and packing Oranges in boxes for exportation.

—— HEXACENTRIS MYSORENSIS.—There are few finer or more desirable warm-house climbers than this East Indian Acanthad. In the Palm-house at Kew a fine variety of the species is now in flower. It has stalked, ovate, slightly toothed green leaves, and long pendulous racemes of large handsome blossoms. The Kew plant is a form differing from the type in having a large blotch of bright brownish-red on each of the five corolla lobes, the rest of the flower being of the same golden-yellow colour that obtains in the type. With liberal treatment in a warm house this will produce racemes from 1½ to 2 feet long before all the flowers of the raceme have passed. If grown as a pot plant it should have a flat trellis fixed on the top of a stake a yard or more in height, so as to allow the splendid flowers to be properly seen in all their beauty.

—— ABUTILONS IN WINTER.—A group of these, in the freshest and most perfect bloom, is now an object of considerable interest at the gardens of the Royal Horticultural Society at Chiswick. Young plants growing vigorously and flowering freely supply flowers of various shades, from the pure white of Boule de Neige to the deepest orange-salmon of the newest forms. No one who can grow Abutilons, and give them the benefit of an intermediate-house, need be without cut flowers at Christmas. Overhead, blooming with conspicuous and happy freedom, is the curious and distinct A. igneum, which, planted out and trained up the roof, grows and blooms with freedom that defies restraint, and in the happy plenteousness of its flowers rewards the cultivator abundantly. It is a species requiring at this season of the year a rather higher temperature, but this is suitable also for the many varieties now forming our collections. It is said the yellow and pink and salmon-coloured flowers stand better in a cut state than those of the white variety; but the latter will endure also, and if the yellow stamens be removed and the petals be turned back, it is of value for festive and funereal wreaths, &c.

—— PINUS SYLVESTRIS GLOBOSA.—Another striking variety of the common Scotch Fir, with the same dark glaucous green colour, but with leaves only about half the length of those of the species. It forms a round, compact, cushion-like bush, and would doubtless make a fine plant for a good rockwork. Nearly the same relationship seems to exist between this and the type as obtains between the common Norway Spruce and its extraordinary varieties, Clanbrassiliana, pygmæa, &c.

—— THE GOLDEN SCOTCH FIR.—In the Pinetum at Kew several specimens of that form of the common Scotch Fir with golden yellow leaves (Pinus sylvestris aurea) are at the present time very conspicuous objects. This variety seems quite a free grower and does not possess that unhappy look which is assumed by golden-leaved forms of so many of our common trees and shrubs. It seems, too, to have a tendency to keep smaller and to maintain a rather more dense and compact habit of growth than characterises the type. As a single specimen on a lawn or in the foreground of the mixed ornamental plantation, where its beauty could be enhanced by contrast with the dark green of other Pines, &c., it is deserving the attention of planters. The brilliant colouring assumed by the foliage during winter disappears to a great extent during summer, when the leaves acquire a sort of yellowish-green tint.

—— DOUBLE FLOWERS IN A WILD STATE.—Comparatively few instances are recorded of double flowers being produced in a wild state, though other kinds of variations—such, for example, as the colour of the flowers and the variegation of the leaves—are not uncommon. Double flowers, generally speaking, are the outcome of exuberant growth, and this is usually the result of artificial conditions. One of the most interesting instances of double flowers being produced by a plant in a wild state is an Australian Epacris, recorded some years ago. At Kew the other day Mr. C. B. CLARKE called our attention to the Indian Gentianaceous genus Ophelia, now reduced to Swertia, of which he has collected specimens of several species having double flowers.

—— A TALL ANNUAL IN INDIANA.—A contributor to CASE'S *Botanical Index*, in a communication on the big trees and tall climbers of Indiana (the substance of which purports to be extracted from the annual reports of the State Geological Survey), mentions the Cucurbitaceous annual, Sicyos angulata, as climbing to a height of 63 feet. Usually this is a more slender plant than our indigenous Bryony, and not climbing higher. The writer explains the extraordinary vigour of this and other plants in the Lower Wabash Valley, Indiana, by the exceeding fertility of the soil. He states that it is considered by competent judges to be the richest and most productive piece of land within the limits of the United States. He also enumerates upwards of twenty species of trees of which there are specimens upwards of 100 feet high growing in the same district. Eleven of these are recorded as being represented by individuals from 150 to 190 feet high. Amongst them Juglans nigra was 155 feet high, and girthed 22 feet at 3 feet from the ground; Liriodendron tulipiferum, 190 feet high and 25 feet girth; Platanus occidentalis, 176 feet high and 33 feet girth; Quercus coccinea, 180 feet high and 20 feet girth; and Vitis Labrusca was measured climbing to a height of 150 feet, and having a stem 32 inches in circumference at the same distance from the ground.

—— COOKING POTATOS. — A correspondent writes:—"An eminent French horticulturist wrote the other day asking for a few of a sort of Potato that would fry well. The Early Rose, said he, is largely grown here, but does not fry well, and Potatos are here generally so cooked. If any one thing in the matter of cookery more than another could possibly mark the divergences that exist between English and French tastes, it is found in the national methods of serving up the Potato. *Pommes de terre a la fricasée* hardly find a place on our home dining-tables. We not only prefer Potatos boiled or steamed, but like them served whole, and specially soft and mealy. What "rosbif" and plum-pudding is to the Frenchman so is a boiled mealy Potato. It belongs to the diet of porter, beer, and bacon. The Briton would turn with contempt from sliced Potatos fried in oil, and served up hot and crisp; such stuff would be kickshaws, fit company for the light acid wines of the Boulevard *café*. Our insular notions of what constitutes a good Potato are very decided, although there yet is to be found some who will smack their lips with gusto over a dish of baked tubers swimming in fat. But the love for a well-cooked mealy Potato is universal, even though there still exists small difference of opinion whether the taking off the jacket should or should not precede the cooking. If either way gives the required desideratum it is of small moment by which method it is obtained. In cold weather, when the frost cracks without and the fire cracks within, it is very possible to find a prevalent *penchant* for a nice hot baked Potato. Fresh from the oven, cut through the middle, spread with butter, and sprinkled with condiments, our baked tuber forms a welcome dish. We have also a weakness for the Potato in a mashed state; not a wet starchy compound, but somewhat dry and floury—soft and pleasant to the taste. With a little gravy, good mashed Potatos make a tempting dish. As to what kind will best suit our French friend we are yet somewhat uncertain; indeed it is a matter on which even the committee of the International Potato Show may find it difficult to offer an authoritative opinion."

—— LONICERA STANDISHII. — Though not very showy, this species, though perfectly hardy, decidedly merits a sheltered place on any wall, where in company with another Chinese plant, Jasminum nudiflorum, and the sweet-scented Japanese Chimonanthus fragrans, and its more handsome variety, grandiflora, its deliciously fragrant white flowers may cheer the close of the dying year, and welcome the birth of the new one. At Kew it is now flowering in front of the Museum No. 1, the lower part of the bush being still clothed with its rather bold foliage. Many years ago FORTUNE sent home this species, which he found cultivated in gardens at Shanghai, along with a nearly allied one, L. fragrantissima, and both were distributed by the Horticultural Society. No botanical description, however, appeared until the present Director of the Royal Gardens, Kew, figured the plant in the *Botanical Magazine* a dozen years ago. Speaking of the name under which it had become known, and which he adopted, he says, "Whatever be the origin of the name Standishii, it is well applied in honour of the active and intelligent nurseryman to whom many of Mr. FORTUNE's rich Chinese collections were consigned."

—— LOOKING AHEAD.—That gardeners are viewing with some misgiving the probable effects of the extremely mild weather which characterised the Christmas season is not to be wondered at. Almost before there has been a taste of winter April is here—or, at least, weather so warm and soft that vegetation is awakening to its influence, and signs of movement are noticeable on every hand. On the rockwork at Chiswick Crocus Imperati is already in full bloom, and Snowdrops have raised their heads above the soil, and their pretty white flowers, prominent in the buds, will soon unfold themselves to greet the mild southerly breezes. Roses, fruit trees, and a hundred other things, are answering to the unseasonable summons, as if the winter was past, and April had really come. But a rude awakening from this pleasant anticipation must assuredly come, and at no distant date; and it behoves the gardener to be watchful, and prepare for any sudden outburst of wintry weather. Protection will be necessary, and material should be prepared ready for any emergency. Mulching is one of those operations that will preserve many things in the open ground. The weather, having been favourable to the cleaning and forking over of borders, mulching can be put on at any time when it is necessary; but a good heap of long dung, litter and leaves should be prepared ready for use. Creeping and climbing plants in positions favourable to early development are particularly subject to injury from sharp and sudden frost following close on wet mild weather; and mats and some such material will be largely needed should January see stern Winter enthroned as ruler of the season. Bedding and other plants in frames are preternaturally active; but if heat from hot water can be applied, there is no cause for anxiety. In the case of unheated frames covering should be at hand, as the growth that is taking place now will make the plants keenly susceptible of frost. These are but illustrations of the many occasions for forethought on the part of the gardener, and it is always eminently wise to be prepared for emergencies. It may be that we have passed out of a cycle of severe winters into one that will be characterised by winters of unusual mildness; but no one must assume this to be so. The southern districts of the United Kingdom have been singularly free from the severe frosts and heavy snowfalls that have been the heritage of the North, but they, like an army at active war, may be resting for a time though active in acquiring resource and strength for a determined onslaught in the immediate future. That the mild weather may go on, give place to something milder, drier, and altogether more seasonable, is the wish of gardeners; meanwhile, knowing that an attack of cold may come at any time, the craft should be prepared to receive and resist it; offering man's fertility of resource, skill, and determination as adequate forces with which to combat the worst that the hardest wintry weather can accomplish.

—— COPROSMA LUCIDA.—In the Winter Garden at Kew there is a large bush of this New Zealand shrub, the Karamu of the Maories, literally covered with its small shining coral-red drupes, which contrast nicely with the dark glossy green leaves. The clustered fruits, which are eaten by the native tribes, measure about one-third of an inch in length.

—— FORCED LILIES OF THE VALLEY.—For a few weeks past remarkably fine Lilies of the Valley have been finding their way into the London markets from Paris. A large grower in this city appears to possess something like a monopoly of the production, and by the exercise of the greatest care in selecting the earliest and finest variety, he is enabled to have

them in flower unusually early in the season. They are evidently grown from single plants that root freely; the plants are dwarf, stout, and erect, without the slightest trace of having been forced. They are bundled together in winter about as many as could be crowded into a 4-inch pot, and when moss is tied neatly about the roots the bundles look as if just turned out of the pot. The bundles are then wrapped in soft paper, stood tightly in a small round basket like those used in nurseries, and strawed over in the form of a low cone. The flowers come to hand in the best possible condition, and as fresh as when dispatched. Unlike the Lilies of the Valley forced in this country, there is nothing tall or drawn or weak about them; while the spikes are large and the individual flowers very fine.

—— PINUS LARICIO PYGMÆA.—The Corsican or Larch Pine appears to possess a counterpart in miniature, and a good specimen is to be seen in the Pinetum at Kew. In KNIGHT and PERRY'S *Synopsis of the Coniferous Plants Grown in Great Britain*, this variety, which seems to have been unknown to LOUDON, is stated to attain a height of 3 or 4 feet, but the larger of the Kew plants is rather more than 5 feet high. It is a dense compact bush, with leaves much shorter than those of the type, and differing too from them in colour. Under exactly similar conditions the foliage of P. Laricio is dark green, and both young and old plants of the variety are of a uniform pleasing, yellowish-green colour.

—— RED BIZARRE TULIPS.—Writing in the *Florist* of Mr. HEPWORTH'S proposal to separate the Red Bizarres as a distinct class of Tulips, the Rev. F. D. HORNER remarks:—"I quite agree with the veteran Mr. HEPWORTH, that the Bizarres, the yellow grounds, have proved themselves deserving of the honour of distinction into two equally-valued classes, by virtue of the magnificent contrasts between our best bright reds, such as STORER'S Dr. Hardy and Orion, and the raven-black of Masterpiece. This seems a natural division, which we only embarrass ourselves by ignoring. It is a distinction fully recognised in the Carnation in the difference between its scarlet and crimson bizarres; but in the Tulips it remains a difficulty, and one which a judge may keenly feel before two flowers running one another so close that he may see no point for his decision but his own private preference for this or that colour in the flame and feather. Points should be founded on settled merits, and not on floating tastes. The scope for a grower's individual likings lies in his home collection. There, in the sanctity of his own garden, he may, if he be enough one-eyed and colour-blind, banish from his Tulip-beds the Scarlet Bizarre, and confine himself to nothing but black velvet in the ground colours of his edged Auriculas; but no such preference should weigh in public against flowers that add to high worth in other points the very valuable one of some decided fresh break in colour."

—— BILLBERGIA VITTATA VAR. MACRANTHA, a very handsome Bromeliad, which, although its magnificently coloured bracts and flowers do not retain their beauty as long as do those of several of its allies, is certainly worthy of a place even in the most select collection of stove plants. Its concave, strap-shaped leaves, prettily marked with transverse bands of white and edged with black spines, measure from 1½ to 2 feet in length. The elegant drooping spike bears large rosy-pink bracts and long flowers, the outer perianth segments being of a deep salmon colour, and only about half the length of the inner ones, which are of a purplish-red colour in their lower half, and a fine, glossy, deep blue-purple above. The long whitish filaments, with their orange-coloured anthers, contrast well with the bright blue of the stigmas. A specimen is now in flower in the Kew collection.

—— NEW ABUTILONS.—Mr. GEORGE, of Putney, has sent us a batch of novel forms of Abutilon, showing that he is steadily working an improvement in these useful flowers, his aim being to secure a dwarf free-flowering habit, to reduce the size of the foliage, and at the same time to obtain bright and telling colours. One very striking variety was of incurved bell form, and of a rich deep crimson, blood-red at the base, with veins of the same colour, becoming paler near the edge. Another very fine one of the same form was of a salmony-orange with crimson base. Another was crimson almost self-coloured outside, and with rather long petals not imbricating. A blush-white veined with pink was very delicate and pretty. Finally, an indian-yellow with crimson veins, a cross from venosum, is a handsome acquisition.

—— THE WILDERNESS CLUB, RICHMOND.—This new Club has been founded "to provide for its members in the country the same comfort as they find in town." The beautiful scenery of Richmond, and its accessibility by either rail, road, or river, render it well adapted for the realisation of such an object. The grounds are yet incomplete, but the club-house was opened a few days since, when the executive committee entertained a select party to luncheon. Upon this site stood a mansion at one time occupied by the beautiful Duchess of DEVONSHIRE. The present mansion is, however, a modern building, and required but a few alterations to adapt it to its new object. There are two entrances—one reserved for lady members, who have a complete suite of apartments set apart for their own use, the view from the ladies' drawing-room, as well as from other windows of the western front, being one of the loveliest to be found on the upper reaches of the Thames. On the west front of the building a handsome terrace is being constructed; and parallel with it two courts for lawn tennis, which, when completed by the laying down of turf from Stockbridge, Andover, will be some of the finest works of their kind, while the beautiful river scenery will greatly heighten their attractiveness. In the winter, at the approach of frost, they will be flooded from the river by a special appliance for the purpose, and will then become available as skating rinks. A large paddock adjoining will be converted into an archery-ground, and at the corner nearest the house a boat-house is to be erected, where it is intended to have a supply of pleasure boats and steam launches. The grounds of the Duke of BUCCLEUCH and the Orleans Club adjoin The Wilderness grounds, the necessary alterations in which have been entrusted to Mr. JOSEPH FORSYTH JOHNSON, under whose directions the various important improvements are being carried out, so that when

"The woods shall hear the voice of spring
And flourish green again,"

The Wilderness Club-house will only be "wilderness" in name.

—— SECHIUM EDULE.—Under the name of Chocos, or Chayotes, the pale yellow Shaddock-like fruits of this West Indian cucurbit frequently find their way to Covent Garden Market, principally from Madeira. The species is a strong-growing climber, used by the Portuguese as a covering for their arbours, &c. The fruits, which attain a weight of from 2 lb. to 3 lb., are produced in abundance from October to February, and are said to be preferred by the Portuguese in Madeira to their native Cabbage. The unripe fruits remain fresh for a long time after they have been cut; the pulp is pure white. In the Kew Museum there are specimens from Mexico which are beset with short spines. A vigorous plant is now bearing fruit in the Succulent-house at Kew.

—— THE KNYPERSLEY NURSERY.—Mr. L. POINTON, who has resigned his charge as gardener to R. HEATH, Esq., at Biddulph Grange, is going into partnership with Mr. J. SHERRATT, nurseryman, &c., Knypersley Nursery, Biddulph, near Congletom.

—— HORTICULTURAL BUILDINGS.—The speedy publication of a work on the construction and heating of conservatories and forcing-houses, by Mr. F. A. FAWKES, is announced. The list of contents gives indications that the subject will be treated with some degree of completeness. If this turns out to be the case, Mr. FAWKES will have rendered a great service.

—— SALVIA BETHELLII (fig. 10).—This is one of the very handsome winter flowering Salvias which have been so finely shown by Mr. CANNELL, of Swanley, from whom the specimen figured was obtained. Salvia Bethellii is without doubt a form of S. involucrata. According to Mr. BETHELL, now gardener at Sudbury Hall, near Wickham Market, it was raised from seed by him, and cultivated in preference to its parent from its being of better habit, the name having been given in compliment to him by friends with whom he had shared his prize. It is a strong growing plant, the branches being clothed with bold, well-proportioned cordate-ovate foliage, and terminating in a great whorled spike of bright rosy-crimson two-lipped tubular flowers, each whorl surrounded in the bud by a pair of broad coloured bracts—whence the name involucrata—some of which, in the undeveloped state, are shown at the top of the inflorescence in the accompanying figure. As grown by Mr. CANNELL, in the form of dwarf bushy plants, in moderate sized pots, this is one of the finest of winter decorative plants for the greenhouse and conservatory.

—— ADVERTISERS AND THE POST-OFFICE.—It does not appear to be sufficiently known that the Post-office authorities absolutely decline to receive communications addressed to any post-office under initials or fictitious names. Thus, any advertiser or other person addressing a letter, say, to A. B., Post Office, Greenwich, may rest assured that A. B. will not receive the said letter. It is necessary to advert to this matter as advertisers occasionally send the Publisher orders for advertisements under initials only, and giving no address beyond that of some post-office. It follows from what has been said that disappointment must arise, and it is beyond the power of the Publisher to communicate with correspondents who do not give their full name and address.

—— GARDENERS' ROYAL BENEVOLENT INSTITUTION.—We hear that in consequence of some deaths having occurred amongst the pensioners since the balloting list was issued, the committee of the Institution have decided to grant the pension to the two candidates which stand next highest on the poll, after the eleven already provided for have been elected. This is really an addition of thirteen instead of eleven to the pension list, making, with those who come on by right, an addition of sixteen pensioners at the anniversary of 1881.

—— PUBLICATIONS RECEIVED.—*Household Surgery; or Hints on Emergencies.* By John F. South. (Murray.)—*The Garden Annual*, 1881. (*Garden* Office, 37, Southampton Street.)—Part 3 of Ward & Lock's *Universal Instructor.—Catalogue of Plants in the Botanical Garden, Bangalore, and its Vicinity.* Prepared by John Cameron, Superintendent.

—— THE WEATHER.—General remarks on the weather during the week ending Jan. 3, issued by the Meteorological Office, London:—The weather has been very dull in all parts of the kingdom, with rather heavy rain or snow over the northern parts of England; in Ireland and Scotland the weather was comparatively dry. The temperature was 3° or 4° below the mean in Ireland and the east of Scotland, but elsewhere it was about its mean value. The lowest reading (14°) occurred at Aberdeen, and was registered on the 28th, a reading of 21° being recorded at Parsonstown at the same time. At most other stations the thermometer was lowest either on December 30 or 31, when it fell to 16° at Markree Castle, and to 22° at Ardrossan. In most parts of England the minima varied from 26° to 29°. The rainfall was in excess of the mean over the central, northern, and south-western districts of England, but in defect in all other places. Bright sunshine was very deficient in all parts of the country, the percentage of total possible duration being only 3 in "Scotland, W.," 6 in "England, E.," 7 in "Ireland, N.;" in "Scotland, E.," where it was greatest, the percentage was only 15. The wind on the 28th was fresh from the westward in the south, and light from the eastward at the more northern stations; but on the following day it circulated round a depression which lay over the south of England, blowing strongly from south in the east, moderately from north-east in the north, and strongly from the north in the west. During the next four days westerly or north-westerly breezes prevailed on all coasts; and at the close of the period an anticyclonic circulation was shown, light south-easterly airs prevailing in the south-east and south, southerly breezes in the west, and south-westerly winds in the north.

—— GARDENING APPOINTMENTS.—Mr. BENHAM, late Gardener to the Earl of STRADBROKE, Henham Hall, Wangford, Suffolk, has been appointed, in succession to Mr. KENNEDY, to superintend the gardens at Melchet Court, Romsey, the seat of the Lady LOUISA ASHBURTON.—Mr. JOHN SPAVEN, late Gardener to Mrs. STEWART, Springfield House, Ulverstone, has been appointed Gardener and General Manager to the Dowager Marchioness of ANGLESEY, Wherwell Priory, Andover, Hants.

## Home Correspondence.

**Thamnocalamus Falconeri.** — This Bamboo (commonly known as Arundinarla falcata) flowered with me some four or five years ago, as it did at the same time with all the specimens I am aware of all over Europe. My plants were grown in large pots, but flowered and ripened their seeds in the open air; even the tiniest shoots were loaded with them. They germinated very well, which was very lucky, because I could not save the least bit of the original plants after their seeding. They made feeble attempts at making young shoots, which died after lingering a year or two from sheer exhaustion. My seedlings have grown into fine plants again. *Jean Van Volxem.*

—— In answer to the enquiry on p. 822 of your last volume, as to the seeding of Thamnocalamus Falconeri, allow me to say that we have a plantation of more than an acre planted with this hardy Bamboo. The plants were raised from seeds which were ripened in the open air here, and many from self-sown seeds. When the old plants were in seed the rats and small birds had a great feast on the ripe seeds, which are about the size of the common black Oat. After seeding the whole of our plants died, which, according to the late General Munro, is common. I may say that it was specimens received from here that induced him to give it the name of Thamnocalamus; previous to this it was called Arundinaria falcata. *W. O., Fota, Cork.*

—— Although I am not able to answer the first three questions of "B." with reference to the above, I can the fourth, in the affirmative, as plants seeded freely with us, but unfortunately some of the short-tailed field mice with which our cliff abounds found them out and devoured the greater part before we noticed the loss. Those remaining, however, were harvested, and in due time sown, and the plants we now have are the result. The quickest way to propagate this Bamboo is by means of cuttings made of the small, well-ripened canes, which, if cut into lengths of a foot or so, and inserted in sharp sandy soil in a damp, shady, sheltered situation, root freely and may be lifted and transplanted with safety anywhere in the spring. B. Metake appears the hardiest of the species, as although the winter was severe last year, it suffered but little, and is now looking as green and fresh as it has done all through the season. *J. Sheppard, Woolverstone, Ipswich, Suffolk.* [We presume our correspondent alludes to Thamnocalamus Falconeri, the Arundinaria falcata of gardens. The true A. falcata is the plant known as Bambusa gracilis, according to the late General Munro. EDS.]

**New Fruits: Melons.** — The time has now arrived when the seed catalogues will be looked through with more than ordinary interest, for each year there are additions to the lists of novelties and specialities—something new of great merit which deserves a trial, but it depends very much upon the requirements of the establishment which of these are to be selected for trial, to see if they will answer the description given, and so supply a need possibly much required. There is one of last year's novelties sent out by Messrs. Veitch & Sons, which I would strongly recommend to every one who grows Melons: it is the William Tillery. This variety certainly fully answers the description given of it. I consider it the best green-flesh Melon ever introduced to cultivation; its size, form, netting and colour are all that can be desired, and its flavour surpasses every other green-flesh Melon I have ever tasted. I hope it will be retained in its present perfection for many years to come, but how soon we lose the original type of most of the standard varieties. Read's scarlet-fleshed was probably the best scarlet-fleshed Melon ever sent out; but how seldom we see it now, even at the metropolitan exhibitions, in its original form and netting. It is almost impossible to keep them true unless one variety only is grown, or we get a plant of the variety which the seed is to be saved from, a week or two earlier in bloom than any other variety. Under such circumstances we must expect and hope for new introductions from year to year. Locality, soil, and other influences often change the quality of different varieties of Melons as well as of other fruits, consequently each variety does not equally succeed in every place. Probably the three best Melons for general cultivation are green-flesh William Tillery, scarlet-flesh Read's, light flesh Dr. Hogg. In each of these we have a vigorous constitution and excellent flavour, and, what is now considered of much importance, good size and appearance. *David Walker, Gr. to B. H. Collins, Esq., Dunorlan, Tunbridge Wells.*

**Root-Pruning.**—I think Mr. Fish goes too far when he says that fertility depends on root-pruning, and endeavours to show that it is only assisted by other means, such as summer pinching, &c., as we all know that if the leafage and top-growth is restricted by a timely application of the thumb and finger any one may soon bring a tree pretty much under control. Take a Peach, for instance, that is making a gross shoot and nip out the point, and the result is it produces others of less strength, any of which laid in will set flower-buds and ripen, and the same with Pears, Apples and Plums, which, if stopped, form spurs at the base. Nature, no doubt, adapts herself to circumstances, as may be seen in poor soils, where feeders are multiplied a hundredfold; but in what way she does the root-pruning for us I cannot understand, and if she were so beneficent towards us there would be no need of our help. One would think, from Mr. Fish's remarks, that he does not practise summer stopping at all, as he states that it is objectionable and dangerous to a degree, comparable to an engine-driver a-top of his safety-valve. I can only hope those who read this will have no nervous twitchings, or be in fear of the explosive force of pent-up sap when the time arrives for the summer pinching of shoots, for if that is likely to be the case they had better take time by the forelock, follow his advice, turn stokers at once, and withdraw all the fire by cutting the roots. I fully admit the advantage of this, and have written in favour of underground pruning more than once, but then there is that little qualifying sentence of its need and utility, "It all depends," and this "depends" resolves itself into the question, Do the trees require such manipulation or not? This will depend again on the soil, whether rich or poor, and the condition of the trees, for if over robust there can be no question that the quickest and most satisfactory way to deal with them is to assail the roots; but if they happen to be in the reverse state feed them freely by top-dressing and soaking the earth about them with strong liquid-manure. As to beheading trees not causing a check we have only to look at our pollard Oaks, &c., to see and know that it does so, which is easily accounted for by the loss of leafage they sustain, as the leaves regulate and control the action and number of roots. Affinity of sorts has more to do with fertility by double grafting than anything else, and this is why it is that trees so treated are often resuscitated and made healthy again. That they may be made the reverse I have a striking instance before me now in the case of a Pear tree, which, since it was regrafted, has cankered to such a degree as to be now nearly dead, although all others around in the same ground are full of life and vigour, and in good seasons bear plenty of fruit. *J. Sheppard.*

**Christmas Roses.**—It is now the season when we are reminded in all the gardening journals that Christmas Roses are very beautiful and so easy of cultivation that there can be no excuse for any garden being without them. Then we have codes of rules for treatment and situation and soil, often quite at variance with one another, but all of them no doubt successful enough where the climate suits them. For more than ten years, however, I have tried every plan and adopted every suggestion I have been able to find, without success. I have planted them in leaf-mould, in peat, and in loam, and mixtures of all three, in sun, in shade, on raised borders and flat borders; I have mixed sandstone and limestone and mortar in the soil, and done many other things for them, but they only produce three or four miserable leaves in spring and half-a-dozen small ill-formed flowers at Christmas, and do the same year after year —for I have not been impatient; many of the plants have been five years or more in the same spot, whilst others have been transplanted. I know that if I could only get a fine healthy crop of leaves in spring the flowers would follow. I pay much attention to the cultivation of hardy plants, with tolerable success; but except perhaps the common white Lily no plant has so completely beaten me as the Christmas Rose. *C. W. Dod, Edge Hall, Jan. 2.*

**Is Sawdust Valuable as a Manure, or Not?** —As regards this question, I should be glad of the opinion of any one who has tested its merits. We are well aware that sawdust alone is of little value as a manure, since it contains but little nitrogen, and does not readily decompose in the soil, thus exercising an injurious action on the roots of plants, and tending to promote the growth of fungi, destructive to vegetation in general. These reasons make the advantage of using sawdust as a manure questionable. In most of our large towns sawdust is extensively used as litter for horses. When so used it greedily absorbs the urine, and when well saturated with the liquid manure its value becomes greatly enhanced. In this state, when, if properly prepared, it may be made very serviceable for refreshing pastures, or for other agricultural purposes, scrupulously withholding it, however, as much the safest course from orchards, or other plantations, where it is certain to foster fungi. I shall not enter further into detail about the particular constituents and properties of this manure, as I have but little experience of it; but knowing that a large quantity of sawdust-manure is to be had, and also that one of our most experienced farmers has largely used it, and speaks favourably of it, I think the opinions of others who have proved its merits will be of service to the public generally, especially as manure of any kind is so difficult to be bought in many instances. *Geo. Westland, Witley Court, Stourport.*

**American Grapes in England.**—Mr. W. C. Barry's very proper remarks, in relation to American Grapes in England, in the *Gardeners' Chronicle*, rather forestall what we had concluded to do with our new white Grape, the "Duchess," in England. We will send you half-a-dozen Vines for you to present to the Horticultural Society at Chiswick, or otherwise for public trial as may in your judgment seem best. We would like to have a couple of them sent to the South of England. It must be understood that the growers will not part with any Vines or cuttings taken from the Vines, as it would interfere with the business of professional men both in England and in America. We will make this offer to any other Grape country in Europe, including the colonies of England, particularly Australia, or wherever they are infested with Phylloxera. From its hardiness, we are induced to have it tested outdoors in England. We append a brief description of the Grape. The variety is twenty years old, and we sold the Vines for the first time last spring. Thus far it has proved Phylloxera-proof, excelling nearly all varieties in growth; the foliage is pale green with no down beneath; largest clusters 1½ lb., average cluster ½ lb.; ripens at our place middle of September, and becomes much finer by hanging later; it never drops from the cluster, keeps longer than any variety we cultivate, and if the clusters are not abused the berries will all raisin. The instrument marked its saccharine this fall 105°. It is entirely free from fox, musk or acidity in skin, flesh, or seeds. *A. J. Caywood & Son, Marlborough, Ulster Co., New York, U.S.A.*

**Lawns and Worm Casts.**—The worm nuisance is one of the worst to contend with on lawns at this season, for no sooner does one sweep up or roll to get rid of the castings they throw up on the surface than they are at it again, making a sward look as dirty and untidy as ever. Many remedies have been suggested to prevent or get rid of the eyesore, but the best I have met with as yet is a dressing of fresh hot slaked lime, which they evidently dare not face, as since we put some on the lawn here a month or more back I have not seen the work of any, and I begin to hope they are making tracks for the other side of the globe to get out of the way of the caustic water soaking into the earth above them each time we get a fall of rain. I had frequently astonished them before by giving lime-water, which quickly made them turn out of their holes; but the effect of that compared with dry lime was but transient, as after a short time others came to the surface, and the dosing had to be repeated again and again. The principal object we had, however, in using the lime was to kill moss, which it does effectually, thus freeing the grass of the most troublesome pest and worst enemy it has to its growth, for if not checked it soon gets almost entire possession of the ground and chokes out everything else, besides which it is a terrible drag to men working a machine in the summer, for when dry and wilted as it is then it is most difficult to cut. Some have an idea that moss on lawns is caused through want of drainage, but I find that the driest of soils are most subject to it, for if grass gets killed or weakened by the hot weather, moss and weeds quickly take its place. The best way to apply the lime for its extirpation is to mix it with at least twice its bulk of fine soil, which gives weight, and if a little damp, prevents it blowing or flying about. Sown on by hand, it may then be easily scattered evenly and regularly, and if when dry the lawn gets a rub over with the back of a wooden rake, followed up by a good rolling, the dressing is pressed in and lost to sight. It is a good plan when giving lawns a dressing of this kind to use some soot as well, and if wood-ashes can be got they will be found of great service with the others in stimulating the growth of the grass. Bone-dust, too, or a slight sprinkling of nitrate of soda, is good, but the latter must be used very sparingly, and is only necessary where soil is exceedingly poor. *J. S.*

**Calanthe vestita, and C. Veitchii.**—These two beautiful winter-flowering Orchids are well deserving of extensive cultivation, more especially in establishments where superior cut flowers are in great demand. As cut flowers for certain particular purposes the Calanthes I think are not to be surpassed, and are almost indispensable, for when tastefully, orderly, and

carefully arranged in places of large dimensions—I mean the spikes—not pressed in and squeezed, as cut flowers are sometimes, but simply and gracefully mixed with fronds of Adiantum cuneatum or A. gracillimum, nothing gives so sweet and pleasant effect at this time to a dinner-table. Grown in 6 or 8-inch pots, filling these half full or thereabouts with potsherds, well prepared, washed and dried previous to using. After having put these into the pots at the requisite distance, apply a thin covering or layering of sphagnum to prevent the soil from gaining access to the crocks. With regard to the potting material, a good loam with a liberal dash of cow-dung, a moderate quantity of rather lumpy potsherds, so to speak, and the same of charcoal, well sifted through a half-inch riddle, retaining the roughest of the two for potting, will, I am convinced, be sure to ensure success in this direction. Previous to using the soil it is well to remove the chill or cold of it by placing it in a warm stove or vinery until it becomes more or less heated while situated there. When potting be careful not to insert or bury the pseudobulbs too deeply in the soil, but simply place the root in firmly on the surface until they — that is, the pseudobulbs — establish themselves in the soil, as they speedily will do once they make a start to grow. Treated with regard to a fine stove temperature liberally supplied with water—not cold water—during the summer months—that is, after they have fairly established themselves in the soil, shaded from the more or less powerful influences of the sun, washed and sponged whenever scale is observed to make its appearance, which in every case they are likely to do — these Orchids will, with due care, come into flower about the beginning of November, and will continue yielding more or less flowers from then onwards to the beginning of February, by retaining the spikes and only removing the individual blooms. Give them sufficient water to sustain and keep the foliage healthy to the last, continuing its application until every spike and bloom are fully developed. See that the temperature at this time is never allowed to become too low, for I am much disposed to think it greatly hinders and checks the development of the flowers, and by a continuation of the same cool treatment the flowers become yellow and sickly looking, and are thereby rendered useless for cutting. By taking a spike of any of these Orchids, and by simply training it over the handles of basket-shaped cut-flower vases, it has, when on a dinner-table, a very pleasing and highly telling effect. I have seen from thirty to thirty-five individual blooms produced along the spikes of these Orchids. When thus obtained in abundance and arranged with Ferns they are a most pleasing sight at this dull season of the year; and as cut flowers they well repay all the little trouble that may have been devoted to them during the summer months. *George Drummond, Broxmouth Garden, N.B.*

**Rollisson's Unique Pelargonium.**—I fully agree with all that "Cultivator" says at p. 891, vol. xiv., as to the usefulness of this variety for winter flowering, but have succeeded best with it by planting it out in a good position in May, and lifting again early in September; thus treated the plant makes a free but short-jointed growth, the texture of the leaves is much firmer, and better able to stand the dull days of winter, and it will be well set with flower-buds at lifting time, which will expand in due time if treated to a rather dry temperature not below 45°. The ordinary double and single bedding varieties of Pelargonium also succeed well treated in this way, and yield a profusion of flowers all the winter; they all require careful syringing, shading, &c., for the first fortnight after they are lifted. The best position for them is behind a north wall]: if treated in this way scarcely a leaf will wither, and they will stand a lower temperature than they would if grown under glass all the year. *W. H. Divers, Burghley.*

**The Potato Disease.**—Interesting as were the experiments carried out by Mr. G. Murray, and recently published in these columns, the results tell us nothing, but simply tend to prove the theory now so long held, that the air is the medium conveying the minute spores, or as Mr. Murray terms them, "conidia," from one place to another. With respect to these particular experiments I think it would have proved of more general interest had Mr. Murray but placed some of his slides or detectors upon the windward side of the Potato field, as well as on the leeward side, as then we should have perhaps learned whether the spores were first brought by the wind into the field from elsewhere, or whether they were the product of spontaneous growth, either from the soil or the seed-tubers. If the glycerine placed on the windward side had detected conidia before any evidence of the fungus were seen in the Potatos, it might have been held as conclusive that the fungus was of foreign origin. Then we should have had to ascertain from whence it came. As bearing upon the important point so often urged, of an early destruction of the haulm, it is further important to know if possible by ocular demonstration how long prior to evidence of the fungus being found in the leafage the conidia may be found floating in the air. Then it would be instructive to learn if possible how far trees, hedges, or other interpositions may offer obstacles to the progress of the conidia, or whether the quieter air in enclosed or sheltered places is more conducive to the spores settling on the leaves than is a large open expanse and quick air. The evidence that the spores were not active at night, being held in contact with the leaves by the heavy dew, supports what I have so often urged, viz., that heavy white mists in July are often productive of more harm than heavy rainstorms. *A.D.*

**Lastrea elongata Hardy in Ireland.**—This Fern is hardy here, as I have grown it in an open fernery since 1875. It produces perfect fructification on fronds at least 18 inches long. I bought it of an English nurseryman as L. cristata. L. elongata, a native of Madeira, has been treated exactly like other hardy British Ferns, and has stood well through the winters, and notably the exceptionally severe winters of 1877-8 and 1878-9, losing its fronds, but the root remaining perfectly healthy. I may mention that in this part of Ireland (Co. Kilkenny) the only Fern which is common to Madeira and the south of Ireland (Trichomanes radicans) will not exist in the open air, and that Asplenium marinum, which had flourished for six years in the roof of a cave that was made for it, was killed by the severe frosts of the winters 1877-8-9. *James Graves, Inisnag.*

**Poinsettias and Eucharis.**—I send you a photograph of a very fine display of Poinsettias and Eucharis, which I had taken on December 20 last. It fails to convey adequately the splendour of the show, especially the double Poinsettias. The dazzling brilliancy and richness of its bracts places our old friend pulcherrima in the shade. The white variety is also most desirable for display upon the stage or for decorations at Christmas. The head of bracts of each variety varied from 10 to 16 inches in diameter; the plants were all struck in June and July, and measure from 8 to 24 inches from the pot, and well covered with foliage, those struck first producing the finest bracts. The Eucharis had from fifteen to twenty-five flower-stems, each with fine clusters of bloom. *R. H. Vertegans.*

**The White Czar and Other Violets.**—Will some one who grows the above say whether its flower-stalk is as long as that of the Czar, or that best of all Violets, Victoria Regina, which with me is hardly as long as the Czar? Will those who grow them say how long the flower-stem of compacta, or double white, is? Also how long is the flower-stem, and what of the fragrance, of the following Violets:—Blandyanum, King and Queen of Violets? Marie Louise is no longer with me than the Neapolitan one. We want all the best Violets mounted on stilts—I beg pardon, stalks—as long as the Czar. The double white is provokingly short with me; it also reverts frequently to the single blue. How is it that white and blue are so closely related and so readily transmutable? The two run into one another with more ease and frequency apparently than any other colour. Does the fact that in photography all blues come out whites throw any light on this interesting subject? *D. T. Fish.*

**Early Peas.**—I fully agree with most of the remarks made by Mr. E. Morgan anent early Peas, and am often surprised at the number of sorts and quantity grown in many gardens, whereas, as he says, were some of the so-called late kinds sown instead, they would be little, if at all behind many of the much vaunted varieties recommended for the first gathering. The fact is, catalogues in which they are classed are too much taken as guides, and people buy and sow accordingly, and as a consequence have to wait till the season is far advanced before they have the satisfaction and pleasure of eating good Peas. Compared with the Marrows, Dickson's, Dillistone's, Sangster's, and others of that class are worthless, and no one would think of eating them after having tasted a dish of the others, as, however well they may be grown, unless picked very young, they lack flavour and are dry eating and poor. The only sorts we cultivate here at starting are Kentish Invicta, on the heels of which follow William I. and Advancer, the latter of which is not only really good in quality, but is a regular and most continuous bearer. To succeed this we sow Veitch's Perfection and Ne Plus Ultra or British Queen at the same time in the outer quarters, and keep on with these two last-named all through the summer, for after repeated trials of others I have as yet found nothing to beat them. From what I saw of Telephone, however, last year, I formed a very high opinion of that variety, and mean to try it as a second early, for there can be no doubt now but that it is a grand Pea, and one that will be a great favourite for a long time to come. There are others, too, of high promise, and it is more than likely that many kinds now in the lists will, ere a year or two elapses, be weeded out and forgotten. Indeed, their numbers might with advantage be at once diminished considerably, but till we get such matters referred to a committee of practical men, catalogues will continue to grow fat and bulky, and confusion get more confounded. Chiswick has done a good work already in the extensive trials made there of vegetables side by side, and its usefulness might be extended in condemning and expunging varieties of inferior merit, which would be a boon to the gardening public, and save much disappointment in having ground occupied with things superseded when it might be put to better account. Of course it is open to every one to use their own judgment and choose for themselves, but then we cannot all have experimental gardens to try this, that and the other, to see how they turn out, and so old worthless sorts are tolerated and grown on year after year. *J. S.*

**Epidendrum Wallisii.**—Now that a sale of imported plants of this rare Orchid is advertised, many lovers of Orchids will be asking—What is Epidendrum Wallisii? It belongs to the slender, reed-like-growing section of Epidendrums, and as regards strength stands about midway between E. myrianthum and E. cnemidophorum. When well grown, its growths attain to a height of between 3 and 4 feet. From the upper portion of the matured growth the flowers are produced in bunches of threes and fours. As the flowers and bunches are closely arranged, a fine effect is produced. Individually the flowers are as large as those of the best variety of Barkeria elegans—sepals and petals yellow more or less spotted with carmine, lip pure white flamed with carmine. Each flower lasts many weeks in perfection. This charming Orchid was collected by Wallis for the Messrs. James Veitch & Sons, Chelsea. Only three plants were established, one of which remains at Chelsea, one was purchased by a great lover of Orchids in America, U.S.; and the third came into this collection, where it is nearly always in flower, and highly esteemed. Like all Orchids that have no decided season of rest, this Epidendrum is difficult to introduce. Imported plants should be staked firmly in small pots, having the base of their pseudobulbs resting on small crocks; these and the surrounding atmosphere must be kept constantly moist until new roots show, when a little peat and sphagnum may be used to surface the crocks. When the plant is established the many large roots which the young breaks emit will require a good share of pot-room. E. Wallisii requires no resting, and should never have its roots otherwise than moist; it is perfectly at home at the cool end of the intermediate-house, where the winter night temperature stands between 55° and 60°. Choose for it if possible a rather shady position. *J. C. Spyers, Burford Lodge, Dorking.*

**Poinsettia pulcherrima.**—At Belton Park, the seat of Earl Brownlow, are some good examples of this fine decorative plant, which I consider well worthy of note. A number of the heads of bracts were measured, and nicely covered the numbers upon the rule up to 20 inches; they are splendid both in shape and colour, and the leaves are of great substance, well maintained down to the tops of the pots. The plants range from 8 inches up to 6 feet, which are grown in 5 and 8-inch pots. *H. A. M.*

**Poyle Park.**—The following notes relating to the early history of this place, figured at p. 815 of your last volume, may be of interest to some of your readers:—The name of Colnbrook is not found in *Domesday Book*, but the place is of considerable antiquity, and is recognised in old deeds as *viculus*—little town or street. The name is obviously deduced from the river Colne, to cross which from the remotest times bridges or ferries were in vogue. The muleteers and pack-horse conductors thought their long-admitted usages were invaded when coaches were started, hence they cried out invasion against vested interests. We read in Dugdale's *Monasticon*, vol. i., that Milo Crispin, who lived before and at the Conquest, while he lived in the Castle of Wallingford, near the time of his death, received certain good offices from Laratius, Abbot of Abingdon, and did give in return to that abbey a public inn and half a hide of land in Colnbrook, on the road to London. Before the end of the year 1106 he had departed this life without issue, whereupon the estate reverted to the Crown. The oldest appellation in the Fine deeds is Culbrok. Fine. Mich. 3 Edward I. 1274, in which one Lucas de Baton, of the city of London, holds a mill in this town. In 1279 a family by name Carlisle buys certain messuages of one Guy, of Culbrok, and his wife. This spelling it carries to the sixteenth century. In 1380 John Lambyn, of Colbrok, buys property of Thomas Herby, of Colbrok, with a garden, &c. Colnbrook has enjoyed the privileges of two charters, granted by Henry VIII., 1538, and by Charles I. in the eleventh year of his reign, 1635. This charter was signed at Canterbury, Oct. 8, 1635. The plague of 1625 almost decimated Colnbrook, but

it passed unscathed in 1665, and the dire effect of the civil wars caused the once chartered town of Colnbrook to dwindle into neglect and insignificance. Outside the town, in Middlesex, is Poyle House, which formed the estate of William de la Poyle in 1267, and of William de Langell, of Horton, who conveyed the manor of Poyle to John de la Poyle and Isabel, his wife. This John deceased in 1318, having demised this manor to his wife for life, then to Richard de Waleden, relative of Humphrey de Walden, who died in 1331, and was a crown tenant of Wraysbury Manor. The reversion of Poyle was in Elizabeth, sole heir of John de la Poyle; she was twenty-four years old at her father's decease. Escheat 2 Edward III., 1337. Sir Thomas de la Poyle died seised of this estate in 1424, and in 1452 the same manor was possessed by John Gainsford, of Crowhurst, Surrey, who held it under the Windsors by the service of half a knight's fee; and it continued and was part of the estates included in the forced exchange between Lord Windsor and King Henry VIII. Poyle became the property of the Bullock family toward the end of the sixteenth century, from which it passed to George Paterson, Esq., from whom it became the property of the present proprietor, Alfred Meadows, Esq., M.D. *J.*

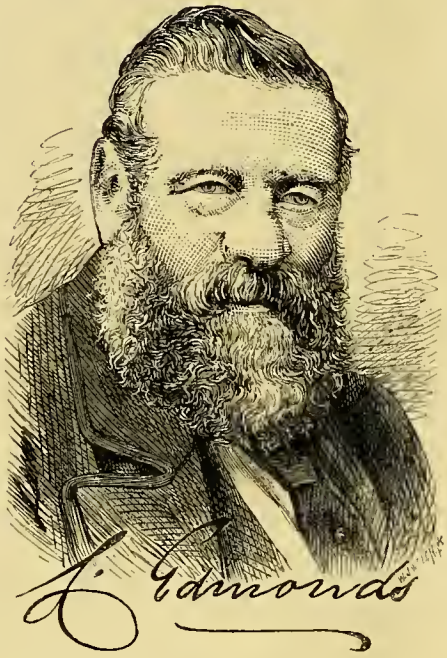
**Heating by Hot Water.**—Two words have been omitted from a sentence in my letter at p. 21 of last week's issue, which are necessary to make sense of it; the fifth line from bottom of third column should read —"and hot air find a vent into *the flue*, the side or tubes," &c. *Ben.*

**Improved Forms of Potatos, &c.**—The note at p. 819 of last volume, signed "R. Rushall," asking information about certain kinds of Potatos, affords me the opportunity I have for some time contemplated, viz., of saying a word to certain seedsmen that get hold of "improved" varieties, not only of Potatos, but all other kinds of vegetables, ofttimes as soon as the original stock is in commerce. I have before me at the present moment a seed list in which the word "improved" occurs with such frequency as must make the least observant suspicious of the reality of the fact; and, worse still, in the same list is the name of the firm attached to certain novelties that were sent out by other firms only last year, and yet with the most daring effrontery they are now called "improved." Do these seedsmen imagine that gardeners are as bereft of reason as they themselves appear to be of veracity? I will not insult the fraternity by even supposing that there is a gardener so blind as not to see through tactics so questionable, and on their behalf I venture to give the "improved" dealers a warning, and that is, that such endeavours at gullibility can only end in their own discomfiture. *W., H.*

**Grafting Roses.**—Most people who have a garden are well acquainted with the art of budding Roses, and many increase their stock by means of cuttings, but few are aware how very easily they may be propagated by grafting; which, if carried out at the right time, is the most expeditious and certain of the three modes, as may be seen by the specimens sent with this, which have only been done just the turn of a fortnight, and yet the parts are united, all cuts callused over, new roots formed, and the buds breaking freely to furnish young shoots. Plants obtained in this way, unlike those from buds or cuttings, are strong the first year, and if planted out in spring flower well during the summer and autumn. For pot-culture they are quite unsurpassed, as being young they are in the full flush of vigour, and therefore where Roses have to be grown largely for forcing I would specially recommend that a lot be worked up for the purpose; and if this be done annually, the old ones may then be turned out in borders or discarded. At one time I used to graft on small young Manettis, but I am not particular about doing this now, as I find pieces of the large roots do equally well or better, and to get these we dig up old stools and replant again after taking off as many roots as we want. These we cut into lengths of about 3 inches, and having trimmed up a lot of small ripe Rose shoots by removing the spines, the scions are obtained from them and inserted in such a way as to get them to fit. This is done by making a notch an inch or so from the tops of the pieces of roots, and then slicing away the part down to it, which leaves a cleft for the point of the scion to rest in. The grafts are made by simply shaving off one side as would be done in making a quill pen, when the ends are just taken off the reverse way to cause them to fit in the clefts, where they remain steady and soon unite. To hold them tightly together till they do this they are tied with matting or Raffia-grass, and then potted singly or put in thickly in boxes of sifted leaf-mould, and stood away where they can be kept dark and in a moist temperature of 60° or so, in which they remain till the scion and stock have got well hold of each other. As soon as this is effected it is necessary to remove them to cooler quarters, where they can also get more air, but at the same time enjoy enough warmth to keep them gently growing till they are hardened off sufficiently to bear full exposure outdoors, which they ought to be able to do by the end of April at latest. *J. S.*

## Obituary.

ANOTHER familiar face has gone from among us, and a large circle of gardening friends will regret to hear that Mr. CHARLES EDMONDS, late gardener at Chiswick House for more than forty years, died at Llandudno on Dec. 30, from a second attack of paralysis. The former *habitués* of Chiswick in the days of its great flower shows, and all the gardening fraternity of the past generation, will remember with pleasure the genial countenance, cheerful manner, and cordial hospitality of the friend who so long presided over the gardening establishment of the late and present Dukes of Devonshire, and of the former Duke's relations who succeeded him, as well as of His Royal Highness the Prince of Wales, who occupied Chiswick House in later years. Mr. Edmonds' features were duly presented to the readers of this paper a few years ago, along with a brief notice of his career; and were thus enshrined among other gardening worthies. Since then, owing to infirm health, and to a paralytic affection, he retired from Chiswick,




and lived at Llandudno, where he had, on the 7th of the same month in which he died, just passed his sixty-ninth birthday. It was alike honourable to him and to the generous nobleman whose predecessor he had served so long and so faithfully that, after leaving Chiswick, he enjoyed an annuity almost equal to the full amount of his previous salary, and that, with the aid of prudential savings, he was thus enabled to spend his last years in substantial comfort. Mr. Edmonds was a man of recognised integrity and sterling principle, always ready to do a good action, or say a kindly word. And although he did nothing remarkable in the way of gardening, he was a sound and safe practitioner and adviser, and both on the Council of the Royal Horticultural Society, where he sat for many years, and as a judge at many metropolitan and provincial flower shows, and in various ways respecting other institutions rendered loyal and real service to the profession, and was ever regarded with unvarying respect. Some of these judicial duties were continued to even the latest year of his life. He had the happy quality of disarming enmity and securing friends. And to those who knew him intimately—among whom the writer can claim an unbroken friendship of nearly fifty years—he was so steadily and consistently true, that his memory will be held in lasting and affectionate esteem. *K.*

## Notices of Books.

**Deutsche Dendrologie, &c.** Von W. Lauche. Berlin: Wiegandt, Hempel & Parey. (Williams & Norgate.) (The Trees and Shrubs Cultivated in Germany.)

This is a large handsome 8vo volume of more than 700 pages, with numerous woodcuts and a copious index. It is intended to do for Germany what Loudon's *Encyclopædia of Trees and Shrubs* has done for English-speaking countries. While not so comprehensive as that book, it is more convenient for use, and of course it has the advantage of more recent publication. The descriptions are based on those in the late Karl Koch's *Dendrologie*, to which this book bears about the same relation as the *Encyclopædia* of Loudon before referred to does to the larger *Arboretum*. The introductory sections are devoted to brief accounts of the geographical distribution of trees, the formation of arboreta, and the culture and propagation of trees. These matters occupy upwards of forty pages, and then begins the systematic description of the various trees, beginning with the Conifers. The plan is to give in brief the characteristics of the order, tribe and genus, and then to enumerate the species in a similar manner, specifying first the name, then the geographical distribution, and the distinctive characteristics. Then follows a list of the principal varieties in cultivation. Thus, under the head of the common Yew we have about fifteen varieties mentioned. Synonyms are mentioned, but no reference is given to any standard work or monograph wherein the student might identify or verify the author's conclusions, neither are any indications given as to the books wherein figures may be found. These details are indeed given in Koch's *Dendrologie*, on which this book is founded, but few gardeners, even German ones, are likely to be able to afford to purchase two works on arboriculture.

The list of varieties is not very complete, if we may judge from a few cases that we have lighted on at random; thus, of Cupressus Lawsoniana only seven forms are enumerated, one of the most striking of the whole, that known as erecta viridis, being not mentioned. Those who have been privileged to see the splendid collection of forms of this species got together by Mr. Parker Hamond at Pampesford will smile at seven forms of Lawson's Cypress. Silver Firs and Spruce Firs are both grouped under Abies, Picea being retained as a subgenus. Neither Abies magnifica nor A. Lowiana is mentioned, while of course the newer Japanese varieties are not included. The omission of the Japanese Oaks—and, indeed, of any of the evergreen Oaks so far as we have seen—is not so easily accounted for.

In spite of many omissions the work is very serviceable, and it is a matter of regret that we have no such work of recent date in the English language. The outline illustrations, though occasionally stiff, nevertheless will answer the purpose of identification. We congratulate German gardeners on the possession of so useful a book, and trust that it will meet with such success that a new edition may soon be called for which shall supply the deficiencies in the present volume.

—— *Deutschlands Flora, &c.* Text von Dr. Ernst Hallier. 500 coloured plates. Dresden: W. Baensch. (Williams & Norgate).—This is the ninth issue of a series of coloured copperplate engravings of the wild plants of Germany and Central Europe. The figures are useful for purposes of identification, and the text supplies brief descriptions of the plants and indications of the localities they inhabit.

—— *Cryptogamic Flora of Central Europe.*—Dr. Winter, of Zurich, has just issued the first part of an illustrated description of the fungi of Germany, Austria, and Switzerland, on the plan of Rabenhorst's well-known works on the Algæ. The present part contains descriptions of the Schizomycetes, the Saccharomycetes, and part of the Basidiomycetes. The greatest interest now-a-days attaches to the extremely minute and doubtless imperfect structures classed under the two first heads, because it has been proved that they are in some cases the exciting causes of various fatal diseases the attacks of which can be avoided by preventing access of these organisms, and which, on the other hand, can be propagated when they are transferred from one body to another. Various forms of fermentation are likewise proved to

be essentially connected with the presence and development of these cells.

—— *The Garden Lexicon.*—The successive numbers of the *Illustrates Gartenbau Lexicon*, edited by Herr Rumpler, the Secretary of the Horticultural Society of Erfurt, prove that the work in question will be very serviceable to German gardeners, and those who read that language.

—— *Die Rose.* By Th. Nietner. Berlin: Wiegandt, Hempel & Parey. (Williams & Norgate.)—A luxurious quarto volume, dedicated to the Rose, and illustrated with numerous woodcuts representing various species of Roses, and twelve coloured plates purporting to represent choice garden Roses, but these latter—that is, the plates—are not such as would delight the rosarian's heart, being representations of poor flowers, and these not rendered in the best style of chromo-lithography, as such a publication deserved. One of the most useful portions of the book is an alphabetical descriptive list of all the varieties of garden Roses, indicating the class to which they severally belong, and the year in which they were raised. The text is of course in German, and the volume is dedicated to Her Imperial Highness the Crown Princess of Germany, our well-beloved Princess Royal.

AQUILEGIAS.—The common garden Columbine, A. vulgaris, is one of the easiest grown of border flowers. The pure white variety is very pretty, and many of the double forms of varied and brilliant colours, quite distinct from anything else we have, cannot fail to command admiration. They are perfectly hardy, and only require rich, deep, and rather light soil. The species A. glandulosa, A. cœrulea, and the hybrid form of the last named variety, A. cœrulea hybrida, are not so easily grown, not because they are not quite hardy, but because of the wet, combined with cold, and the unfavourable atmosphere in the neighbourhood of large towns and cities where they are attempted to be grown. I have been so unsuccessful in growing them out-of-doors in the neighbourhood of London that it was determined to cultivate the whole of them in pots, and afford them the protection of a frame. Good loam with a little turfy peat added, and a fifth part of rotten manure, makes an excellent potting material. It has been stated by some that these species of Aquilegia are practically biennial; this is not so, as with good treatment they are as much perennial plants as the Phlox. I have plants now five or six years from seed, and they grow stronger and flower better the longer they are kept under our system of pot culture. The plants cannot bear coddling, and the framelights should be drawn off whenever the weather is favourable. I keep the lights on in wet weather, and when the air is very damp and during the prevalence of fogs. Green-fly attacks the young leaves as soon as they are formed, and these must be destroyed by fumigating. Later on red-spider attacks the leaves, but these may be prevented or destroyed by syringing the undersides of the foliage with rain-water once or twice a day, and allow the plants to be very freely exposed to the air. A great mass of roots is formed in the pots, consequently much water is required, and we do not fail to give manure-water when the flower-spikes begin to rise. *J. Douglas, Loxford.*

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Henderson, Andrew, Wellington Road, St. John's Wood, N.W.
Hudson, James, The Gardens, Gunnersbury House, Acton.
James, J., The Redlees Gardens, Isleworth.
King, James, Gardener to G. Simpson, Esq, Wray Park, Reigate.
Laing, John, Stanstead Park, Forest Hill, S.E.
Lee, Charles, Royal Vineyard Nursery, Hammersmith.
Llewelyn, J. T. D., F.L.S., Penllergare, Swansea.
Little, Henry, Hillingdon Place, Hillingdon, near Uxbr'dge.
Masters, Maxwell T., M.D., F.R.S., Mount Avenue, Ealing, W.
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Parker, Robert, Exotic Nursery, Tooting.
Roberts, J., The Gardens, Gunnersbury Park, Acton.
Roger, Alexander, Era House, Surrey Lane, Battersea, S.W.
Smith, Geo, Tollington Nursery, Hornsey Road, N.
Turner, Harry, Royal Nursery, Slough.
Williams, Henry, Victoria Nursery, Upper Holloway, N.
Wills, John, Onslow Crescent, Onslow Square, S.W.
Wilson, Geo F., F.R.S, Heatherbank, Weybridge Heath.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
FOR THE WEEK ENDING WEDNESDAY, JAN. 5, 1881.

| MONTH AND DAY. | BAROMETER at 32° Mean Reading Reduced to 32° Fahr. | BAROMETER Departure from Average of 18 years. | TEMPERATURE OF THE AIR. Highest. | TEMPERATURE OF THE AIR. Lowest. | TEMPERATURE OF THE AIR. Range. | TEMPERATURE OF THE AIR. Mean for Day. | TEMPERATURE OF THE AIR. Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition. Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition. Degree of Humidity. Sat. = 100. | WIND. Average Direction. | RAINFALL. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dec. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In |
| 30 | 29.32 | −0.58 | 42.5 | 33.5 | 9.0 | 37.2 | − 0.1 | 34.3 | 80 | S.S.E.: N.N.E. | 0.16 |
| 31 | 30.02 | + 0.12 | 36.4 | 31.0 | 5.4 | 34.2 | − 3.0 | 28.8 | 81 | NNW | 0.10 |
| Jan. | | | | | | | | | | | |
| 1 | 30.19 | +0.37 | 42.4 | 32.0 | 10.4 | 37.1 | − 0.1 | 32.5 | 83 | S.W. | 0.00 |
| 2 | 30.24 | +0.42 | 48.0 | 34.5 | 13.5 | 42.3 | + 5.1 | 41.1 | 86 | S.W. | 0.00 |
| 3 | 30.19 | + 0.40 | 42.7 | 38.0 | 4.7 | 40.7 | + 3.8 | 36.2 | 84 | S.E. | 0.00 |
| 4 | 30.08 | +0.32 | 41.2 | 36.0 | 5.2 | 39.0 | + 2.4 | 30.3 | 74 | N.E. | 0.00 |
| 5 | 30.09 | +0.34 | 42.8 | 35.5 | 7.3 | 39.7 | + 3.2 | 35.3 | 84 | ENE: | 0.00 |
| Mean | 30.02 | + 0.20 | 42.3 | 34.4 | 7.9 | 38.6 | + 1.6 | 34.1 | 83 | S.W.: N.E. | sum 0.26 |

Dec. 30.—Generally dull, wet and cold till the evening; fine at night.
— 31.—Snow fell in the morning; dull and cold. At night the sky was cloudless.
Jan. 1.—Fine and bright till evening, snow melting rapidly. Highest temperature at night.
— 2.—Dull, misty, heavy damp day.
— 3.—A still, quiet, dull morning. Fine, with sun shining from noon. Overcast at night.
— 4.—Fine and bright till 10 A.M., overcast afterwards, but fine and pleasant although dull.
— 5.—Fine bright morning, strong wind; generally a fine day.

LONDON: *Atmospheric Pressure.*—During the week ending January 1, 1881, in the neighbourhood of London, the readings of the barometer at the level of the sea decreased from 29.75 inches at the beginning of the week to 29.34 inches on the morning of Dec. 27th, was 29.63 inches at midnight of the 28th, decreased quickly to 29.19 inches by 3 p.m. on the 29th, and after this increased rapidly on the 31st to 30.33 inches by midnight, and slowly on January 1 to 30.38 inches at the end of the week. The mean reading at sea level for the week was 29.73 inches, being 0.13 inch higher than that of the preceding week, and 0.37 inch below the average.

*Temperature.*—The highest in the week was 53° on the 28th; on the 31st the highest temperature reached was 36°.4. The mean of the seven highest day temperatures was 44°.8. The lowest temperature in the week was 30°.5 on December 26; on the 28th the lowest temperature in the day was 47°. The mean of the seven lowest temperatures was 35°.4. The greatest range of temperature in one day was 18°.1 on the 27th, and the smallest was 5°.4 on the 31st; the mean of all was 9°.4.

The mean daily temperatures of the air and the departures from their respective averages were:—Dec. 26th, 34°.1, −3°.7; 27th, 42°.4, + 4°.8; 28th, 50°.5, +13°; 29th, 46°.4, + 9°; 30th, 37°.2, −0°.1; 31st, 34°.2, −3°; and Jan. 1, 37°.1, −0°.1. It will thus be seen that the average temperature of the 31st was 16°.3 of lower temperature than it was on the 28th; the mean temperature of the air for the week was 40°.3, or 2°.8 above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, were about 60° on the 27th and 28th, and about 50° on the other days of the week. The lowest readings of a thermometer with its bulb resting on grass, and exposed to the sky, were 45° on the 28th, and 39°.5 on the 29th; on every other night it was below 32°; the mean of the seven nights was 32°.5.

*Wind.*—The direction of the wind was generally S.W., but it was from the N.W. part of the 27th day, and mostly N.N.W. on the 31st.

*Rain.*—Rain fell on five days, to the amount of 0.85 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, January 1, the highest temperature of the air observed by day was above 53° at Truro, Plymouth, Bristol, and Brighton, but only reached 42° at both Bradford and Leeds; the mean value from all stations was 49½°. The lowest temperature by night exceeded 31° at Bristol and Liverpool; it was as low as 24°.6 at Wolverhampton, and 26° at Sheffield; the mean from all stations was 28½°.

The range of temperature in the week was greater than 24° at Truro, Brighton, and Norwich, and was less than 16° at Manchester, Bradford, and Leeds; the mean range from all stations was 21°.1.

The mean of the seven highest day temperatures was as high as 50°.9 at Truro, and 48°.8 at Plymouth; but at both Bradford and Leeds it was only 38°.3, this being the minima value; the mean from all stations was 43°.3.

The mean of the seven lowest night temperatures exceeded 37° at Truro and at Plymouth, and was below 32° at Wolverhampton, Nottingham, Hull, Bradford, and Leeds. The mean from all stations was 33°.7.

The mean daily range of temperature was greater than 11° at Plymouth, Bristol, and Sheffield, and was less than 8° at Liverpool, Bradford, and Leeds; the general mean from all stations was 9°.6.

The mean temperature of the air for the week was as high as 45°.3 at Truro, and 43°.2 at Plymouth, but was below 35° at Wolverhampton, Bradford, and Leeds. The general mean from all stations was 38°.4, being 6°.3 of lower mean temperature than in the week ending January 3, 1880.

*Rain.*—Rain or snow fell on every day at Sheffield: the days on which snow fell were December 26 and 30; at Brighton it fell on four days only, and at all other places it fell on five or six days. The heaviest fall was at Sheffield, 2.3 inches; the next in order of amount was Sunderland, 1.86 inch. The smallest fall was at Blackheath, viz., 0.85 inch, and the next in order of amount was 0.88 inch at Nottingham. The average fall from all stations was 1.4 inch.

The weather was fine and frosty at the beginning of the week, was generally dull and mild on the 27th, 28th, and 29th; generally dull and cold on Dec. 30 and 31, and on January 1 was fine and bright.

SCOTLAND: *Temperature.*—During the week ending January 1 the highest temperature of the air was 48°.3, at Glasgow; at Perth the maximum temperature in the week was 41°, and the general mean of the high day temperature was 45°.4. The lowest temperature in the week was 15° at Perth, and 15°.3 at Aberdeen; but at Leith the lowest temperature was 28°; the mean of the low night temperatures was 22°.6. The average of temperature in the week was 22°.8; it was as large as 31°.2 at Aberdeen, and as small as 18° at Greenock.

The mean temperature of the air for the week was 35°.3 at Leith, the highest, and 29°.2 at Perth, the lowest. The general mean was 32°.6, being 5°.8 below that of England.

*Rain* or *snow* fell to the amount of 0.75 inch at Aberdeen, and to 0.73 inch at Edinburgh. No rain fell during the week at Glasgow. The general average fall was 0.35 inch.

DUBLIN.—The highest temperature of the air in the week was 47°.2; the lowest was 24°.8, and the mean temperature for the week was 34°.2. The fall of rain was 0.75 inch.

JAMES GLAISHER, F.R.S.

## Answers to Correspondents

AMERICAN PUBLICATION: *A Subscriber.* The American *Gardeners' Monthly*, published in Philadelphia, we should think, would suit you best.

BLUE GLASS: *R. Slade.* There is no advantage in using blue glass, and we cannot recommend it.

BOOKS: *E. S.* We presume you want some horticultural journal, not one purely botanical; if so, *Die Deutsche Gartner Zeitung*, or the *Deutscher Garten*, would suit you. If you will tell us more precisely what you want, we will endeavour to assist you.

CELERY: *J. S. W.* We presume your Celery with the roots and hearts "scooped out as clean as a tube," must have been devoured by rats or mice; but have the depredators left no marks by which they can be traced?

DICKSONIA: *H. W. G.* The fronds are affected by the thrips, which is the cause of their turning brown. You must destroy these, either by fumigating with tobacco or syringing with some of the various insecticides which are effectual against that troublesome insect. In reply to your inquiry as to whether it would be safe to bury the stems of Tree Ferns 2 feet below where they are at present planted, we should say it would be quite safe, as the roots in these plants are chiefly formed on the surface of the stem.

HORTICULTURAL DIRECTORIES, &C.: *William Roberts.* No, thanks.

NAMES OF PLANTS: *G. M.* We cannot name scraps without flowers.—*C. Hart.* One of the forms of Odontoglossum Andersonianum.

ONION SEEDS: *J. L.* About 8 lb., if sown in drills, and from 9 lb. to 12 lb. if sown broadcast.

ZONAL PELARGONIUMS: *W. A. S.* Pinch out the tops, and tie out the stems so as to expose all the parts to the light, and they will push forth new shoots and form large bushy specimens. It is not desirable to cut them back. They should have been stopped once or twice during their growth if dwarf and bushy plants had been desired.

*** *T. P.*, who gives the address "Post-office, Hemel Hemstead," and who has sent two letters containing stamps, is requested to communicate his full name and address (not necessarily for publication), as the Post-office authorities refuse to receive letters at any post-office if addressed under initials or fictitious name.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

JOHN K. KING, Coggeshall, Essex—Garden Manual of Home-Grown Seeds.

LOUIS VAN HOUTTE, Ghent, Belgium—Tubers and Rhizomes of Gesneraceous and other Plants.

BARR & SUGDEN, King Street, Covent Garden—Choice Seeds for Flower and Kitchen Garden, Gladioli, Lilies, Iris, &c.

W. HEAN QUICK & CO., Barnstaple—Select List of Farm, Vegetable, and Flower Seeds.

J. CHEAL & SONS, Lowfield Nurseries, Crawley, Sussex—Vegetable, Flower, and Farm Seeds.

THE LAWSON SEED AND NURSERY COMPANY, Edinburgh and London—Garden and Agricultural Seeds.

DAVID GOLD MCKAY, Market Hill, Sudbury, Suffolk—Home-Grown Flower and Vegetable Seeds.

DOWNIE & LAIRD, Frederick Street, Edinburgh—Garden, Flower, and Agricultural Seeds, &c.

DICKSON & ROBINSON, 12, Old Millgate, Manchester—Select Vegetable and Flower Seeds, &c.

JOHN LAING & CO., Forest Hill, London, S.E.—Garden, Flower, and Farm Seeds, &c.

SMITH & SIMONS, Howard Street, St. Enoch Square, Glasgow—Seeds, Bulbs, Plants, Implements, &c.

LITTLE & BALLANTYNE, Carlisle—Spring Seed List, 1881.

GEORGE COOLING & SON, Bath—Vegetable and Flower Seeds.

WM. DRUMMOND & SONS, Stirling—Vegetable and Flower Seeds.

F. F. HALLETT, Manor House, Brighton—Pedigree Cereals.

COMMUNICATIONS RECEIVED.—W. H.—J. Hughes.—R. I. L.—J. R. J.—T. B.—A. D.—G. D.—E. M.—R. D.—H. W. W.—J. G.—S. P.—W. N. C.—E. H.—W. R.—J. V. & S.—G. W.—W. G. S.—W. S.—E. A.—H. K.—C.—B. D.—R. G.—T. H.—E. W. B.—E. B.—M. J. B.—G. N.—R. J. M.

# Markets.

*COVENT GARDEN, January 6.*

Further large consignments of Canadian Apples have reached us this week, prices being against buyers. Good samples of late Grapes are in demand, at increased values. Trade generally quiet. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Begonias, per doz. | 6 0–12 0 | Ficus elasticus, each | 1 6– 7 6 |
| Cyclamen, per doz. | 12 0–18 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cyperus, per dozen | 6 0–12 0 | Hyacioths, per doz. | 8 0–12 0 |
| Dracæna terminalis | 30 0–60 0 | — Roman, doz. | 12 0– .. |
| — viridis, per doz. | 12 0–24 0 | Lily of the Valley, per pot | 2 0– 4 0 |
| Epiphyllum, per dozen | 18 0–30 0 | Myrtles, per doz. | 6 0–12 0 |
| Erica gracilis, dozen | 9 0–18 0 | Palms in var., each | 2 6–21 0 |
| — caffra, per doz. | 8 0–12 0 | Poinsettia, per doz. | 9 0–18 0 |
| — hyemalis | 12 0–36 0 | Primula, single, per dozen | 5 0– 6 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Evergreens, in var., per dozen | 0–18 0 | Tulips, 12 pots | 8 0–12 0 |
| Ferns, in variety, doz. | 4 0–18 0 | | |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Bouvardias, per bun. | 1 0– 3 0 | Pelargoniums, 12 sprays | 1 6– 2 0 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Poinsettia, 12 blooms | 3 0– 6 0 |
| Chrysanth., 12 bun. | 9 0–18 0 | Primula, double, per bunch | 1 0– 1 6 |
| — 12 blooms | 2 0– 4 0 | — single, 12 sprs. | 0 6– 1 0 |
| Cyclamen, 12 blms. | 0 3– 0 6 | Roses (indoor), doz. | 2 0– 6 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | — yellow Fr., doz. | 1 0– 2 0 |
| Eucharis, per doz. | 4 0– 9 0 | — red French, doz. | 1 6– 2 6 |
| Euphorbia, 12 sprays | 3 0– 5 0 | — Christmas, 12 bl. | 1 0– 2 6 |
| Gardenias, 12 blms. | 15 0–30 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Hyacinth, Roman, 12 sprays | 1 6– 2 0 | Tuberoses, per dozen | 4 0– 8 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Violets, 12 bunches | 1 6– 2 6 |
| — red, 12 blooms | 1 0– 3 0 | — Neapolitan, Fr., per bunch | 3 6– 5 0 |
| Lilac, Fr., per bunch | 8 0–10 0 | — Czar, Fr., bunch | 1 0– 2 0 |
| Lily of the Valley, 12 sprays | 2 0– 5 0 | | |
| Marguerites, 12 blms. | 0 4– 0 9 | | |

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 1 6– 5 0 |
| Grapes, per lb. | 3 0– 7 0 | Pine-apples, per lb. | 1 0– 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Asparag., Fr., bndl. | 25 0– .. | — Cos, each | 0 6– 1 0 |
| — Sprue, per bund. | 1 6– 2 0 | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Parsley, per bunch | 0 4– .. |
| Celery, per buodle | 1 6– 2 0 | Radishes, per bun. | 0 2– .. |
| Chilis, per 100 | 3 0– .. | Rhubarb, per bund. | 1 0– .. |
| Cucumbers, each | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| Garlic, per lb. | 1 0– .. | Spinach, per bushel | 4 0– .. |
| Herbs, per bunch | 0 2– 0 4 | Tomatos, per lb. | 0 9– 1 0 |
| Horse Radish, p. bun. | 4 0– .. | Turnips, new, bunch. | 0 4– .. |

POTATOS:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 4*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

## SEEDS.

LONDON: *Jan.* 5.—The demand for Clover seed from the country is now becoming rather more general. English red is most inquired for, fine qualities being readily taken; but so far very little really good seed has found its way to market, the majority of the parcels shown being very deficient in size and character. Foreign reds so far have not met with much inquiry. White Clover is dearer, the offerings continuing very light indeed. Trefoil is extremely firm, as is also French Italian. Alsike, though standing at a very low level, does not meet with much favour. Timothy is exceedingly scarce, and prices seem likely to advance. There is now some sale for spring Tares. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CORN.

At Mark Lane on Monday there was no activity in the trade for English Wheat; foreign was in good supply, and sales progressed slowly, but at full prices. Fine malting Barley was in moderate request, at quite previous rates; medium and inferior were very inactive, and grinding descriptions met with a slow sale. Prices were unaltered. There was a moderate inquiry for Indian Corn at about previous rates. Oats were firm, at full prices. Beans and Peas changed hands at former prices, whilst those for flour were steadily maintained.—On Wednesday trade was very quiet. Wheat and flour were held for the rates of Monday, but only a trifling business was done. Maize was dull. Oats were taken off very slowly; and as regards other classes of produce there was no material change. Supplies were only moderate.—Average prices of corn for the week ending January 1:—Wheat, 41*s.* 11*d.*; Barley 31*s.* 5*d.*; Oats, 20*s.* 10*d.* For the corresponding period last year:—Wheat, 46*s.* 11*d.*; Barley, 37*s.* 7*d.*; Oats, 21*s.* 7*d.*

## CATTLE.

At the Metropolitan Market on Monday there was a good supply of beasts, and trade generally was dull; choice qualities, however, met with purchasers at fair rates. For a large supply of sheep there was a fair demand; choice qualities were not much lower than last reported, but inferior were difficult to dispose of. Choice calves were scarce and dear. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.*, and 5*s.* 6*d.* to 6*s.* 8*d.*; calves, 5*s.* 4*d.* to 6*s.* 8*d.*; sheep, 5*s.* 6*d.* to 6*s.*, and 6*s.* 4*d.* to 7*s.* 2*d.*—On Thursday the market was quiet in tone, without special feature. Beasts were dull and drooping in value, but sheep fairly steady. Calves sold at late rates.

## HAY.

Tuesday's Whitechapel Market report states that the supply of fodder offer was good, whilst trade was quiet at the following quotations:—Prime Clover, 100*s.* to 117*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 100*s.*; inferior, 30*s.* to 70*s.*; straw, 30*s.* to 39*s.* per load.—On Thursday the short supply of hay and straw on sale met with a better trade, and prices were a trifle dearer for straw.—Cumberland Market quotations:—Superior meadow hay, 92*s.* to 105*s.*; inferior, 50*s.* to 77*s.*; superior Clover, 108*s.* to 117*s.*; inferior, 80*s.* to 94*s.*; and straw, 34*s.* to 40*s.* per load.

## POTATOS.

The Borough and Spitalfields markets reports state that fair supplies were on sale. The trade was dull, as follows:—Scotch Champions, 75*s.* to 85*s.*; ditto Regents, 80*s.* to 100*s.*; Essex Regents, 80*s.* to 90*s.*; ditto Champions, 70*s.* to 80*s.* per ton; Belgian kidneys, 3*s.* 9*d.*; German reds, 3*s.* 6*d.* to 4*s.* 9*d.* per bag.—Last week's arrivals into London consisted of 11,139 bags from Hamburgh, 5763 Bordeaux, 532 Antwerp, 390 St. Nazaire, 5 tons Roscoff, 223 bags Rotterdam, and 84 bales Ostend.

## COALS.

The following are the prices current at market during the week:—West Hartley, 14*s.* 9*d.*; Walls End—Easington, 15*s.* 6*d.*; Hetton, 17*s.*; Hetton Lyons, 15*s.* 6*d.*; South Hetton, 17*s.*; Tunstall, 15*s.* 6*d.*; Hawthorns, 15*s.* 9*d.*; Lambton, 16*s.* 6*d.*; Original Hartlepool, 17*s.*; Wear, 15*s.* 6*d.*; Thornley, 16*s.* 6*d.*

**Government Stock.**—Consols, for delivery closed on Monday at 98¾ to 98⅞ ex div., and at 99 to 99¾ ex. div. for the account. On Tuesday and Wednesday the finishing quotations were, for delivery, 98⅝ to 98¾, and 98⅞ to 99 for the account—both ex div. On Thursday the final quotations were, for delivery, 98⅝ to 98¾ ex div., and 98⅞ to 99, ex. div., for the account.

# NEW PRIMULAS FOR 1881.

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA ALBA "MAGNIFICA."**

(Raised by Messrs J. & J. HAYES, Edmonton; purchased by B. S. WILLIAMS.)

The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.

**Per Packet, 5s.**

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA "CHISWICK RED."**

This is best described as the most brilliant crimson-scarlet Primula yet sent out, with habit as robust as "Alba Magnifica," the foliage very finely cut and deep green. Sold only in sealed packets bearing my trade mark.

**Per Packet, 5s.**

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA "RUBRO VIOLACEA."**

Is a remarkably fine plant of extremely robust habit, bearing flowers of an exceedingly peculiar violet-crimson shade, hence its name, most appropriately given by the Royal Horticultural Society of Chiswick. Sold only in sealed packets bearing my trade mark.

**Per Packet, 5s.**

## NEW and CHOICE VEGETABLE SEEDS

| | s. | d. |
|---|---|---|
| WILLIAMS' PROLIFIC DWARF FRENCH BEANS.. .. .. per quart | 2 | 6 |
| WILLIAMS' ALEXANDRA BROCCOLI .. .. .. .. .. per packet | 1 | 6 |
| WILLIAMS' IMPROVED DWARF BRUSSELS SPROUTS .. per packet | 1 | 0 |
| WILLIAMS' MATCHLESS RED CELERY .. .. .. .. per packet | 1 | 0 |
| WILLIAMS' MATCHLESS WHITE CELERY .. .. .. .. per packet | 1 | 0 |
| WILLIAMS' OSMASTON MANOR CUCUMBER.. .. .. .. per packet | 1 | 6 |
| WILLIAMS' GLORIA MUNDI ENDIVE .. .. .. .. per packet | 1 | 0 |
| WILLIAMS' VICTORIA COS LETTUCE .. .. .. .. .. per packet | 1 | 0 |
| WILLIAMS' MAGNUM BONUM ONION .. .. .. .. per packet | 1 | 6 |
| WILLIAMS' EMPEROR of the MARROW PEAS .. .. .. per quart | 2 | 6 |

For Opinions of the Press and Testimonials see

*B. S. W.'S ILLUSTRATED SEED CATALOGUE for* 1881,

Now Ready, Post-free to all Applicants.

☞ All Seeds amounting to 20s. Carriage Free to any Railway Station in England, and all of 40s. to any Railway Station in Scotland or Wales, or any Steam Port in Ireland.

*Flower Seeds Free by Post, except heavy kinds.*

# B. S. WILLIAMS,

Seed Merchant and Nurseryman,

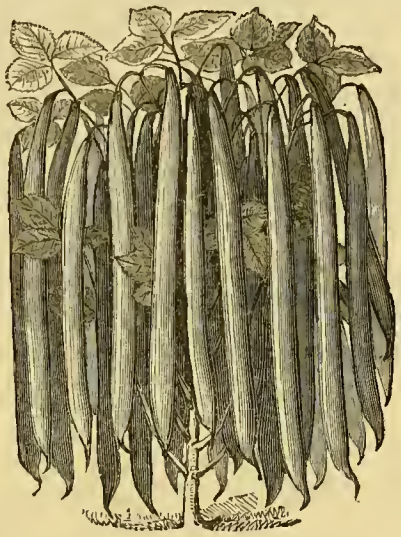
VICTORIA AND PARADISE NURSERIES,

UPPER HOLLOWAY, LONDON, N.

# CARTERS' VEGETABLE NOVELTIES

For 1881.

**NOTE.—All these Novelties have received First-class Certificates from the Royal Horticultural Society, or have been recognised as great improvements upon kinds already in cultivation.**



**NEW BEAN** — **(Dwarf)—Carter's Longsword.** A remarkably productive and fine-flavoured variety. Price, in sealed packets, 3s. per pint.

**NEW PEA** — **Carter's Stratagem.** The only Pea certificated by the Royal Horticultural Society in 1879. Price, in sealed packets, 5s. per pint.

**NEW PEA** — **Carter's Telephone.** Awarded the First-class Certificate of the Royal Horticultural Society, 1878. Price, in sealed packets, 3s. 6d. per pint.

**NEW PEA** — **Carter's Pride of the Market.** A superb new Dwarf Pea for Garden or Field Crops. Price, in sealed packets, 3s. 6d. per quart.

**NEW PEA** — **Culverwell's Telegraph.** An indispensable exhibition variety. Price, in sealed packets, 2s. per pint.

**NEW PEA** — **Carter's Little Wonder.** A Dwarf Wrinkled Marrow, as early as Advancer. Price, in sealed packets, 2s. 6d. per pint.

**NEW MELON** — **Blenheim Orange.** Awarded First Prize in a competition of thirty-one varieties at the June Show of the Royal Horticultural Society, afterwards awarded the First-class Certificate of the Royal Horticultural Society, September, 1880. Price in sealed packets, 2s. 6d. and 3s. 6d. per pkt.

**NEW CABBAGE** — **Chou de Russie.** An invaluable winter vegetable. Price, in sealed packets, 1s. 6d. per packet.

**NEW BEAN** — **Carter's Leviathan.** Takes First Prize everywhere. Producing enormous pods, 13 to 15 inches long. Price, in sealed packets, 2s. 6d. per pint

**NEW CUCUMBER** — **Carter's Model.** The largest and best exhibition variety in cultivation. Price, in sealed packets, 2s 6d. and 3s 6d. per pkt.

**NEW TURNIP** — **Carter's Jersey Lily.** The earliest and best white Garden Turnip known. Price, in sealed packets, 1s. per packet.

**NEW TURNIP** — **Carter's Golden Rose.** The hardiest and best flavoured winter Turnip. Price, in sealed packets, 1s. per packet.

**NEW TOMATO** — **Vicks' Criterion.** Awarded First-class Certificate of the Royal Horticultural Society. Price, in sealed packets, 1s. 6d. per packet.

**NEW CAULIFLOWER** — **Carters' Defiance.** Extra early forcing. The best early Cauliflower in cultivation. Price, in sealed packets, 1s. 6d. and 2s. 6d. per pkt.

**NOTE.—We are again offering Valuable Prizes for these Peas and a Collection of Vegetables at the Meetings of the Royal Horticultural Society. For Particulars see Schedule, or apply to us.**

THE QUEEN'S SEEDSMEN,

And Seedsmen by Special Warrant to H.R.H. the Prince of Wales.

237, 238, High Holborn, London, W.C.

# AIGBURTH BRUSSELS SPROUTS.

The Best-flavoured, Hardiest, and Most Productive Variety in Cultivation.

*IN USE FROM OCTOBER TO MARCH.*

**In Sealed Packets only, 1s. each.**

## ROBERT P. KER & SONS

Have the pleasure to recommend this remarkably fine variety of Brussels Sprouts. It has been tested by many of the most practical Gardeners, and pronounced the best sort in cultivation. The Royal Horticultural Society's trials of Brussels Sprouts at Chiswick also placed the "Aigburth" variety in the place of honour—1st.

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THORN QUICK and HOLLY for Hedges. Several thousands of the above to be Sold Cheap, the ground being required for other purposes Apply
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

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Their TRADE CATALOGUE of Agricultural, Garden, and Flower Seeds, may now be had on application. Any Customer not having received a Copy by post will oblige by letting them know. Special quotations for large quantities of seeds by arrangement.
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ROSES, CLEMATIS, SHRUBS, FRUIT TREES, &c., the leading varieties, very strong and healthy.
Descriptive priced CATALOGUE post-free on application.
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ABIES DOUGLASII, about 1 foot, transplanted, 7s. 6d. per 100, 68s. per 1000; CUPRESSUS LAWSONIANA, about 14 inches, twice transplanted, 8s. 6d. per 100, 75s. per 1000; PINUS LARICIO, stocky, transplanted, 7s. 6d. per 1000; PINUS RIGIDA, for planting in swampy places, 5s. per 1000.
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SPECIAL TRADE OFFER. — Several Millions of the finest Seedlings in the kingdom. 1-yr. and 2-yr. QUICK, fine; 1-yr. and 2-yr. BIRCH, very fine; 1-yr. and 2-yr. ALDER, fine; 1-yr. BEECH, stout; 1-yr. SWEET BRIER, 1-yr. SYCAMORE, 1-yr., ACACIA, good; 1-yr. LABURNUM, fine; 1-yr. BROOM, 1-yr. APPLES, very fine; 1-yr. PEARS, very fine; and 2-yr. LARCH, with good leaders. Special prices to large buyers. Samples and prices on application.
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FRUIT TREES, &c., at special low Prices.
GLOBE ARTICHOKES, strong, 3s. per dozen.
DUTCH MEDLARS, Standards, 9s. per dozen.
APPLES, ESPALIERS, 12s. per doz., 90s. per 100.
CURRANTS, White, 6s. per 100, 50s. per 1000.
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The above cannot fail to give satisfaction.
THOMAS PERKINS AND SONS, 34, Drapery, Northampton.

**The Nurseries, Elgin.—Established 1822.**

R. AND A. MORRISON offer the following Transplanted and other Trees:—
ALDER, incana, transplanted, 18 to 30 inches, fine.
,, glutinosa, transplanted, 18 to 30 inches, fine.
ASH, 1-yr. seedling, strong.
,, common, transplanted, 9 to 12 and 12 to 18 inches.
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ELM, Scotch, 1 and 2-yr. seedlings, strong.
LABURNUM, Scotch, 1 and 2-yr. seedlings, strong.
LARCH, true native, 1-yr., strong; 2-yr. seedlings.
,, transplanted, 9 to 12, 12 to 18, and 18 to 30 inches, fine.
MAPLE, English, transplanted, 12 to 18 inches.
,, Norway, transplanted, 12 to 18 and 18 to 24 inches.
PINUS AUSTRIACA, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr. 2-yr., 2-yr., strong and fine.
,, LARICIO, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., strong and fine.
,, MARITIMA, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr., strong and fine.
,, MONTANA, transplanted, 1-yr., 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr. strong and fine.
,, SYLVESTRIS (see Scotch Fir).
POPLARS, sorts, transplanted, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 feet.
FIR, Scotch, true native, 1-yr. 1-yr.; 2-yr., 1-yr.; 2-yr., 2-yr., 4 to 6, 6 to 9, 9 to 12 inches, transplanted, very fine.
SYCAMORE, 1-yr. seedlings, strong.
,, transplanted, 1 to 1½, and 1½ to 2 feet.
ARBOR-VITÆ, American, transplanted last year, finely rooted, 1 to 1½, 1½ to 2, and 2 to 3 feet.

**Special Offer of**

NURSERY STOCK, on land which must be cleared.
CEDRUS DEODARA, handsome, 2 to 3 feet, 9s. per dozen, 60s. per 100; 3 to 4 feet, 15s. per dozen, 100s. per 100.
DEUTZIA CRENATA FL.-PL., strong, 1s. 6d. per dozen, 10s. per 100.
HOLLIES, Common, transplanted and bushy, 6 to 12 inches, 10s. per 100, 75s. per 1000; 12 to 18 inches, 12s. 6d. per 100, 120s. per 1000; 1½ to 2 feet, 20s. per 100.
LAVENDER, strong and bushy, 2s. per dozen.
LAURELS, caucasica, transplanted and bushy, 1 to 2 feet, 16s. per 100.
,, Portugal, ditto, ditto, 1 to 1½ foot, 10s. per 100.
PICEA NORDMANNIANA, handsome, 3 to 5 feet, 20s. per dozen.
YEW, Irish, fine, 2 to 2½ feet, 30s. per 100.
,, English, fine, 1 to 1½ foot, 10s. per 100; 1½ to 2 feet, 15s. per 100.
BROOM, Common, 2-yr. in drills, selected, 4s. per 100.
HAZEL, transplanted, 2 to 3 feet, stout, 16s. per 1000.
HORNBEAM, transplanted, 3 to 4 feet, 25s. per 1000.
POPLARS, Black Italian, standards, 20s. per 100.
PRIVET, Evergreen, 2-yr. cuttings, well rooted, 10s. per 1000.
,, transplanted, 2 to 3 feet, 20s. per 1000.
SNOWBERRY, 2 to 3 feet, stout, 21s. per 1000.
All in fine condition for removal.
THOMAS PERKINS AND SONS, 34, Drapery, Northampton.

RHODODENDRON PONTICUM, transplanted, bushy, 4 to 6 inches, 60s.; 6 to 9 inches, 80s. per 1000; 9 to 12 inches, 12s.; 12 to 15 inches, 15s. per 100. Trade price on application.
AUCUBA JAPONICA, 9 to 12 inches, 4s.; 12 to 18 inches, 6s. per dozen.
LAUREL, Common, bushy, 2½ to 3 feet, 18s. per 100.
CEDRUS DEODARA, 1½ to 2 feet, 9s.; 2 to 2½ feet, 12s. per dozen.
YEW, English, 2½ to 3½ feet, 8s. per dozen.
,, Irish, Seedlings from, 1½ to 2 feet, 5s. per dozen.
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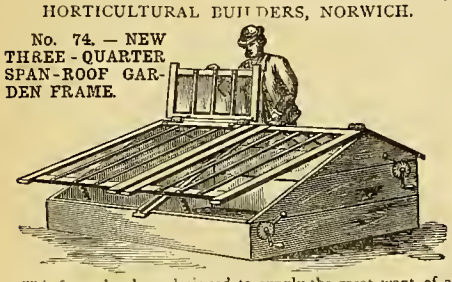

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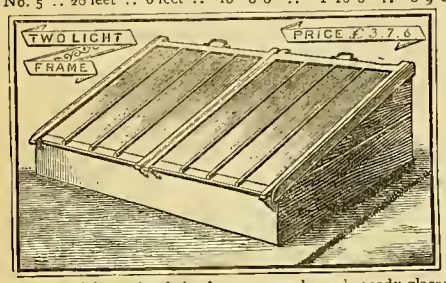


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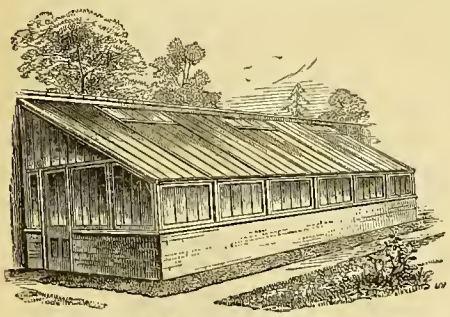

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| | Inches. | Inches. | |
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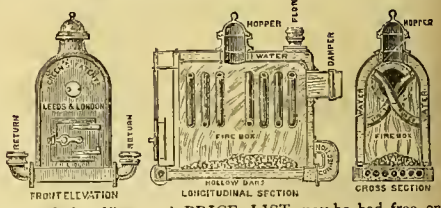
*With Tubes or Shelves, and Hollow or Ordinary Cast-iron Grate Bars.*

**SADDLE BOILERS,**

With WATERWAY BACKS and WELDED BOILERS, Specially adapted for Heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

*They are the neatest, cheapest, most effective and durable of any extant.*

The Tubular ones are remarkable for their great Heating Power, Slow Combustion, and the length of time the Fire will Burn without requiring attention.

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3 feet 6 inches, 5 feet, and 6 feet.

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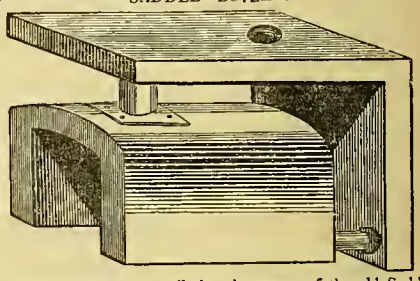
## JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. High. | Wide. | Long. | To heat of 4-in. Pipe. Feet. | Price. £ | s. | d. |
|---|---|---|---|---|---|---|
| 20 in. | 18 in. | 18 in. | 300 | 7 | 0 | 0 |
| 20 ,, | 18 ,, | 24 ,, | 400 | 8 | 0 | 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 | 0 | 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 | 0 | 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 | 0 | 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 | 0 | 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 | 0 | 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 | 0 | 0 |

Larger sizes if required.

*From* Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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When ordering Boilers please refer to the above advertisement.

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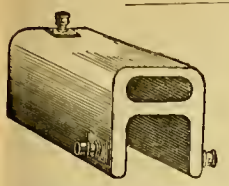
(LIMITED).



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TERMINAL END
**SADDLE & FLUE BOILER.**
Unsurpassed for economy and utility.

**HEATING APPARATUS fixed complete.**
Particulars on application.

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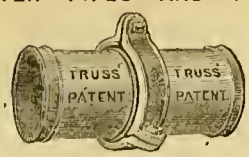
also SINGLE, DOUBLE, TREBLE, or QUADRUPLE

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*ANY LABOURER CAN FIX THEM.*

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*Catalogues Free on Application.*

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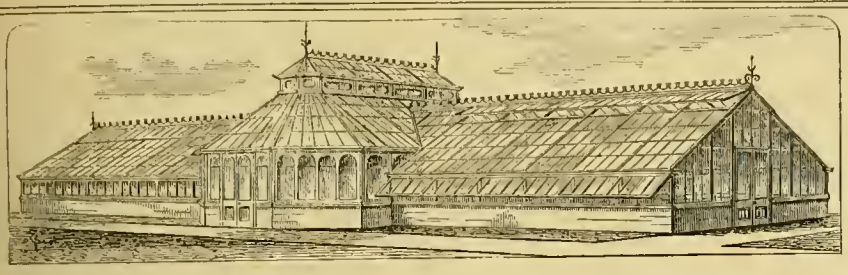

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Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price*. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.

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**Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.**
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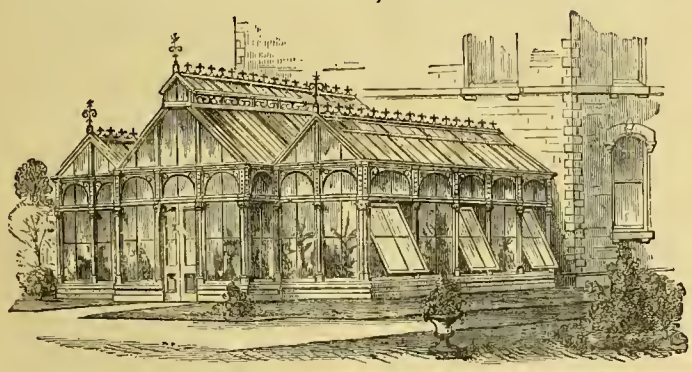

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The Best Hot-Water Joint is Jones' Expansion Joint.

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ENGINEERS and IRONFOUNDERS, STOURBRIDGE.

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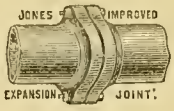


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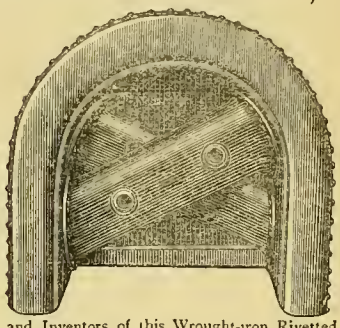

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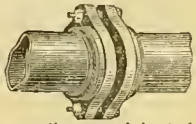

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*This Joint, being easily removed, is specially adapted for Tenants.*

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| 8 ,, | .. | .. 0 5 0 | | 19 ,, | .. | .. 0 10 6 | |
| 9 ,, | .. | .. 0 5 6 | | 20 ,, | .. | .. 0 11 0 | |
| 10 ,, | .. | .. 0 6 0 | | 21 ,, | .. | .. 0 11 6 | |
| 11 ,, | .. | .. 0 6 6 | | 22 ,, | .. | .. 0 12 0 | |
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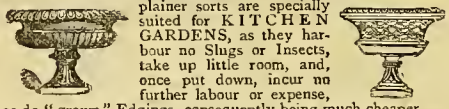

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**To Gardeners and Others.**

THE TRUSTEES of ST. GEORGE in the EAST will meet on WEDNESDAY, January 12, 1881, to ELECT a BEADLE and CARETAKER of the Churchyard. Candidates must be between the age of 25 and 35, and have a knowledge of Gardening. Salary, commencing at £78, will be increased £2 per annum for four years, if the duties are satisfactorily performed. Livery and a suit of working clothes once a year will be provided. Candidates to be in attendance with their testimonials at the Vestry Hall, Cable Street, on January 11, at 3 o'Clock in the afternoon. A detailed list of the duties may be seen at my office between the hours of 10 and 5.

T. G. HARRISON, Vestry Clerk and Clerk to the Trustees.

Vestry Hall, January 30, 1880.

WANTED, in a Provincial Nursery, a MAN to take Charge of the Glass Department. He must be a good Propagator and Grower of popular Plants, understand Forcing Flowers early, and have a general knowledge of Plants and their value. Wages to commence at 25*s.* per week. Apply, in own handwriting, with references, to G. B., R. Silberrad & Son, 25, Savage Gardens, London, E.C.

**Winter Gardens, Southport.**

WANTED, a GARDENER. Must be young and active, and possess a sound knowledge of Stove and Greenhouse Plants. Good references indispensable. State wages required.—Mr. LONG, Manager, Winter Gardens, Southport.

**Gardener and Wife.**

WANTED, an active man as UNDER-GARDENER—wife as LAUNDRESS—without incumbrance. House found.—R. H. APPLETON, Woodside Hall, Preston-on-Tees, *viâ* Darlington.

WANTED, an experienced PROPAGATOR (INDOOR)—State age, wages, &c.—FRAS. R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

WANTED, an energetic married man, to PROPAGATE and GROW a mixed Collection of Plants for Market and Cut Flowers. Wages to commence at 23s., and cottage and garden.—W. AND J. BROWN, Wothorpe, Stamford.

WANTED, near London, a PROPAGATOR and GROWER.—Must thoroughly understand Forcing Roses and other Flowers for Market purposes. References as to character, &c., will be required.—Apply, by letter only, N. C., *Gardeners' Chronicle* Office, W.C.

WANTED, a practical FOREMAN, having a good knowledge of Grapes, Cucumbers and Peaches on a large scale. Married man preferred. Wages, 30s. per week.—H. DICKINSON, Shardlow, near Derby.

WANTED, INDOOR FOREMAN and PROPAGATOR, under Manager. Must have a thorough knowledge of Plant Growing for Market and the Cut Flower Trade. As he will have sometimes to Wait upon Customers a knowledge of Outdoor Stock is desirable. State wages required, and other particulars, to W. BARRON AND SON, Elvaston Nurseries, Borrowash, Derby.

**Nursery Foreman Wanted.**

MESSRS. THOMAS METHVEN AND SONS are in WANT of a FOREMAN for the Outdoor Department of their Nurseries. Must have a thorough knowledge of the Rearing of Seedlings and transplanted Forest Trees, Fruit Trees, Coniferæ, &c.—Apply, stating all particulars and salary expected, Leith Walk Nurseries, Edinburgh.

WANTED, as GROUND FOREMAN, ASSISTANT SALESMAN, and to Attend Market two or three days a week. Must have a knowledge of the Value of Plants, and be strictly honest, sober, and trustworthy. A good address indispensable.—State wages required, and other particulars, to W. BARRON AND SON, Elvaston Nurseries, Borrowash, near Derby.

WANTED, AT ONCE, an experienced man as GROWER under Glass, where Cut Flowers are made a speciality.—Address, stating age, wages required, and experience, to TURNER BROS., Florists, Garston, Liverpool.

WANTED, a young MAN—from a market nursery preferred—with a good knowledge of Making-up Vegetable and Flower Seeds, and be able Wait upon Customers. Also one for general Nursery Work, Budding, Grafting, &c.—Apply, with references, stating wages, to R. W. P., Ashgate Road Nurseries, Chesterfield.

WANTED, a young MAN, Quick at Potting and Tying—one used to Market work preferred—R. CHILDS, Blenheim Nursery, Rye Lane, Peckham, S.E.

WANTED, an IMPROVER under Glass.—A first-rate opportunity.—For particulars apply to W. CHILD, The Gardens, Croome Court, Severn Stoke, Worcester.

WANTED, as SHOPMAN, an active young man, well acquainted with the Seed Trade in all its branches.—Apply with references, and stating salary expected, to JOHN COWAN, The Vineyard and Nurseries, Garston.

WANTED, a young man, as ASSISTANT SHOPMAN.—State age, experience, and wages required.—DONALD CUTHBERT, Clayton Square, Liverpool.

WANTED, as ASSISTANT SHOPMAN, an active industrious man, well up in the Trade. Wanted also, a good PENMAN.—FREEMAN AND FREEMAN, Seed Merchants, Norwich.

WANTED, a WAREHOUSEMAN, for the Seed Trade; a practical working man—one who has been accustomed to Inspect the Growing Crops—preferred.—State age and salary required to GEORGE COOPER, Seedsman, Hertford.

WANTED, a young MAN (about 20), with some knowledge of the Seed and Nursery Business. State age, experience, and salary expected, to B. R. DAVIS, The Yeovil Nurseries, Yeovil.

## WANT PLACES.

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GARDENER (HEAD).—Age 37, married, no family; steady, energetic, and trustworthy. An excellent Grape Grower, also a good Plantsman, and well up in every other department of Gardening. Excellent references.—JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool.

GARDENER (HEAD); age 35.—A GENTLEMAN can highly recommend his Gardener. Seven years' services. A steady and thorough practical man in all branches of Horticulture.—THOS. DUTTON, Esq., Broughton Park, Manchester.

GARDENER (HEAD); age 31.—Mr. DAVIDSON, Gr. to the Earl of Harrowby, Sandon Hall, Stone, Staffordshire, can confidently recommend his Foreman to any Lady or Gentleman requiring a thoroughly practical and energetic man. No single-handed place accepted.

GARDENER (HEAD).—Mr. PRATT, The Gardens, Hawkstone, Shrewsbury, can with confidence highly recommend to any Lady or Gentleman a thorough practical man. Fourteen years' experience. Four years as General Foreman in present situation.—Address as above.

GARDENER (HEAD).—Married; Scotch; steady, energetic, and trustworthy. Twenty-five years' practical experience in all branches of gardening. An excellent Grape Grower, and good Plantsman. Thirteen years' excellent reference from last situation.—JAS. GALBRAITH, 14, Mary Ann Place, Catford, S.E.

GARDENER (HEAD), where two or more are kept.—Age 27; extensive experience in all departments. References of the highest order from previous situations.—C. W., Shotley Hall, Northumberland.

GARDENER (HEAD).—Age 30, single; thoroughly understands Stove and Greenhouse Plants, Vines, Peaches, Cucumbers, Melons, and Flower and Kitchen Gardening. Good references.—W. H., 15, Victoria Place, Kilburn, N.W.

GARDENER (HEAD).—T. ROURKE, Head Gardener during the last twenty-five years to the late respected Mr. White, of Killakee, Co. Dublin, is now disengaged, and begs to offer his services to any Nobleman or Gentleman requiring the same. Killakee, apart from its natural beauty and general high keeping, has long been noted under Mr. Rourke's management for the variety, quantity, and high excellence of its horticultural productions.—Mr. F. W. BURBIDGE, University Botanical Gardens, Pembroke Road, Dublin.

GARDENER (HEAD); age about 41, married, small family; Scotch.—The Hon Mrs. H., 24, Prince's Gate, London, W., recommends highly a Man as above. Much experience in Kitchen and Landscape Gardening. Excellent Vine Manager, and very successful with Vegetables and Wall Fruits; competent to Lay-out Grounds, and understands Forest Trees. Highest possible personal character, and certificates of ability from Gentlemen and Nurserymen.—DONALD McFARLANE, 24, Sutton Street, Stoneycroft, Green Lane, Liverpool.

GARDENER (HEAD, WORKING).—Age 34, married; thoroughly practical in all branches of Gardening. Good character.—J. TOMLIN, Kenell Ride, Ascot.

GARDENER (HEAD, WORKING).—Age 38, married; thoroughly experienced in all branches of the profession. Over two years' good character from present place.—GARDENER, Ferndale, Nightingale Lane, Clapham, S.E.

GARDENER (HEAD, WORKING).—Age 48, married, no encumbrance; understands Gardening in all branches, also Pasture Land and Stock. Good character.—J. PECK, Bevereye, Hampton, Middlesex.

GARDENER (HEAD, WORKING, First-class).—Age 32, single; good Fruit, Plant, and Vegetable Grower, also Table Decoration, &c. Has had good experience both in England and Scotland. Highest character.—HEAD GARDENER, Marble Hill, Twickenham, S.W.

GARDENER (HEAD, WORKING).—Thoroughly understands the profession in all its branches. Wife first-class Laundress and Dairywoman. Highest testimonials.—GARDENER, 21, Ryder Terrace, Twickenham, W.

GARDENER (HEAD, WORKING).—Age 30, married, one child; has a thorough practical knowledge of the profession in all branches. Good character. Disengaged on January 24.—C. N., Gardener's Cottage, Woodhays, Wimbledon, S.W.

GARDENER (HEAD, WORKING).—Age 39, one son (aged 12); good practical experience in all branches of Gardening. Eighteen years in good establishments. Can have good characters from present and previous employers. Leaving through establishment being broken up. Wife good Dairywoman, if required.—H. H., Blackstone's, Redhill, Surrey.

GARDENER (HEAD, WORKING), in a Nobleman's or Gentleman's Family.—Married, one child; has had experience in England and the North of Scotland. Thoroughly understands Gardening in all its various branches. Good character.—GARDENER, 1, Myrtle Terraace, Myrtle Road, Acton, London, W.

GARDENER (HEAD, WORKING), where three or more are kept.—Married; two children. Eleven years' practical experience. Two years' good character from last employer. Well up in the cultivation of Grapes, Peaches, Melons, Cucumbers, Strawberries, Stove and Greenhouse Plants, Early and Late Forcing, and Flower and Kitchen Gardening.—R. DOWDING, The Gardens, Bagshot Park, Surrey.

GARDENER.—Age 28; married, no family. Understands the profession in all branches. Good reference.—R. F., 166, Prince of Wales Road, Haverstock Hill, N.W.

GARDENER (GOOD).—Age 33; well up in the general routine of a Gentleman's Garden, also Stock. Excellent character.—GARDENER, Spring Cottage, Station Road, New Hampton, Middlesex.

GARDENER, under a Foreman.—ADVERTISER (age 22, single), desires to Improve himself, and has no objection to pay a small Premium if required. Good character.—FREDERICK COOPER, Sands Seale, Farnham, Surrey.

GARDENER (WORKING, SINGLE-HANDED or otherwise).—Age 33, single; seventeen years' good practical experience in all branches. Good character.—F. H., 5, Canterbury Terrace, Kilburn, N.W.

GARDENER (SINGLE-HANDED, or where another is kept).—Age 27, married; good character.—J. C., C. W. Haynes & Co., 5, West Street, Harrow.

GARDENER (SINGLE-HANDED).—Age 23. Good reference.—Address, with full particulars to H. M. W., 11, Ravenswood Terrace, Ravenswood Road, Balham, Surrey.

GARDENER (SINGLE-HANDED).—Age 28, single; twelve years' experience. Good character from last and previous situations.—E. M., 6, Francis Street, Paddington, W.

GARDENER (SINGLE-HANDED, or GOOD SECOND).—Age 28, single; twelve years' experience. Thoroughly understands the profession, including Stove and Greenhouse, Flower and Kitchen Gardening, &c. Three years' good character.—F. K., Foxlease Cottage, Clay Hill, Lyndhurst, Hants.

GARDENER (SINGLE-HANDED, or UNDER).—Age 24, married; to live in the lodge preferred. Ten years' experience. Good references.—J. CARPENTER, The Gardens, Powis Castle, Welshpool.

GARDENER (FOREMAN, or SECOND in the Houses preferred).—Age 27, single; twelve years' experience—last twelve months in a leading Cut Flower establishment. Good character.—G. H., Witton, North Walsham, Norfolk.

GARDENER (UNDER).—Age 24; eight years' practical experience.—T. S., 10, Hopkins Street, Golden Square, London, W.

GARDENERS (UNDER).—Mr. H. THORNBER, Head Gardener, the Winter Gardens, Blackpool, can recommend three honest and steady young men as above, all having had several years' experience in good situations. For particulars apply to the above.

GARDENER, or GARDENER and LAUNDRESS.—Thoroughly understands the profession in all its branches. Testimonials of the highest character. State particulars, &c.—The GARDENER, Niton Rectory, Isle of Wight.

GARDENER and FORESTER.—S. HILL, eleven years Gardener and Forester in the Earl Annesley's, Castlewellan demesne, wants a similar situation. Satisfactory reasons for leaving.—Castlewellan, County Down.

FOREMAN, in a good establishment.—Age 26; year and half in present situation. First-class references from present and previous situations.—FOREMAN, Haydon Hall Gardens, Pinner, Middlesex.

FOREMAN.—Well up in the Propagation of Coniferæ, Roses, Rhododendrons, Clematis, &c. Eight years in present situation as Manager. Leaving on account of the proprietor making alterations by taking his son into the business. Will be highly recommended.—S. LEV, Malmesbury Road, Springbourne, Bournemouth.

FOREMAN PROPAGATOR and GROWER.—Thoroughly efficient in all branches of the Trade. First-class references.—A. B., Mr. W. Bull, King's Road, Chelsea, London, S.W.

FOREMAN and PROPAGATOR, or PROPAGATOR and GROWER for Market, or otherwise. Twenty-five years' practical experience in some of the leading nurseries. Good references from last place.—G. S., 7, Victoria Cottages, Holmsdale Road, Selhurst, Surrey.

FOREMAN (ASSISTANT), in the Houses.—Age 25, single; eight years' excellent practice. Good character.—H. R., 2, Loam Pit Vale, Lewisham, S.E.

NURSERY FOREMAN (OUTDOOR).—Many years' experience. Good testimonials. Near London preferred.—A. B., Shorrold's, North End, Fulham, S.W.

NURSERY FOREMAN (OUTDOOR).—Married; well practised in Budding and Grafting Fruit Trees, Roses, Clematis, Conifers, Layering, Inarching, and Propagation of Deciduous Flowering Trees and Shrubs, and the rearing of Nursery Stock generally. Twenty years' practice. Understands the management of men. Good character from present employer.—A. Z., Mr. Davis, High Street, Solihull, near Birmingham.

PROPAGATOR, or PROPAGATOR and GROWER.—Soft-wooded Stock, Cut Flowers, Ferns, Foliage Plants, Roses, &c. Good references.—A. F., 2, Church Terrace, Albert Road, South Norwood, S.W.

PROPAGATOR and GROWER.—Well up in Roses, Conifers, Soft-wooded Plants, &c.; good Budder and Grafter. First-class references.—A. U., Upton Nurseries, Chester.

JOURNEYMAN, in a Gentleman's Garden.—Aged 20; two years' good character, and four years previous.—R. V., 20, Hertford Street, Mayfair, W.

JOURNEYMAN, in a good establishment, or FOREMAN in a smaller one. Age 26.—M. W. CHARLTON, Cope Street, Barnsley.

IMPROVER, in a Nobleman's or Gentleman's establishment, in the Houses preferred.—Age 19; good character and highly recommended by the Head Gardener.—A. W., Lulworth House, Shanklin, Isle of Wight.

**Seed Trade.**

SHOPMAN.—Age 23; eight years' experience in all branches of the Trade. First-class references.—ALPHA, 59, Cauldwell Street, Bedford.

SHOPMAN, or SECOND, in Retail Seed Trade.—Age 23; good Penman and Accountant. Three and a half years in last situation. Good reference.—W. HARRIS, Hammerwood, East Grinstead.

CARPENTER, on a Gentleman's Estate or a Nursery.—Married; understands the Fitting of Hot-water Pipes, Painting, and Glazing, and can make himself generally useful.—J. POTTER, Princess Road, Springbourne, Bournemouth.

DINNEFORD'S MAGNESIA.

The Medical Profession for over Forty Years have approved of this pure solution as the Best Remedy for

**ACIDITY OF THE STOMACH, HEARTBURN, HEADACHE, GOUT, AND INDIGESTION,**

and as the safest Aperient for Delicate Constitutions, Ladies, Children, and Infants.

DINNEFORD'S MAGNESIA.

HOLLOWAY'S OINTMENT and PILLS.—Diseases of the Skin.—No case of disease of the skin, be its nature what it may, has failed to be benefited when these potent remedies have been properly applied. In scrofulous and scorbutic affections they are especially serviceable. Scurvy, eruptions, and glandular swellings, which had resisted all other modes of treatment and gradually become worse from year to year, have been completely cured by Holloway's cooling Ointment and purifying Pills, which root out the disease from the blood itself and leave the constitution free from every morbid taint. In the nursery Holloway's Ointment is simply invaluable; it will give ease in Sprains, Contusions, Burns, Scalds, and Infantile Eruptions, and may always safely be applied by any ordinary attendant.

# FACTS WORTH READING

## BOILERS, BURGHLEY HOUSE GARDENS,

**The Seat of the Most Noble the Marquis of Exeter,**

MR. GILBERT *writes as follows*:—"Ten years ago we put down two of Weeks's Patent Upright Tubular Boilers to replace eleven of the then Improved forms of Saddle Boilers, to which 8000 feet of piping is attached. We find one Boiler sufficient to work the entire apparatus, except in very severe weather, when we use both. Weeks's Boilers are staunch Gardeners' Friends. They keep our minds at ease, and consequently prevent our hair turning grey. I may add that our Boilers have not cost One Shilling for Repairs since the time they were fixed."

## BOILERS at HUTTON HALL, GUISBOROUGH, YORKS,

**The Seat of J. W. Pease, Esq., M.P.**

Five years ago we received commands to remove a series of Improved Saddle Boilers, which, after repeated trials, during a period of twelve months, were found incapable of doing the work. At the same time we made an addition of 3600 feet of piping, and put down five of our Patent Duplex Upright Tubular Boilers to do the whole of the work, which now consists of 14,000 feet of piping, in two distinct systems. After a five years' trial Mr. McIndoe, the Head Gardener, writes as follows:—

"Respecting the five Tubular Boilers you fixed here five years ago, I have, indeed, great pleasure in saying nothing can be more satisfactory than the manner in which they do their work, and this, too, with an amount of fuel and labour that bears a very favourable comparison with any Boilers I have ever had to do with. As you are aware, there is upwards of 14 000 feet of piping attached to the Boilers, and this heats twenty-seven houses or compartments. They do this most efficiently, and without any pressure. Severe as the last and this winter has been, we have not lost one moment's sleep on account of our Boilers, or failing temperature in the houses. I regret the principle of your Tubular Boilers is not better understood by practical Gardeners and would-be Hot-water Engineers. Were it so there would be a great deal less misery and up-hill work in early forcing."

## BOILERS at WILTON HOUSE.

**Fuel Consumed.**

| | | | |
|---|---|---|---|
| 1876.—COALS (culm), 64 tons 18 cwt., at 22*s.* per ton | £71 | 7 | 9 |
| CHALK (the getting), 10 tons at 1*s.* 6*d.* per ton | 0 | 15 | 0 |
| 1877.—COALS (culm), 55 tons 17 cwt., at 20*s.* per ton | 55 | 17 | 0 |
| CHALK (the getting), 18 tons, at 1*s.* 6*d.* per ton | 1 | 7 | 0 |
| 1878.—COALS (culm), 61 tons 14 cwt., at 19*s.* per ton | 58 | 12 | 3 |
| CHALK (the getting), 20 tons, at 1*s.* 6*d.* per ton | 1 | 10 | 0 |
| Total Cost for 3 years .. .. | 189 | 9 | 0 |
| Deduct value of Lime burned and used in the Garden, 168 quarters at 4*s.* per quarter .. | 33 | 12 | 0 |
| Cost of Fuel for 3 years .. | £155 | 17 | 0 |

Or for 1 year, £51 19*s.* There being 18 compartments, about 33 feet by 12 feet; it costs £2 17*s.* 8½*d.* per year, or 1¾*d.* per day to heat each.

## BOILERS AT EASTWOOD PARK,

**GLOUCESTERSHIRE,**

**The Seat of Sir George Jenkinson, Bart.**

Mr. WOOLFORD, *the Gardener, writes*:—"It gives me much pleasure to inform you that the Duplex Upright Tubular Boiler gives us great satisfaction. We get plenty of heat with very little trouble. I have had to do with most kinds of hot-water boilers, but I prefer Weeks's Upright Tubular."

## BOILER AT LUCKNAM, CHIPPENHAM, WILTS,

**The Seat of R. Walmesley, Esq.**

Mr. A. MACKAY, *the Gardener, writes as follows*:—"It affords me great pleasure to add my testimony, in favour of your Patent Duplex Upright Tubular Boiler. It does its work well and satisfactory, being both economical in fuel and labour, and in my opinion cannot be surpassed in heating power. I have had upwards of twenty-five years' experience, with almost every description of boiler, and can with confidence assert that yours is the best boiler I have ever worked.

## ZOOLOGICAL SOCIETY'S GARDENS,

"Regent's Park, London, N.W., September 23, 1880.

"Messrs. J. WEEKS & Co.—Gentlemen, I have much pleasure in stating that since the introduction of your Hot-water Apparatus, about twenty years ago, into these gardens, I have found the working of the same most admirable, not only with reference to the warmth, and with ease of management, but in the economy in fuel and labour. I am constantly asked by the visitors and Fellows of the Society how the various houses are kept warm during the winter, and at the same time supplied with sufficient fresh air. I invariably call their attention to the new lion house, as this building appears to me perfection as far as warmth and ventilation are concerned; and I feel it is my duty to recommend this mode of heating buildings, whether intended for animals or plants.—Yours faithfully,

"A. D. BARTLETT."

## BOILER AT LOWER EATON, HEREFORD.

**The Seat of James Pulley, Esq.**

At these gardens two so-called "improved forms of Boilers" were tried for two years, and failed. We were requested to remove both, but we suggested the removal of one only, leaving the other for a comparative test by the side of our Duplex of the same size. This was agreed to, with the following result, as given by Mr. Williams, after three years' trial:—"Your Patent Duplex will heat the houses much better and with less fuel than the other Boiler. We have therefore discontinued using the latter, and now use your Boiler only."

## BOILERS at GIBSON'S HILL, NORWOOD.

**Fuel Consumed.**

Mr. ANDERSON, *the Gardener, writes*:—

| | |
|---|---|
| "When I came here seven years ago we had three Saddle Boilers, and the Fuel Account was hard upon .. .. .. .. .. .. | £50 per year. |
| —rather over than under—for steam coal, now the fuel for your Tubular costs about .. .. | £20 per year. |
| Clear Saving in Fuel .. .. .. | £30 per year. |

And this Tubular heats about 3000 feet of piping. I have worked Tubulars now for twelve or fourteen years, and have never had a breakdown yet, so I stick to my friends."

## MR. SOLOMON'S BOILERS.

At the two famous Fruit-growing Establishments, Peckham Rye, the property of Mr. Solomon, Fruiterer by appointment to Her Majesty the Queen, His Royal Highness the Prince of Wales, and other members of the Royal Family, a series of different forms of Boilers have been tried and replaced by three of our Patent Duplex Upright Tubulars, making a total of four in operation, now working both the entire establishments.

One of these Boilers had been on its trial for about 10 years, thus showing that no hasty conclusions were formed as regards the adoption of the latter three, which after several years' test Mr. Solomon states, in a letter dated March 2, 1880:—

"I can always state with confidence that all you have undertaken for me in the shape of Hot-water Work, &c., has always proved in the highest degree satisfactory and successful. After many years' experience and observation it is my decided opinion there is no Boiler extant so powerful, efficient, and economical as your Patent Duplex Upright Tubular. The one that has been working 10 years, and those of a later date, continue to give my Manager and myself perfect satisfaction."

## BOILER at the PINE-APPLE NURSERY.

Messrs. E. G. HENDERSON & SON *say*:—"After the enlargement and additions to our establishment we put down two large improved Saddle-shaped Boilers. Imagine our great disappointment when in the unusually mild winter of 1877-78 we found ourselves with deficient boiler power to work our Heating System. True, the circumstances were somewhat exceptional, the number of the houses to be heated being unusually large, at some distance apart, at different levels, containing nearly two miles of piping, and divided into ninety-five compartments. Still, as the season was so mild, no difficulty should have been experienced in obtaining sufficient heat. However, as the Boilers failed to supply this, it became apparent that we must have additional boiler power, either by fixing a third Boiler of the same type, or by the substitution of another and more powerful one of another pattern. We decided upon the latter course, and having seen some very favourable instances of Weeks's Patent Duplex Upright Tubular Boilers we had one of their large ones, with all the recent improvements, put down and attached to the piping. The result we are glad to say is a complete success, so much so that we have not only been enabled to entirely dispense with the two large Saddle Boilers, but to discontinue the use of mats."

## BOILERS at MESSRS. WOOD & INGRAM'S,

**Huntingdon.**

Messrs. WOOD & INGRAM, of the Nurseries, Huntingdon, *write as follows*:—"Your Upright Tubular Boilers have been in use at our establishment for many years with perfect success. At the present time we have two, viz., one fitted on the high level in a shallow stokehole, with the top of boiler 6 feet above its work, the other in an ordinary stokehole, with the apparatus attached in the usual way. Either of these will work with the greatest ease our entire apparatus, consisting of about one mile of piping. We use them alternately. The Duplex Boiler on the high level has always and is now doing its work in first-rate style. Many of our clients and visitors have expressed their astonishment at its efficiency when they are informed of the great extent of piping it works so easily, with so small a cost in fuel and labour compared with other boilers we have before used."

## BOILER AT CHALK FARM NURSERY, NORWICH.

**Another instance where our Boiler has superseded others.**

Number of Houses, 4, each 120 feet long = total length 480 feet
Number of Houses, 6, each 100 feet long = total length 600 feet

Total Length of Houses .. 1080 feet

Total length of piping, upwards of One Mile.
Size of Boiler, No. 5.

Mr. HANNENT *says*:—"I beg to assure you that the Boiler answers every purpose, and I am perfectly satisfied."

*New and Enlarged Book of Designs (15th Edition) and full particulars of Boilers sent, post-free, on application.*

# J. WEEKS & CO.,

## HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS,

## KING'S ROAD, CHELSEA, LONDON, S.W.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, January 8, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 368.—Vol. XV. { New Series. } SATURDAY, JANUARY 15, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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Now Ready, in cloth, 16s.,
*THE GARDENERS' CHRONICLE,*
Volume XIV., JULY to DECEMBER, 1880.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

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just received from Japan in very fine condition.

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On view the morning of Sale, and Catalogues had.

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FLORIST and JOBBING BUSINESS for SALE, in one of the best suburbs, near London. Comprises Seven-roomed House, Seed Shop, large Show-house, Six Span-roof Greenhouses, about 40 ft. long each. Lease, 53 years unexpired; Rent, £6 per annum. Price for House, Glass Erection, Lease, £1150: £300 can remain.—D. J., 305, Deacon's Advertising Offices, 154, Leadenhall Street, London, E.C.

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TO BE SOLD, a well-appointed CONSERVATORY, SHOP, and OFFICE, fitted with Desk, Seed Boxes, Shelves, Gas and Hot-water Pipes. Situate in the main road, Brixton.

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Half an hour's ride from London, in the best position in the Town.

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TO BE LET, with Immediate Possession, SEEDSMAN'S SHOP, HOUSE, and nearly an Acre of NURSERY GROUND, at Hemel Hempstead, within five minutes' walk of the Market Place. Rent, £42.

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J. ROBERTS, The Gardens, Gunnersbury Park, Acton, W.
J. HUDSON, The Gardens, Gunnersbury House, Acton, W.
J. AUSTEN, Ashton Court Gardens, Bristol.
W. WILDSMITH, The Gardens, Heckfield, Winchfield.

**To the Trade.**

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All well transplanted, bushy, and fine roots.
Priced LIST on application.
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WILLIAM ROBINS, The Gardens, Hartwell House, Aylesbury.

TO THE TRADE.

PRIMROSE, double white, fine plants, 14s. per 100.
PRIMROSE, double lilac, fine plants, 12s. 6d. per 100.
" " yellow, fine plants—these are very fine plants, full of flower-buds, suitable for pots or window boxes—14s. per 100.
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**Seedling Thorns and other Forest Trees, Hardy**
CONIFERS and SHRUBS, CHEAP.

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Free on rails. Cash.

Also 10,000 CROWN BOB and WARRINGTON GOOSEBERRY TREES; 2000 BLACK GRAPE and NAPLES CURRANT TREES. Apply to

W. COCKS, Monk's Hall, Gosberton, Spalding.

FRUIT TREES, &c., at special low Prices.

GLOBE ARTICHOKES, strong, 3s. per dozen.
DUTCH MEDLARS, Standards, 9s. per dozen.
APPLES, ESPALIERS, 12s. per doz., 90s. per 100.
CURRANTS, White, 6s. per 100, 50s. per 1000.
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The above cannot fail to give satisfaction.

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WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSEYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

**Special Offer of**
NURSERY STOCK
on land which must be cleared.

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YEW, Irish, fine, 2 to 2½ feet, 30s. per 100.
" English, fine, 1 to 1½ foot, 10s. per 100; 1½ to 2 feet, 15s. per 100.
BROOM, Common, 2-yr. in drills, selected, 4s. per 100.
HAZEL, transplanted, 2 to 3 feet, stout, 16s. per 1000.
HORNBEAM, transplanted, 3 to 4 feet, 25s. per 1000.
POPLARS, Black Italian, standards, 20s. per 100.
PRIVET, Evergreen, 2-yr. cuttings, well rooted, 10s. per 1000.
" transplanted, 2 to 3 feet, 20s. per 1000.
SNOWBERRY, 2 to 3 feet, stout, 21s. per 1000.
All in fine condition for removal.

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3,000 LIME, Red-twigged, 8 to 15 feet.
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1,000 BEECH, 5 to 10 feet.
1,200 FIRS, Larch, 4½ to 5½ feet.
100 POPLARS, 18 to 20 feet.
100 VINES, Grape, 4-yr.
4,000 LAURELS, Common, 3 to 8 feet.
1,000 " Portugal, 3 to 5 feet.
4,000 HOLLIES, Green, six times transplanted.
1,000 BOX, Green and Variegated, 2½ to 5½ feet.
20,000 PRIVETS, Evergreen, 2 to 3 feet.
1,000 OAK, 5 to 8 feet; 500 ditto, 14 to 16 feet.
1,000 FRUIT TREES, Standard and Dwarf.
200 LAURUSTINUS, Shining-leaved.

A large quantity of FLOWERING TREES and SHRUBS.

W. HANDSCOMB, Aspley Guise, Woburn, Beds.

SCHOOLMASTER POTATO.—This splendid variety of Potato, grown by J. T. Poyser, Esq., from seed supplied by Messrs. Webb & Sons, Stourbridge, can now be obtained in the finest condition on application to J. BLAIKIE, Gardener, at the following prices: 2s. 9d. per peck of 20 lb., 10s. per bushel of 80 lb., cheaper by the half ton or ton. Also a splendid lot of Scotch CHAMPIONS, 4s. per bushel.

Price per ton on application.

Park House Gardens, Stapenhill, Burton-on-Trent, Dec. 31, 1880.

CABBAGE PLANTS, very strong autumn-sown Early Enfield, Rainham, Robinson's Drumhead, Russell's (true) Thousand-head, &c., at 3s. per 1000 (1200), 25s. per 10,000 (12,000).

N.B. Plants warranted free from club-root, grown on strong soil from best seed stocks. Low quotations for very large quantities. Descriptive LIST and testimonials on application.

EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

EUONYMUS JAPONICUS, 6 to 12 inches, 8s. per 100; E. AUREA MARGINATA and MEDIOPICTA, 6 to 9 inches, 20s. per 100; 9 to 15 inches, 6s. per dozen. VARIEGATED and ORNAMENTAL TREES, 3s. per dozen; VERONICA TRAVERSII, 3s. to 6s. per dozen. ALPINE and ROCK PLANTS, 24s. per 100.

STANSFIELD BROTHERS, Southport.

SEAKALE.—SEAKALE.—SEAKALE.—Also ASPARAGUS and RHUBARB for forcing and planting. Prices on application. Our Seed CATALOGUE is now ready, and will be forwarded free on application.

H. THORNTON AND CO., Nurserymen and Seedsmen (Dancer's Nurseries), Fulham, S.W.

SEED POTATOS.—The Subscribers are prepared to make special low offers of all the leading varieties of Seed Potatos, for delivery now and up to April 1 next.

LITTLE AND BALLANTYNE, Royal Seed and Nursery Establishment, Carlisle.

RHUBARB, Victoria and Albert. Cask and packing included, 16s. per 100.

T. EVES, Gravesend Nurseries.—Established 1810.

KENTISH FRUIT TREES.—One of the largest stocks in the county, comprising Standard Pyramid and Trained CHERRIES, APPLES, PEARS, and PLUMS, in 300 varieties, at from 60s. to 100s. per 100. GOOSEBERRIES and CURRANTS, KENTISH COBS, RASPBERRY CANES, &c., at very low prices.

T. EVES, Gravesend Nurseries.—Established 1810.

THORN QUICK and HOLLY for Hedges. Several thousands of the above to be Sold Cheap, the ground being required for other purposes. Apply

W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

THE MOST SUPERB ROSES that money can buy.

Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.

Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

### New, Rare and Choice Plants.
EXTRAORDINARILY CHEAP.

HILEY, having a large, healthy, and well-grown stock of the following beautiful plants, will send them (carefully and perfectly packed) on receipt of Post-office Order. No charge for packing, mats, or hamper if cash is sent in advance. Half or quarter dozens at same rates. Many plants are now offered at less than a quarter the prices of London firms or of those who propose to be co-operative. See CATALOGUE. Inspection requested. Hundreds of testimonials to the value of well and quickly grown plants as compared with those kept in stock for years (the case in most nurseries), can be seen from the gardens of most of the nobility and gentlemen amateurs in Great Britain :—

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| 12 | ADIANTUM CARDIOCHLÆNUM. This rare and most beautiful Maidenhair has been raised from spores for the first time. Good plants .. | 12 | 0 |
| 12 | ,, FARLEYENSE, strong plants, single crowns, rapidly make specimens .. .. .. .. | 12 | 0 |
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| 12 | NEW and RARE FERNS, 12 distinct sorts (Catalogue prices, 36s.) .. .. .. .. .. | 9 | 0 |
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| 12 | PRIMULA JAPONICA and varieties of AMŒNA | 4 | 0 |
| 12 | FERNS, for decoration or cutting .. .. .. | 4 | 0 |
| 12 | CYCLAMEN, fine strain, full of buds and flowers.. | 18 | 0 |
| 12 | TEA ROSES, strong, in pots .. .. .. | 15 | 0 |
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| 12 | LILIUM LONGIFLORUM, fine bulbs of this beautiful white Lily .. .. .. .. | 6 | 0 |
| 12 | ,, CANDIDUM, large bulbs .. .. .. | 6 | 0 |
| 12 | ,, AURATUM, large bulbs .. .. .. | 12 | 0 |
| 12 | ,, DAVURICUM, large bulbs .. .. .. | 6 | 0 |
| 12 | ,, ,, SPLENDENS, large bulbs .. .. | 9 | 0 |
| 12 | ,, MARTAGON, large bulbs .. .. .. | 6 | 0 |
| 12 | ,, PYRENAICUM (rare), large bulbs .. .. | 12 | 0 |
| 12 | ,, THUNBERGIANUM AUREUM, large bulbs .. .. .. .. .. .. .. | 6 | 0 |
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| 12 | ,, POMPONIUM (scarlet, rare) .. .. .. | 21 | 0 |
| 12 | ,, CHALCEDONICUM flore-plena .. .. | 21 | 0 |
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| *12 | PYRETHRUMS, for spring flower, named sorts .. | 6 | 0 |
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| 12 | GARDENIAS, strong young plants .. .. | 12 | 0 |
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| 12 | DRACÆNAS, new and valuable sorts .. .. | 6 | 0 |
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Those marked * being now dormant, can be sent free by post.

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The Nursery is three minutes' walk from West Croydon Station, and ten minutes' from East and New Croydon on London, Brighton, and South Coast Railway, and South-Eastern Railway. Cabs at all Stations.

JOHN H. LEY, Royal Nursery, London Road, Croydon.

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### RASPBERRY CANES
and STRAWBERRY PLANTS.

For Sale, in large or small quantities, the undermentioned very best varieties :—

| RASPBERRIES. | STRAWBERRY. |
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| Carter's Prolific. | Rresident. |
| Northumberland Fillbasket. | Sir Joseph Paxton. |
| Red Antwerp. | Aigburth. |
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Apply to JOSIAH H. BATH, Manor Farm, North Cray, Kent.

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TO THE TRADE.

E. WILSON SERPELL (late Pontey), 21, Cornwall Street, Plymouth, begs to offer to the Trade the undermentioned choice Seeds, which have all been grown by careful Amateurs and professional Gardeners, from the best known stocks, and which he can with confidence recommend :—

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VERBENA, finest mixed, 5s. per quarter ounce.
COCKSCOMB, fine dwarf, bright crimson, 3s. per quarter ounce, 5s. 6d. per half ounce.
,, fine dwarf dark crimson, 3s. per quarter ounce, 5s. 6d. per half ounce.
GERANIUM, Tricolor, Golden Bronze, &c , mixed, 5s. per one-eighth of an ounce.
PETUNIA, extra choice mixed, blotched, striped, &c., 4s. 6d. per one-eighth of an ounce, 8s. per quarter ounce.
AURICULA, extra fine, mixed, 10s. per half ounce.
,, choice mixed, 20s. per ounce.
PANSY, choice mixed, English saved, 20s. per ounce.
STOCK, Scarlet Intermediate, very fine, bright, large flowering, 10s. per ounce.
,, Brompton, splendid double scarlet, a magnificent strain, 7s. 6d. per ounce.
WALLFLOWER, dark, blood-red, English, 6d. per ounce, 7s. per pound.
CUCUMBER, Carter's Model, 10s. per 100 seeds.
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These Cucumbers have been carefully saved.
All above are of English growth and will germinate well.

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### Onion Seed.—To the Trade.

MESSRS. HARRISON AND SONS, SEED MERCHANTS, Leicester, have a good stock of several kinds of the above, which they are prepared to offer. Their Trade List is now ready, and will be sent on application ; it has been posted to all their regular customers, but should it have miscarried, on intimation of the same another copy will be sent.

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# WEBBS'

POPULAR COLLECTIONS OF

# VEGETABLE SEEDS

PRODUCE A CONSTANT SUPPLY OF THE

ALL THE YEAR ROUND, FOR GARDENS OF ALL SIZES.

# BEST VEGETABLES.

**Price, 12s. 6d., 15s., 21s., 31s. 6d., 42s., 63s., and 105s. each.**

☞ Our Exceptional Position as the largest bona fide Seed Growers in the Kingdom, enables us to offer **THE BEST SEEDS** at much Lower Prices than other Houses.

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WEBBS' SCHOOLMASTER
(IMPROVED).
3s. per peck, 10s. per bushel, 27s. per sack.

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(IMPROVED).
2s. 6d. per peck, 9s. per bush., 23s. per sack.

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WEBBS' SPRING CATALOGUE
For 1881,

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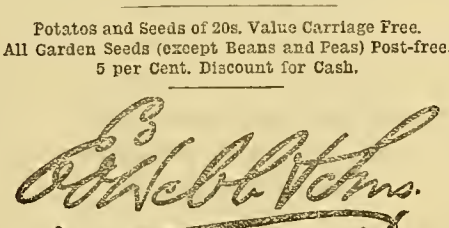
Potatos and Seeds of 20s. Value Carriage Free.
All Garden Seeds (except Beans and Peas) Post-free.
5 per Cent. Discount for Cash.



THE QUEEN'S SEEDSMEN,
WORDSLEY, STOURBRIDGE.

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### Hardy Ornamental Trees, &c., are offered,
as follows, by

EWING AND CO., Eaton, near Norwich, of the best quality, at prices affixed. Free on Rails at Norwich. Quantities weighing 1 ton and over can be sent in through trucks to any Railway Station in the Kingdom :—

ELMS, suitable to plant for Avenues, Parks, Streets, &c., for immediate effect—
,, Giant Huntingdon or Chichester, the largest Elm grown : 12 to 15 feet, 21s. per doz., 150s. per 100 ; 15 to 20 feet, 24s. per doz., 175s. per 100.
,, English, or Hertfordshire, the best Elm for Street Planting, and makes the soundest timber : 10 to 12 feet, 18s. per doz., 150s. per 100 ; 12 to 15 feet, 24s. per doz., 175s. per 100.
,, monumentalis—the Monumental Elm—a grand Elm, with pyramidal habit ; keeps its leaves almost up to Christmas : 6 to 8 feet, 18s. per doz. ; 8 to 10 feet, 21s. per doz.
,, Exeter, or Devonshire Elm (fastigiata or plumosa), a most striking Elm with fastigiate habit, which should be more planted : 8 to 10 feet, 12s. per doz. ; 10 to 12 feet, 18s. per doz. ; 12 to 15 feet, 24s. per doz.
,, elegantissima pendula (an extremely beautiful variegated, leaved kind) : fine Standards with stems about 6 feet high, 2s. 6d. to 3s. 6d. each, 24s. to 36s. per doz.
,, Purple, dark purplish-green leaves, fine for contrasting with trees with light green foliage : 8 to 10 feet, 18s. per doz. ; 10 to 12 feet, 24s. per doz.
,, Camperdown Weeping, horizontal habit of growth, one of the handsomest trees grown : fine Standards, with good heads and stems, 8 to 10 feet, 21s. per doz. ; 10 to 12 feet, 30s. per doz. ; 12 to 15 feet, 42s. per doz.
,, Scampton's Weeping, the best weeping Elm, very vigorous growth, extremely large leaves ; fine Standards, with good heads and stems, 8 to 10 feet, 18s. per doz. ; 10 to 12 feet, 24s. per doz. : 12 to 15 feet, 30s. per doz.
,, Wheatley's, a very handsome Elm, of very neat growth and pyramidal habit : 6 to 8 feet, 9s. per doz. ; 8 to 10 feet, 12s. per doz. ; 10 to 12 feet, 18s. per doz. ; 12 to 15 feet, 21s. per doz.
,, small-leaved Wych, 4 to 6 feet, 12s. per 100.
,, large-leaved Wych, or Mountain Elm, 6 to 8 feet, 35s. per 100 ; 8 to 10 feet, 60s. per 100.

CHESTNUT, Horse, extra fine stout trees, many times transplanted : 8 to 10 feet, 9s. per doz., 60s. per 100 ; 10 to 12 feet, 12s. per doz., 80s. per 100.
,, scarlet-flowered, 6 to 8 feet, 18s. per doz. ; 8 to 10 feet, 24s. per doz.

WILLOW, gold-barked, 4 to 6 feet, 3s. per doz. ; 6 to 8 feet, 4s. per doz. : 8 to 10 feet, 1s. each.
,, scarlet-barked, 4 to 6 feet, 4s. per doz. ; 6 to 8 feet, 5s. per doz.
,, Scarlet Palm, a magnificent Willow, of most vigorous growth : 4 to 6 feet, 3s. per doz., 20s. per 100 ; 6 to 8 feet, 4s. per doz., 25s. per 100 ; 8 to 10 feet, 9s. per doz., 50s. per 100.
,, regalis (the Royal Willow), an extremely handsome and vigorous growing Willow, with silvery, almost white leaves : 4 to 5 feet, 4s. per doz., 25s. per 100 ; 5 to 6 feet, 5s. per doz., 30s. per 100.

BEECH, Purple, best dark broad-leaved variety : 3 to 4 feet, 12s. per doz. ; 4 to 5 feet, 15s. per doz. ; 5 to 6 feet, 18s. per doz.
,, Fern-leaved, an extremely ornamental small-growing tree : 3 to 4 feet, 12s. per doz ; 4 to 5 feet, 18s. per doz.
,, Cut-leaved, a large-growing tree of the highest utility and ornament ; 4 to 5 feet, 12s. per doz. ; 5 to 6 feet, 18s. per doz.

POPLAR, Black Italian, 6 to 8 feet, 15s. per 100 ; 8 to 10 feet, 30s. per 100.
,, argentea nova, a variety of equally strong growth with the Black Italian, and an excellent variety to plant near the sea : 5 to 6 feet, 20s. per 100 ; 6 to 8 feet, 25s. per 100.
,, fastigiata gigantea (Giant Lombardy), the largest and hardiest upright Poplar : 5 to 6 feet, 18s. per 100 ; 6 to 8 feet, 30s. per 100.
,, canadensis aurea var. Geertii, a new variety, with golden leaves : 5 to 6 feet, 12s. per doz. ; 6 to 8 feet, 18s. per doz.
,, canadensis nova, an improved Canadian Poplar, which makes a big tree in a very short time : 5 to 6 feet, 18s. per 100 ; 6 to 8 feet, 30s. per 100.
,, Ontario, a splendid Poplar, with very large leaves : 6 to 8 feet, 4s. per doz., 25s. per 100 ; 8 to 10 feet, 6s. per doz . 40s. per 100.

CORNUS MASCULA VARIEGATA, one of the hardiest and best variegated deciduous shrubs, very hardy and easy to grow : Dwarfs, 9s. per doz. ; Pyramids, 12s. per doz.

PRUNUS SINENSIS ALBA flore-pleno, double white Plum, excellent for forcing : very strong plants, 10s. per doz.
,, domestica variegata (the variegated-leaved common Plum), a handsome and hardy tree, with beautifully variegated foliage : strong Dwarf plants, 12s. per doz.

Of the following we also hold very large and fine stocks, viz., Tamarisks of sorts for seaside planting, Forsythias, Spiræas, Syringas, Lilacs, &c. ; also variegated Tree Box and broad-leaved Privet, Berberis dulcis, Nuts and Filberts, Black Currants, Strawberry Plants, Globe Artichokes, Double-blossomed Furze, Virginian Creepers, &c. ; and shall be happy to forward particulars and prices on application.

Special terms to Trade for large quantities.
Post-offices Orders payable at Eaton, near Norwich.

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AUCUBAS, AUCUBAS.—Extra fine, well rooted and bushy, 2½ to 3 feet, 30s., 35s. and 40s. per 100.
WILLIAM IRELAND, Piltoo Nurseries, Barnstaple.

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### Hardy Rhododendrons and Azaleas.

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.

HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.

Knap Hill Nursery, Woking, Surrey.

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ROSES, CLEMATIS, SHRUBS, FRUIT TREES, &c., the leading varieties, very strong and healthy.

Descriptive priced CATALOGUE post-free on application.
GEO. J. WOOLLETT, Nurseries, Caterham, Surrey.

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### Wholesale Seed Catalogue.

WATKINS AND SIMPSON, WHOLESALE SEEDSMEN and BULB MERCHANTS.

Their TRADE CATALOGUE of Agricultural, Garden, and Flower Seeds, may now be had on application. Any Customer not having received a Copy by post will oblige by letting them know. Special quotations for large quantities of seeds by arrangement.

Seed Warehouses ; 1, Savoy Hill, and 7, Savoy Street, Strand, W.C.

RARE AMERICAN SHRUBS, &c.
NIVIUSIA ALABAMENSIS, lately figured in *The Garden*, 5s. each, £2 10s. per dozen.
ANDROMEDA ARBOREA, a beautiful but rare small tree, 2s. 6d. each, £1 5s. per dozen.
FRANKLENIA PUBESCENS, a charming shrub, 3s. 6d. each, £1 15s. per dozen.
STYRAX GRANDIFOLIUM, a rare shrub, 2s. 6d. each, £1 5s. per dozen.
HESPERALOE YUCCAFOLIA, red Yucca from Texas, 7s. 6d. each, £4 per dozen.
Can be forwarded at low rates by steamer from Baltimore to Liverpool. Packet free.
JOHN SAUL, Washington, D.C., United States, America.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
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BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
,, Golden many thousands, 3, 4, 5 to 10 feet high.
,, Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
,, Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
,, Golden Queen, 4, 5, 6 to 10 feet high.
,, Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade.
CHINESE JUNIPERS, 6, 7 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
,, ,, ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUIOPSIS BOREALIS, 4, 5 to 10 feet.
,, DOLABRATA, 3, 4 and 5 feet.
THUJA AUREA, 2, 3 and 4 feet high.
,, SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
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FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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HOME-GROWN GARDEN and FIELD SEEDS.
H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
Seed Growing Establishment, Wisbech.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

RASPBERRY CANES.—100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30s. per 1000; samples of 100 for 4s., free in London, no change of rail. Also 100,000 FASTOLF, price 10s per 1000; samples of 200 for 2s. 6d, free on rail, sent to any station in Great Britain. Payments to accompany order. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to
A. AND E. BATH, Colgates Farm, Sevenoaks, Kent.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

CHRYSANTHEMUMS.—CHRYSANTHEMUMS.—Strong stock plants to furnish cuttings, our selection from 300 of the best varieties grown, 4s. per dozen, 25s. per 100.
Strong cuttings of the best large-flowered ANEMONE or POMPON CHRYSANTHEMUMS, 12 varieties, our selection, 1s. 6d.; 50 varieties, 5s. 6d.; 100 varieties, 10s., post-free. Cuttings of JAPANESE varieties, 2s. 6d. per dozen.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

**Grape Vines.**
B. S. WILLIAMS has still on hand a good stock of all the leading kinds, including the Alnwick Seedling, which has proved the best late black Grape in cultivation. Strong Planting and Fruiting Canes.
A LIST of kinds and prices on application.
Victoria and Paradise Nursery, Upper Holloway, N.

## SPECIAL OFFER.

**To Market Gardeners and Others engaged in Planting.**

PEARS, Standard and Pyramid.
CHERRIES, Standard and Pyramid.
THORNS, Standard and Pyramid.
GOOSEBERRIES, CURRANTS, STRAWBERRIES, &c.

*For Prices and List of Sorts apply to*
**CRANSTON'S NURSERY & SEED CO.**
(LIMITED),
KING'S ACRE, near HEREFORD.

VINES—VINES—VINES.
W. G. CALDWELL AND SONS, The Nurseries, Knutsford, are now offering their celebrated stock of FRUITING and PLANTING CANES of the above, which are unusually fine, and thoroughly well ripened, consisting of:—

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| Black Hamburgh. | Black Alicante. |
| Buckland Sweetwater. | Duke of Buccleuch. |
| Foster's Seedling. | Golden Champion. |
| Golden Queen. | Lady Downe's. |
| Madresfield Court. | Mrs. Pince. |

Muscat of Alexandria, &c.
The Trade supplied. CATALOGUES free.

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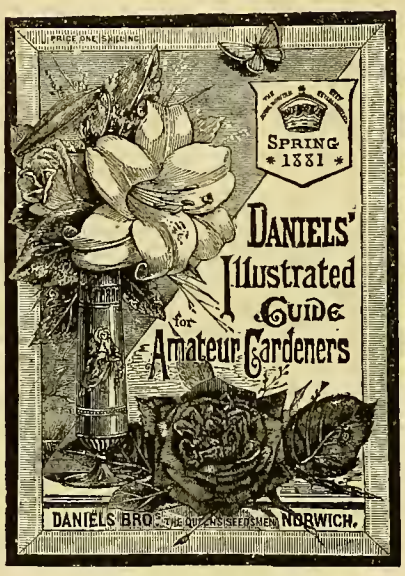


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5,000 " Cunningham's White, 1½ to 2 feet.
10,000 " choice named varieties, 1½ to 2 feet.
50,000 " Seedling Hybrids and Ponticum, 1½ to 2 feet.
5,000 CURRANTS, Black, 6s. per 100.
1,000 " Red, 6s. per 100.
2,000 POPLARS, Black Italian, 10 to 12 and 12 to 14 feet.
1,000 SYCAMORES, 10 to 12 and 12 to 14 feet.
2,000 CHESTNUT, Horse, 9 to 10 and 12 to 14 feet.
2,000 LIMES, Handsworth Red-twigged, 9 to 10 feet.
BERBERIS AQUIFOLIA, 12 to 15 and 18 to 24 inches.
CUPRESSUS LAWSONIANA, 6 to 9 feet.
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The Nurseries,
MILTON, STOKE-ON-TRENT.

# HARRISON'S LEICESTER RED CELERY.

This valuable variety still maintains its reputation, and is justly pronounced by the Royal Horticultural Society and all who have tried it, as the best Celery in cultivation for hardiness, size, and flavour, and is suitable alike for Market Gardeners and Amateurs.

## TESTIMONIALS.

*From* Mr. O. ARKELL, *Gardener to* A. J. Shinner, Esq., *Cheltenham, December*, 23, 1880.

"I have taken First Prize with your Leicester Red Celery at the Cheltenham Society's Show held in June last, and also another First Prize at the same Society's Show held in September. It is undoubtedly the best Celery grown."

*From* Mr. JAS. GILL, *Wisbech, January* 28, 1880.

"I find your Leicester Red Celery the best of several sorts I grew for market."

*From* Mr. E. HULSE, *Macclesfield, December* 24, 1880.

"I grow a lot of Celery plants for the market, but can get none like your Leicester Red. It beats all I can get."

**From the original Raisers, 1s. per packet.**

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SEED GROWERS, LEICESTER.

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HAVE APPOINTED
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**CONCENTRATED POTATO MANURE.**

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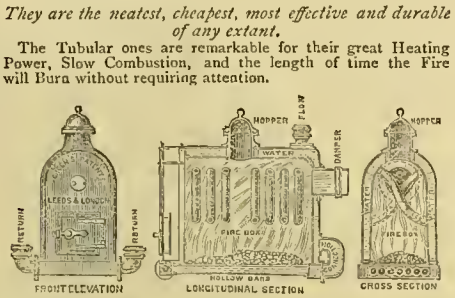


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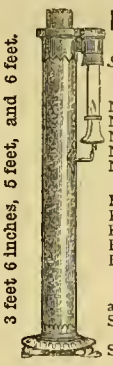


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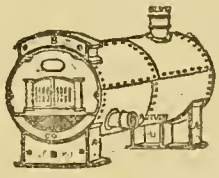

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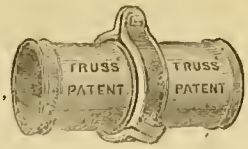


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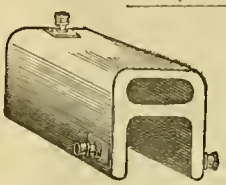

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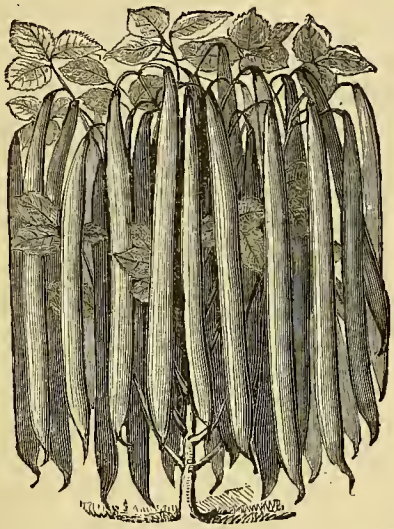

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*THE BEST OF THE SEASON.*

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## AMERICAN WONDER PEA.

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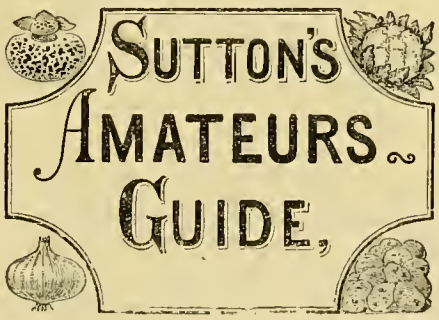


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# Gardeners' Chronicle.

*SATURDAY, JANUARY* 15, 1881.


## A KING'S GARDENER.

NO man, beginning his life and ending it as a gardener—though a king's gardener—has ever reaped such a crop of honours and rewards as André le Nôtre. He served Louis XIV., the most magnificent of French monarchs, and he designed and formed half-a-dozen of the most noted of French gardens. The father of this distinguished gardener filled the post of superintendent of one of the royal gardens, and he gave his son, with praiseworthy ambition, an excellent education, intending him for an artist. Le Nôtre would probably have made an excellent painter, but the king's gardens, in *esse* and in *posse*, needed him, and fate and fortune bent his desires in the right direction. Having made his mark by the preparation of some good designs at one of the lesser royal houses, the king, who was then contemplating the creation of Versailles, entrusted the gardens to Le Nôtre. The ground was difficult, but the gardener formed his plan and explained it to his Majesty. Louis was charmed, and four times during the expounding of the programme he exclaimed, in great delight, "Le Nôtre, I give you 20,000 francs!" The story of Versailles and its bad site, and the skill employed upon it, has been often told. The man who had all France to choose from where to build a house, most unwisely selected Versailles as the site, and Le Nôtre did the best that could be done in such a dilemma. He presided over six great gardens besides Versailles—Clagny, Chantilly, St. Cloud, Meudon, Sceaux and the Tuilleries.

Travelling in Italy the Pope desired to see him, and, having paid Le Nôtre some compliments, found himself tightly hugged in the arms of the enthusiastic gardener, and on several occasions he embraced the king himself. It was reported to Louis that Le Nôtre had embraced the Pope, and a courtier, standing by, offered a heavy bet that he had not done so. "Lay no bets," said Louis, "Le Nôtre embraces me. I am of opinion he did as much by the Pope."

By royal favour the gardener was at length ennobled, and the king offered him a coat-of-arms. But Le Nôtre cared not to face envy and detraction, and he replied that he felt grateful for such distinguished favours, but instead of accepting the offered coat-of-arms he would prefer to keep those he already had adopted—three snails and an Artichoke. In his old age he received permission to retire into seclusion, on condition, as King Louis kindly said, that he would sometimes pay him a visit. When he did so, Louis placed him by his side in a cabriolet, and drove him round the gardens. "What would my father have said could he have seen me now?" said Le Nôtre. He was then ninety. He must have been one of Nature's gentlemen—full of kindness, candour, tact, sagacity, and right feeling. Such men are always honoured. The "Grand Monarque" was never tired of showing him favour, and rewarding him substantially. The only titled gardener since his time has been the designer of the building of the Great Exhibition, and he, at the Crystal Palace and elsewhere, won his fame as the gardener of the people, not of the monarch. *H. E.*

## New Garden Plants.

POLYSTICHUM TRIPTERUM, *Presl, Epim. Bot.* 55. ASPIDIUM TRIPTERON, *Kunze, Bot. Zeit.* vi. 569; *Mettenius, Aspid.* 51; *Hooker, Second Century of Ferns*, t. 57 (not 56); *Id. Sp. Fil.* iv. 15; *Hooker and Baker, Syn. Fil.* 254; *Franchet et Savatier, Enum. Plant. Japon*, ii. 254. ASPIDIUM TRIPTERIS, *Eaton*, in *Gray's Pl. Japon*, 330.

Fronds subcoriaceous, triangular-ovate or hastate-lanceolate, ternately pinnate; pinnæ pinnate, the lateral ones shortly stalked, sub-opposite, curved upwards, obliquely oblong acuminate, the terminal one twice as long or more, lanceolate acuminate; pinnules sessile spreading approximate, entire and cuneate at the base, acutely auricled above, thus trapezio-oblong-lanceolate subfalcate attenuate at the point, inciso-serrate or deeply toothed, the teeth mucronate; veins pinnate or forked, the venules free; sori forming a line on each side about midway between the costa and margin; indusium membranous, peltate, repand; caudex short, erect; stipes slender, rather long, stramineous, clothed towards the base with large ovate dark brown scales.—Hab. Japan: Nippon, Yohoska, Hacone, Yeso; island of Tsus-Sima; and Northern China.

This most distinct and well-marked Fern is noted by Sir W. J. Hooker as "one of great elegance," and not likely to be confounded with any other. It is found in rocky places on the shady hills of Japan, and has been imported from that country by Messrs. Veitch & Sons, of Chelsea, who have already received the award of a First-class Certificate for its production at the meeting of the Royal Horticultural Society in March last; and of a corresponding Certificate from the Royal Botanic Society in April.

The caudex of this novel and elegant Fern is short, stoutish, and erect, clothed with dark brown ovate scales, the base of the slender stipes being also scaly below, and, as well as the rachides, of a pale brownish colour. The fronds are from 1 foot to 1½ foot long, with a lanceolate terminal portion, and two shorter lateral branches standing right and left at the base; it may, therefore, be said to consist of three branches, which give a hastate outline to the frond, described by Presl as ternately-bipinnate. The lower branches (or pinnæ) are nearly opposite, 4 to 6 inches long, shortly stalked, acuminate, and pinnate, the pinnules being subsessile, falcate, acuminate, auriculate, and inciso-lobate or strongly toothed, those on the posterior side being considerably larger than those on the anterior. The longer central branch or pinnæ consists of numerous closely-set dimidiately-oblong falcate, attenuated, auriculate subsessile pinnæ, 2 inches in length at the widest part, the basal ones shorter, and the terminal ones confluent into an attenuated inciso-serrate apex. The base of the pinnules (pinnæ of the branches) is entire and wedge-shaped, the attachment being, as it were, by the thin apex of the wedge. The margins, especially on the anterior side, are deeply incised towards the base, with sharply-toothed lobes, which become smaller near the apex, and the teeth are everywhere mucronate or bristle-pointed. The veins running into the basal lobes are pinnate, with forked venules, those of the smaller lobes once or twice forked, with the veinlets free. The sori form a line on each side the costa, and indications of a second line are seen across the auricle and a few of the larger basal lobes; they appear to be small, and to be covered by a somewhat fragile peltately orbicular indusium.

As a garden Fern this plant must become a favourite from its refined habit and evergreen character. As a native of Japan it may be expected to be hardy, at least in all favourable situations. We understand it has stood uninjured beside our native Polystichums in Messrs. Veitch's glass-covered hardy fernery. *T. Moore.*

## THE COMPASS PLANT.

[WE take the following interesting notice of Silphium laciniatum (the Compass Plant of the Prairies) from the last number of the *Botanical Magazine*, in which this fine hardy composite is figured:—]

This noble plant was introduced into Europe in 1781 by M. Thouin, and flowered for the first time in the Botanic Garden of Upsala, in Sweden. It has been in cultivation in Europe ever since, though its name and fame as the Compass Plant of the Prairies are of comparatively modern date, it having before that borne the popular names of Turpentine Plant and Rosin-weed, except amongst the hunters and settlers in the Western States. With regard to the history of its reputed properties as an indicator of the meridian by the position of its leaves, I am fortunate in having recourse to my friend Professor Asa Gray, now in England, who has most kindly furnished me with the following very interesting account of this matter:—

"The first announcement of the tendency of the leaves of the Compass Plant to direct their edges to the north and south was made by General (then Lieutenant) Alvord, of the U.S. Army, in the year 1842, and again in 1844, in communications to the American Association for the Advancement of Science. But the fact appears to have long been familiar to the hunters who traversed the prairies in which this plant abounds. The account was somewhat discredited at the time, by the observation that the plants cultivated in the Botanic Garden at Cambridge, U.S., did not distinctly exhibit this tendency. But repeated observation upon the prairies, with measurements by the compass of the directions assumed by hundreds of leaves, especially of the radical ones, have shown that, as to prevalent position, the popular belief has a certain foundation in fact. The lines in *Evangeline** were inspired by a personal communication made by General Alvord to the poet Longfellow.

"Since the leaves tend to assume a position in which the two faces are about equally illuminated by the sun, it might be suspected that their anatomical structure was conformed to this position. This has been confirmed, first by Mr. Edward Burgess, who, when a pupil of mine, observed that the stomata were about equally abundant on the two faces of the leaf; and next by Mr. Arthur, of Iowa, who has recently published in Prof. Bersey's *Introduction to Botany*, a figure of a section of a leaf, showing that the arrangement of the 'palisade cells" of the upper and lower strata is nearly the same. The leaves always maintain a vertical position, except when overborne by their weight. As to their orientation, not only is this rather vague in the cultivated plant, but subject to one singular anomaly, which may be commended to Mr. Darwin's attention. I have several times met with a leaf abruptly and permanently twisted to a right angle in the middle; so that, while the lobes of the basal half pointed say east and west, those of the apical half pointed north and south."

To the above I have little to add. I have not been able to detect any orientation of the leaves in the Kew cultivated specimens, but these not being planted in a good exposure all round, are out of court as witnesses. On the other hand, when traversing the prairies with Dr. Gray in 1877, I watched the position of the leaves of many hundred plants from the window of the railway car, and after some time persuaded myself that the younger, more erect leaves especially, had their faces parallel approximately to the meridian line. I may mention that I, on the same occasion, convinced myself that the flower-heads of various of the great Helianthoid Compositæ that grew in hosts on the prairie did follow the sun's motion in the heavens to a very appreciable degree—their morning and evening positions being reversed. This observation did not, however, extend to the Compass Plant, the rigid stout peduncles of whose flower-heads would not be expected to favour such a motion. *J. D. Hooker.*

* Though, no doubt, familiar to many of my readers, these lines will bear repetition here:—

"Look at this delicate plant that lifts its head rom the meadow,
See how its leaves are turned north, as true as the magnet;
This is the Compass Flower, that the finger of God has planted
Here in the houseless wild, to direct the traveller's journey
Over the sea-like, pathless, limitless waste of the desert.
Such in the soul of man is faith."

I cannot congratulate the poet on the fidelity of the description of the plant as a "delicate" one.

## THE KEW ARBORETUM.

### THE MAPLES.—III.

A. TEGMENTOSUM, *Maxim.*, Bull. de l'Acad. de Petersb., xv. 125, 1859; *Flora Amurensis*, p. 66; Koch, *Dendrologie*, theil i., p. 520.—Native of the Amoor River.

This distinct and very desirable Maple (fig. 13) I have not yet seen in in this country, but it is grown by M. Lavallée and others on the Continent, and before long will doubtless find its way to our gardens. As it comes from a district which has furnished us with so many perfectly hardy plants, there can be no reason to doubt the hardiness of the species now mentioned. It is a small tree, with cordate, generally 3-lobed, irregularly, acutely and doubly serrated, quite glabrous leaves, about 3 inches long by 2½ inches broad; sometimes, however, the lateral lobes are almost suppressed, and the leaves attain a length of 4 inches, and measure only half that much across. A singular charm is imparted to the foliage by the network of red veins on the under surface. It is recognised instantly from A. Ginnala and A. tataricum by its prominent stalked buds. The flowers, which open in May, are borne in pendulous racemes; the samaræ have horizontally spreading wings.

ACER TATARICUM, *L.*; Loudon, *Encyclop. of Trees and Shrubs*, p. 80, fig. 123; Koch, *Dendrologie*, theil i., p. 518; Watson, *Dendrologia Britannica*, tab. 160. *A. cordifolium*, Hort.; *A. tataricum rubrum*, Hort.—Native of Central and Southern Russia, the Caucasus, Austria, European Turkey, Japan, &c.

A small tree, from 15 to 30 feet high. Introduced in 1759. The doubly serrate leaves of this species vary considerably in size and form; in young or vigorous trees they are as much as 4 inches long by 3 inches broad (the petioles being about 2 inches long), and are very decidedly 3-lobed. Usually, however, they are more or less heart-shaped, acuminate; in colour they are dark shining green above, paler beneath. The small pale greenish-yellow flowers are borne in short erect racemes; the red samaræ are very attractive in September and October, and the abundance in which they are generally produced renders the trees or bushes very conspicuous. In spring this is one of the first of the Maples to expand its leaves, and on that account alone is valuable for ornamental purposes. In autumn the leaves change to yellow and brown tints. The colour of the young wood is a reddish-brown.

FIG. 12.—ACER SEMENOWII.

*Var.* AIDZUENSIS, *Franchet*, in Bulletin de la Société Botanique de France, tome xxvi., p. 84.—A native of woods in the subalpine tracts of Aidzu, Nippon.

I have not yet seen this variety in cultivation. It differs from A. tataricum in its thinner more membranaceous leaves, which turn black in drying, and by its samaræ with parallel wings which overlap on their inner edges. In A. Ginnala the wings are more or less divaricate, and the fruits are considerably less.

*Var.* SEMENOWII, *Regel et Herder*, Enumer. Plant. in region Cis et Transil. a cl. Semenevio, anno 1857 collect, p. 24, tab. xii.—A native of the valleys of Alatau in Russian Turkestan, at elevations of from 3000 to 4000 feet.

A slender, graceful bush, with reddish twigs and petioles, and leaves (fig. 12), somewhat like those of A. Ginnala, but smaller, glabrous, shining green above, somewhat lighter below.

*Var.* GINNALA; *A. Ginnala*, Maxim., *Bull. de l'Acad. de Petersb.* xv., p. 126; Koch, *Dendrologie*, theil i., p. 519; *A. tataricum*, L., var. *laciniata*.—Native of the Amoor River.

In this form the leaves are prettily cut and lobed, the leafstalks and midrib are red and the slender twigs are more deeply coloured than those of the type; taken altogether the plant is more graceful in habit than A. tataricum. In autumn the decaying foliage assumes a splendid glowing ruby-red colour. It was introduced to cultivation by the Russian traveller and botanist, Maximowicz. *G. Nicholson.*

## THE NEW VINE MILDEW.*

THE Vines this year, as the period of the vintage drew near, had a very unusual appearance. Instead of being covered with green leaves, or with leaves tinted with the colours of autumn, they were covered with dry, brown, shrivelled leaves, as if they had been burnt by the sun or frost-bitten. Many had fallen off altogether, and lay at the roots of the Vines, or, in some cases, there remained on the branches of the Vines the petiole only, from whence the leaf had been detached in such a manner that only the dry leaves—or ends of the leaves—were to be seen. At the extremity of the branches only a few small new leaves were visible, showing a very backward condition of growth. In other places the burning of the leaves was less complete, and the dry spots on those still alive were visible. I found the Vines in the environs of Tours, and especially at Mettray, in this state early in October. The dry brown patches, at first isolated, spread at the expense of the living tissue; they increased in number, ran together, and covered the whole leaf, as was apparent by the middle of October, in the neighbourhood of Vendôme.

When these prematurely dried leaves were examined, the underside was seen to be covered with a white efflorescence, which had some resemblance to a covering of white frost. This is caused by a little mould which kills the tissue of the leaf which it attacks. When it first appears it is of a pure white colour, which by-and-bye changes to a dull leaden tint, slightly ruddy, and it is there less visible. It has received the name of Peronospora viticola. It is very similar to the Peronospora infestans, which attacks the Potato, and causes the Potato disease.

The Peronospora which infests the Vine is a newcomer here. Until the last few years it had only been noticed in North America, where it is very common, and known as Grape Vine mildew. M. Max Cornu, as long ago as 1877, in France called attention to the fact that the introduction of American stocks into French vineyards might introduce a disease very much to be dreaded (*Compt. rend. de l'Acad. des Sciences*, 1877, 2e sem., p. 210), while in Italy M. Pirotta expressed a hope that the Peronospora viticola would not infest the European Vines as the Phylloxera has done (*I Funghi parassiti dei Vitigni*; Milan, 1877).

The American parasite has now unfortunately invaded the French vineyards. In 1878 M. Planchon recognised it on an American Vine-stock, and Le Jacquez in the south-west of France; in 1879 it had reached the Rhone Valley, and in the East Savoy and the department of Doubs (M. Vaissier, *No. du 31 October du Courier Franc-Comtois*).

I have now found this pest at the north-western extremity of the culture of Vines in France, so that there is no doubt but that the whole of the country is infested with it. How far is this new enemy to be dreaded in France? Opinions are divided on this point. The damage occasioned by it in America is quite different according to the climates. M. Georges Hussmann (*The Cultivation of the Native Grape*: New York) says that the mildew destroys sometimes in Missouri two-thirds of the Catawba crop. But he is careful to add that in that hot climate it makes its appearance between the 1st and 15th of June. In Massachusetts, on the contrary, it does not show itself except in autumn, and causes scarcely any hurt to the Vines. The following is the interesting account given by the learned Professor of Cambridge (Massachusetts), Mr. Farlow (*Bulletin of the Bussey Institution*, March, 1876):—"It might naturally be supposed that a fungus as common as Peronospora viticola, so often found on all the leaves of the Vine, must have very disastrous effects on the crop. This is, however, not the case. The fungus does not attack the Grapes themselves; besides, at least in New England, it does not make its appearance before August 1, and the leaves do not look brown until the month of September. As regards the culture of Vines in the Northern States in the open air, we are disposed to think there is little to fear from the Peronospora, but that, on the contrary, this fungus may be even beneficial. Our indigenous Vines are very luxuriant, and possess an abundance of leaves. That which is most to be feared is that in our short summers the Grapes will not be sufficiently exposed to the sun. The Peronospora arrives, we think, at a time when the Vines have attained their full growth, and when the important point is that the Grapes covered by the leaves should ripen. In drying up the leaves the Peronospora allows the sun's rays to reach the Grapes, and it does not seem to injure the Vines, which appear to grow on as usual." Will it be the same in Europe?

What I have observed in the Vendômois makes me hope it will be so. Without agreeing entirely with Mr. Farlow, and considering the Peronospora on the Vines may be indirectly beneficial, we may at least consider the fears expressed as to the devastation of our vineyards as exaggerated.

As in North America, the Peronospora has not appeared this year in Touraine and the Vendômois before the beginning of September. In shrivelling the leaves it has in no case prevented the ripening of the few Grapes which the stocks produced this year.

One proprietor in the neighbourhood of Vendôme, M. Dujardin-Beaumetz, when interrogated as to the condition of the Vines, told me that the Grape growers of the Vendômois are not disturbed by the burning of the leaves, for they consider it is due to white frost.

This fact has not apparently had any disastrous effect on the unfruitful seasons we have witnessed. The Grapes were very scarce, but they were well developed, and ripened under favourable conditions. The loss of the leaves appears to have caused no injury to the Vines, which is satisfactory.

The wood is already of a good colour, and the pruning seems as if it would be effected under favourable conditions.

With this information was sent a leaf of a variety of Vine, the premature shrivelling of which had been attributed to white frost, but on which I easily recognised numberless tufts of Peronospora viticola. *Extracted from the "Journal de la Société Nationale d'Horticulture de France," October*, 1880.

* *Notes on Peronospora viticola (Mildew) in the Vendôme and in Touraine.* By M. Ed. Prillieux.

FIG. 13.—ACER TEGMENTOSUM. (SEE P. 74.)

## GROSVENOR GALLERY.

THE winter exhibition of pictures at the Grosvenor Gallery is no exception to its predecessors. Like former exhibitions at this place it contains specially selected pictures, and pictures of a distinct class grouped together. The first thirty-eight sketches and paintings are works by French artists, valuable for comparison with similar sketches produced by English artists: none have any special interest for horticultural readers except 16, "Marché aux Fleurs, à Nice," and 17, "Retour du Marché aux Fleurs." From 39 to 66 we get contributions from the Liverpool Society of Painters in Water Colours; like the last set none of these drawings appeal specially to us beyond a few sketches which truthfully and pleasantly transfer scraps more or less complete of landscape scenery. In 73, "Water Lilies," by W. J. Muckley, we have a bright, beautiful and dashing picture of white Water Lilies, and at 74, in "Christmas Roses," by the same artist, we get an excellent and well-painted group of Hellebores; the latter group is undoubtedly the better of the two, the Water Lilies (and especially the leaves) strike us as being sketched in from memory rather than from Nature; both pictures, however, display a high power of drawing and colour. 76, "Single Dahlias," J. M. Jopling. This is a very poor and weak representation of single Dahlias; the specimens look as if they had just been taken out of a reticule or carpet-bag, the flower-stems showing broken backs. No part of the drawing or painting is good: there is, however, a rich Berlin wool effect. In 77, "Hayfield, near the Mouth of the Thames," J. W. Whymper, we have an excellent example of this master's bold, truthful and beautiful landscape work. 86, "Abutilons" (or as it is given in the Catalogue, "Arbutolons"), J. M. Jopling, is equally unsatisfactory with 76. Any one who has seen Abutilons growing in greenhouses, seen them many times and known them for many years, must shiver at this picture. "Arbutolons" may, however, belong to some new genus unknown to the writer—if so he desires never to better know the genus. 100, "A Study of Roses," Mrs. Stillman, belongs to the same class as the last; we have never seen such Roses, except those made of dyed shells and wool, and whenever did Roses carry such leaves as these?

Passing on to 119 we get a little picture of "Chrysanthemums," by Miss M. Naftel, well drawn and well coloured. 161, "Himalayan Rhododendrons," Miss F. W. Currey: this is an excellent picture of crimson Rhododendrons, notable for its good and natural drawing and colour. One bloom is represented as having fallen from the plant, with the calyx still attached: we take this to be an oversight on the artist's part, as in Nature the calyx always remains affixed to the flower-stalk, and never drops away with the bloom. 163, "Wallflowers," Mrs. P. J. Naftel, is truthful to Nature and excellent. The last subject in the West Gallery is 180, "Roses," Lady Lindsay. This picture has a natural effect, and the leaves (as well as the blooms) are well drawn; the picture is, however, somewhat hard, formal and "set"—a quality that no doubt Lady Lindsay will speedily free her works from. Passing to the Sculpture Gallery we have in 184*, "Chrysanthemums," Miss Purvis, a well executed sketch of Chrysanthemums treated in a decorative manner. 185, "Study of Red Eschscholtzia," R. Bateman: here we have a sketch of the variety which carries petals white inside and rose-colour outside (termed "Mandarin" by some nurserymen, we believe). "Red" Eschscholtzia, therefore, is somewhat of a misnomer, as there is no "red" in the plant: there is a spray of wild Heartsease at the base. The picture has no special merit. The little picture of "Marigolds," 198*, by Mrs. Pauline Walker, is remarkably well drawn and coloured: the subject, however (like many other similar subjects in the gallery), is somewhat trifling, but a trifling success is better than a pretentious failure. 214, "Chrysanthemums," Mrs. E. Pfeiffer, is well executed, but the leaves are not true. 219, "Autumn Flowers," J. J. Hardwick, is a correctly drawn group of small Chrysanthemums in a basket. 228, "The Butterfly's Bower," by Mrs. E. Pfeiffer, is a good study of the Magnolia, with leaves well drawn, but very faint in colour. 241, "Irises," Miss L. V. Blandy, is a good picture, marked by correct drawing and a truthful reproduction of the colours and lights and shades of Nature. 245, A "Forest Garden," Miss G. Martineau, is an excellent water-colour picture of extended masses of white Water Lilies growing in a large still pool in a wood. 250, "Poppies," Mrs. Carr Hastings: these small pale rose-coloured single Poppies appear strange and unsatisfactory to us—we are not familiar with the variety. 266, "Day Lilies," Miss M. Chase, a group of fairly painted Hemerocallis. In the Sculpture Gallery no picture calls for special notice from us, although some of the landscapes, sketches in chalk of old trees, &c., are worthy of attention. In the vestibule we have in 287, "Œillets," and 288, "Glaïeuls," E. E. Morand, groups of Pinks and Gladioli, so sloppily painted and without definition as to be hardly distinguishable: the colour is no doubt somewhat bright and the pictures may exhibit some dexterity of execution, but both Œillets and Glaïeuls are scurvily treated. 296-297, "Roses and Chrysanthemums." Here we have a good deal of correct and studied drawing, and bright, truthful colour. Not only are Roses and Chrysanthemums shown, but a considerable number of other well-known plants. 301, "Pensées et Giroflées," Madame M. Lemaire: this is a group of Pansies and Wallflowers, well drawn and brightly painted.

We now reach the East Gallery, containing decorative pictures for ceilings, panels, windows, altars, nursery walls, &c. The first picture represents a beautiful young woman with a bird on her shoulder, by H. Holiday: on turning to the catalogue (320), this is said to represent "Theology"—we never remember seeing "Theology" under such an aspect before; perhaps this is "pure theology" as contrasted with the "practical theology" we now and then read of in consecrated churchyards. Faust in his opening soliloquy says he knows, to his grief, "theology;" he could hardly have had a charming young woman like this in view. There is a very pretty pencil sketch of Shakespeare and his principal characters (321) immediately underneath the uncommonly pleasant "Theology." The majority of the pictures in the East Gallery are by Mr. E. Burne Jones and Mr. Walter Crane. All persons who have paid any attention to art know Mr. E. Burne Jones' pictures perfectly well, know the expressionless faces he is never tired of painting, know the hands and the feet and the hips, the wings, and the trumpets. In the East Gallery of the present winter exhibition there is a perfect surfeit of these things. Many of the large and elaborate drawings by this artist are designs for windows, and in these he introduces the conventional trees (well marked in 339 and 345), and draperies belonging to MSS. of the twelfth and thirteenth centuries. Some authorities consider these uncouth conventional forms to have been designedly made uncouth and ugly; other persons are inclined to suppose that the twelfth century illuminators—the early Italian painters—could not (if they would) have drawn figures and faces and animals better than they did. Their buildings are always amusingly out of perspective; a knight looks out of a tower like "Jack" looking out of a "box," their colours are raw and primitive. All this is not (we are taught) because our remote precursors could not, had they pleased, have equalled L. Alma Tadema himself, but because (so we are told) they knew their own style of drapery and perspective to be better. In Mr. E. Burne Jones' designs many of these old vagaries are not only copied, but, as it appears to us, exaggerated. The most remarkable design by this artist is perhaps 353, "The Judgment." In this there are the four old, big, ugly, and terrible emblems of the Evangelists, the rivers of water undulating like blue smoke from the top to the bottom of the picture. Angels with extraordinary wings and trumpets, and the dead rising from the earth—in other words, coming out of circular holes in a sort of rude Roman pavement or roadway, and some of the holes (from which the dead are supposed to have emerged) are open, reminding the spectator of coal-cellars from which the coal-plates have been removed. At the upper part of the picture there is an ugly dislocated lamb. Is it right at the present day to attempt a gigantic representation of such a subject in such a style? No one can turn over twelfth and thirteenth century illuminations without laughing at the absurdities and shortcomings of the old limners, and it is almost impossible for ordinary mortals to contemplate Mr. E. Burne Jones' interpretations of sublime subjects without a similar manifestation of feeling. That there is admirable drawing in this picture of "The Judgment" cannot be denied, but the artist has stultified himself; such a representation of "The Judgment" as this belongs to the past. The picture is greatly admired by the extraordinary young ladies in the extraordinary chintz dresses that one always sees at the "Grosvenor." They talk about the "wealth of curves," the "blending of the carnations," and the "precious" drawing to be seen in the trumpets. Ladies and gentlemen of this class are often drawn and laughed at in *Punch*—they are "mute before a Botticelli"—(see *Punch's Almanack*). Mr. E. Burne Jones is much more successful when he paints what are termed by some persons "heathen" subjects. His "Cupid's Hunting Ground," "Sea Nymph," and "Wood Nymph," are less conventional in treatment and much better as pictures.

Mr. Walter Crane follows, far off, in a similar style: no one can look at 336—"The Goose Girl"—and the fleeing ugly rustic, without laughing. Mr. Sambourne never drew a racier figure of a clodhopper, though he has often drawn a better one. 349, by this artist, is named "Design for a Frieze:" really a design for a panel. It is meant for mosaic, and the tesseræ are shown, but the patterns in mosaic should be outlined with tesseræ outside to form the first set of tesseræ of the ground. Mr. Crane has not outlined his curves, but cut his tesseræ up into innumerable triangular pieces and odd forms, quite contrary to ancient examples and modern practice. 324 in this room is termed a "Study for Decoration," M. R. Corbett. Under this high-sounding title we get a spray of a (possible) white Lily, fairly drawn from a wretched example (only fit for the rubbish-heap). In this East Gallery we may see the labour of many long years, especially on the part of Mr. E. Burne Jones; the work is in many instances so careful, elaborate, and studied, that it repays attention. A considerable amount of this work is probably very excellent and right, although it does mimic the wonderful drapery and adjuncts of the Bayeux Tapestry. Mr. Muckley contributes several decorative floral designs for this "department;" but his pictures, as far as the plants are concerned, are not decorative, as he indulges in all the varied light and shade and perspective of Nature. Several hours may be very agreeably and profitably spent in the Grosvenor Gallery, and we advise all our readers to go and judge for themselves, not being too much influenced either by the artists themselves, Sir Coutts—or the writer of these lines. *X.*

## PLANTS IN FLOWER.

HEREWITH I send you a list of plants and shrubs that I saw flowering in the open in this neighbourhood on the 4th inst. Many are half-hardy, and that they are now so blooming, and in some instances profusely, will, I think, testify, and more strongly than any words of mine can, to the mildness of the climate here.

In the list I have confined myself to cultivated plants and shrubs; had I added the wild ones I saw in flower here on the 4th and 5th inst. the increase would have been over a hundred varieties. *Ernest Bullmore, Falmouth.*

Arbutus Unedo
Alyssum saxatile compactum
Auricula
Abutilon Boule de Neige
Arabis albida
Anemone
Aralia Sieboldii
Aubrietia græca
Ageratum
Acanthus latifolius
Antirrhinum, several vars.
Aponogeton distachyon
Andromeda axillaris
Berberis Darwinii
Brugmansia sanguinea
Borago officinalis
Crocus, several varieties
Coronilla glauca
Ceanothus Gloire de Versailles
Camellia several varieties
Calceolaria amplexicaulis, and many other varieties
Corydalis lutea
Clematis Mrs. G. Innes and another variety
Chrysanthemum indicum, several varieties
,, frutescens
,, Burridgeanum
Carnations, white
,, pink
,, scarlet
Cydonia japonica
,, ,, alba
Cowslip
Cytisus racemosus fragrans
Daisy, pink
,, white
Desfontainea spinosa
Daphne Laureola
Dianthus
Erica mediterranea nana
,, (white)
Escallonia macrantha
Echeveria glauca
Fragaria indica
Fuchsia serratifolia
,, splendens
,, microphylla, and about twelve other varieties
Garrya elliptica
Grevillea rosmarinifolia
Gentiana acaulis
Hydrangea hortensis
,, japonica
,, ,, variegata
Hepatica, double red
Helichrysum, many varieties
Hesperis matronalis
Helleborus niger
,, ,, maximus
,, purpurascens
Hypericum calycinum
Iberis sempervirens
Jasminum nudiflorum
,, revolutum
Kerria japonica fl.-pl.
Lamium maculatum
Limnanthes Douglasii
Laurustinus (common)
Larkspur (annual)
Lobelia pumila
Mahonia Aquifolium
,, Bealii
Mignonette
Marigold, African
Myosotis dissitiflora
Narcissus, polyanthus
Pyrethrum Golden Feather
,, Parthenium
Primrose, single, several varieties
,, double, white
,, ,, lilac
,, ,, crimson
Primula japonica
,, sinensis rosea
Polyanthus
Pernettya mucronata
,, angustifolia
Pelargonium (Cape)
,, single red
,, ,, white
,, ,, pink
,, double red
Phlox Drummondi
Pittosporum Tobira
Pansy, many varieties
Ruta graveolens
Rhododendron arboreum, and many other varieties
Rose, monthly
,, Tea
,, Bourbon
Saponaria calabrica
Sedum, yellow
Salvia fulgens
,, red
Silene pendula compacta
Scilla sibirica
Snowdrops
Saxifraga crassifolia
Shamrock
Stock, Ten-week
,, Brompton, single
,, ,, double
,, night-scented
Schizostylis coccinea
Tritoma Uvaria
Virginia Stock
Vinca major variegata
,, minor alba
Violet, blue
,, white
Veronica Andersoni
,, ,, variegata
,, decussata
,, salicifolia
,, kermesina
,, Lindleyana, and other garden varieties
Wallflowers, single yellow
,, ,, dark red
,, German double
Yucca gloriosa
,, recurva

## EXTENSION OF HARDY FRUIT CULTURE.

THE immense supply of Apples from the States and Canada that has this year come to hand should do something to set those who grow fruit in this country on a large scale thinking about their future prospects. Considering the greater cost of packing, liability to injury, and more perishable nature even of keeping varieties of fruits, such as Apples, the importation of fruit will always be more difficult than that of grain. It is evident with Apples, as it is now with grain, that the effects of bad seasons and failing crops are about to make very much less difference to the consumer than they do to the home grower. For after one of the worst Apple crops, taking the kingdom collectively, that has been experienced in recent times, Apples are far from being at the price they might have been expected to fetch. It is needless to say that the fruit question is of small consequence as compared with that of the staple article of food—grain; but the facts connected with fruit are so far important that they point in the same direction with those bearing on grain, and show that we are gradually getting less dependent upon the produce of the land in England—a matter which for some time has awakened the serious consideration of all who are connected or conversant with rural

affairs, or who give a thought to the general prosperity of the country.

It may not here be out of place to say that the question of home hardy-fruit growing needs to be looked at from two distinct points of view, separating those kinds that are soft and perish quickly from the harder description that will keep for a time more or less protracted. Regarding the softer fruits, such as Strawberries, Raspberries, Currants, and Gooseberries, the home-grower may calculate upon being tolerably secure and outside the reach of foreign competition to any extent likely to much influence prices. It is with the keeping descriptions of fruit—such as Apples — which may be set down as of more importance than all others put together—that the home grower has to compete ; he has two serious difficulties to contend with—dear land and an uncertain climate : possibly the former may hence-

FIG. 14.—DOUBLE-FLOWERED PETUNIA.

forward to some extent be remedied, but any material change in the latter is out of the range of possibility.

Those who urge that very much more land might, with advantage to both producer and consumer, be devoted to fruit culture, are continually met with one objection, which is, that in seasons when there is a failure the returns are little, and when there are heavy crops the prices are so low as to make it unremunerative. The former is no doubt correct, and does not admit of remedy ; but not so the latter. If the American fruit farmers, with their scores or hundreds of tons, in a land of tinned Peaches, Apples, &c., had not been able to see and act further than just marketing the produce of their orchards as it came to maturity, fruit-growing in their go-ahead country would not have got much beyond the requirements of each individual household ; whereas the large preservers of fruit in England, who make a business of it, do not seem able to get beyond making the ordinary jam, which is generally an indescribable hodge-podge mixture, so disguised that it would puzzle any one to guess what it is composed of. But why should the large fruit-growers sell all their produce to the preservers? Why not preserve it themselves, and secure the double profit of producers and manufacturers? The art is not difficult nor is the plant costly.

A few years ago I accidently met a gentleman from Kent, who was extensively engaged in fruit-growing, and who saw the mistake that was made by the growers in selling their fruit to the preservers, so much so that he told me he had tried to organise an association of growers to preserve their own, but the project met with so little response that it fell through. If the growers had the means of preserving the produce of their own orchards, obviously they would be in a position to meet and avoid the sacrifices which they have to submit to when heavy crops cause a glut. As things now are, when any particular kind of fruit is more than ordinarily plentiful—Plums for instance—they scarcely pay for gathering and marketing, unless there happens to be a scarcity of some other sort that causes a run on the plentiful kind. The American preservers do not confine themselves to ordinary jam-making, as is evident by the tinned fruits, especially Peaches and Apples, of which they prepare such immense quantities, retaining the natural flavour, each piece almost as entire as when newly peeled and quartered.

I have already referred to the American grower having the advantage of cheaper land, but, on the other hand, labour with him costs more than it does here, to an extent that will more than cover the difference under that head ; and before his fruit can reach the English market the carriage costs more than he gets as his share. No doubt the climate is greatly in his favour ; he will not have nearly so many failures as the English grower. In growing Apples and Plums—the fruits which, cultivated on an extensive scale, are most likely to give the best return—the crop would only be part of what the land would yield, as by planting the orchards thin enough—the way that in most localities would be most likely to answer—the grass crop might always be relied upon. With the present condition of agriculture in England, and no probability of corn growing ever paying anything approaching what it has done, it is no wonder that extensive landowners and deep thinkers, such as have spoken words of warning to farmers during the past year, should urge that relief should be sought in the extensive cultivation of garden produce. This is no doubt quite right if the producers follow the right track, which is evidently not in vegetable growing, for it needs very little extension in this direction to go beyond the demand, as is evident from the result of the present autumn, when favourable weather has had the effect of making almost everything in season so cheap that the growers have little or nothing left after paying expenses.

Whatever benefit those engaged in farming are likely to get by the cultivation of garden produce, they will, I think, have to look for it in the direction of fruit cultivation. In so doing they will effect a desirable threefold object—benefiting the community by increasing the food supply, and conjointly benefiting themselves and the country by diverting to their own pocket the not inconsiderable sum which now every year passes out of the kingdom. Fruit cultivation sufficiently understood, well carried out, and pushed as far as may be in those parts of the kingdom where soil and climate offer a prospect of success, must not be looked upon as a panacea for all the difficulties that beset cultivators of the land, but it is nevertheless one of the means by which something very considerable may be done to benefit all parties in the State. *T. Baines.*

## Florists' Flowers.

THE DOUBLE PETUNIA. — Amongst the flowers that have not been left behind in the march of progress may be named the Petunia. It is not a favourite flower with many persons, but it is just possible that some of those who do not admire it have not seen it at its best. The recently introduced double varieties are notable for the large size of the flowers, and for their rich and varied colours, and these also are of good substance. The flimsy character of the flowers of the single Petunia is rather against them, but this charge cannot be urged against the double forms ; their irregular outline and fringed petals obtain favour for them with those who do not like the smooth and rounded contour of the flowers admired by the florists.

There are few plants more easily grown, or which give better results with less trouble. They may be grown from seeds or propagated by cuttings. Of course if it is intended to keep up a stock of any particular variety it must be propagated by cuttings. Even if seeds are produced from double flowers only a certain percentage of these will give double varieties ; but it is only by saving seeds from carefully crossed flowers that good results can be obtained. If the plants are to be increased by cuttings they should be put in very early in the year. They form roots very freely in a gentle hotbed. When the cuttings have struck root they ought to be potted off into small pots and again be placed in a frame with a little bottom-heat. When the plants have fairly started into growth they should be placed in a greenhouse, and must be shifted on as they require it. Good large specimens will require 11-inch pots in which to flower, and all the flower-buds should be pinched off as they appear until the plants are established in these pots.

The shoots may either be trained to flat trellises or trained to sticks to form bushy specimens ; for my part I should object to the flat trellis system, but it might be adopted under certain conditions. At all events the more natural method will find most admirers. During the growing period admit plenty of air, and give manure water twice a week when the flowers begin to open. The soil best adapted for pot culture is light turfy loam, with one part leaf-mould and one part rotten cow-manure.

If seeds are sown early in the year they soon vegetate ; if pricked out and potted on as they require it the plants will flower the same season. They are well adapted for out-of-doors culture also, and in certain positions are good bedding plants, but the succulent branches are easily injured by high winds ; they should therefore be planted in a sheltered place, but ought also to be exposed to sun and air. It is a good plan to stick some short branches amongst them when they are planted in a bed ; the shoots run

naturally amongst the branches, and receive sufficient support to cause the production of a mass of bloom; but if this is required the single varieties are the best to grow. *J. Douglas, Loxford.* [For the use of the accompanying engraving (fig. 14) we are indebted to the courtesy of Messrs. Veitch & Sons. EDS.]

A STUDY OF DOUBLE-FLOWERED CHINESE PRIMROSES.—It was a happy thought on the part of Mr. A. F. Barron to bring together and exhibit in bloom just now, when the Chinese Primrose is one of the most useful of winter flowers, a collection of the double-flowered varieties now in cultivation. It was incomplete in that the old rosea plena or double purple was not among them, but this is somewhat scarce, difficult to grow, and not at all adapted for general cultivation. There is the old double white, with smooth-edged segments; and its variety fimbriata, on which the flowers are larger and delicately fringed—two forms of great value when well managed, because they supply so much flower during the autumn and winter months. Good culture has made the Chiswick plants robust and of free growth; in pure health and a wealth of bloom the plants appear to requite the kindly care which has brought them to a high state of perfection.

For depth of colour King of Purples tops all the flowers of this shade; the colour is a very pretty deep lilac-pink, the flowers large and full, and retaining their colour. It is a vigorous grower, and by no means sparing of flower. Emperor is a Fern-leaved variety, the foliage handsome and fairly compact, but difficult to cultivate; the flowers are large and full—as double as one can well desire. A good well-grown well-bloomed specimen is an object of great beauty. Atro rosea plena and rubra grandiflora plena are both plain-leaved varieties, the flowers not so full nor so deeply coloured as in the before-mentioned types. It may here be remarked that with the exception of Emperor none of the others forming the collection had Fern-leaved foliage. Lilac Queen has pale lilac-pink flowers, very pretty and distinct. Earl of Beaconsfield, one of Mr. Gilbert's new varieties, is very good; the flowers large and full, and of a deep rosy-pink colour. All the foregoing have dark leaf and flower-stems. Exquisite has pink ground flowers, margined with white; very pretty indeed, and most pleasing to the eye. The new variety, Annie Hillier, certificated by the Floral Committee of the Royal Horticultural Society a few days ago, comes very near to this: Exquisite has all the freedom and vigorous growth claimed for the new form. Magnifica is in the way of Earl of Beaconsfield, but has decidedly smaller flowers, though they are fully double. Eva Fish has so much individuality of colour as to deserve placing by itself. It is quite distinct, and of a rosy-lilac shade, melting into blush; trusses and flowers alike large, beyond the ordinary size; very good in all respects. This has white flower and leaf-stalks.

Among the white varieties, Mrs. A. F. Barron is the queen at this season of the year. The flowers are pure white, but they show at times the faint purple stripes that are more distinctly characteristic of the blossoms later on, when the atmosphere becomes clearer and brighter as winter melts into spring. Mrs. Eyre Crabbe, a variety of some fifteen years' standing, is in the same way, but has smaller flowers. White Lady is very like Mrs. Barron, but in its proper character is white, while Mrs. Barron is striped. Marchioness of Exeter and Princess appear now to be counterparts of Mrs. Barron, but the cultivator finds that they develope differences in the colour and depth of the stripe, though they are not so discernible at one time as at another. Fairy is very pretty indeed; the prevailing colour is white, but the centre or ground is of a delicate blush; it is a robust grower and very free, and altogether a most acceptable variety. Blushing Beauty has the petals suffused with a most soft and delicate lilac-pink, the young flowers are quite pure white, but as they age the blush tint pervades them; the flowers are large and full, but the leaf-stalks are inordinately long, which robs the plant of a suitable compact appearance. Candidum has smaller flowers, and is of a more compact growth.

This collection of double Primulas are in 48 and 32-sized pots, according to the size of the plants. The soil used is of a rich character. Perhaps some persons fall short of success because they cultivate in too poor a soil. Too much leaf-mould is not desirable for plants of robust growth and good size; it does well for starting the plants into growth, but is too poor when the riper development comes. The pots are drained well, and a little mortar rubbish mixed with the soil is found to be of great advantage. Another item in the mode of treatment the plants receive at Chiswick is worthy of notice. When potted the lowermost leaf-stalks are allowed to just rest upon the soil, but are not buried in it. The Chinese Primrose, like the Primrose, Polyanthus, Auricula, and others of the same family, will throw out roots from the leaf-axils close to the soil, and these greatly assist the plants in their development, while they afford anchorage, and assist to keep the plants upright and firm.

There is due to the gardener much credit when he succeeds well with any flower, even the easiest to cultivate. Still greater credit and honour fall to his lot if he succeeds with a plant that is under the most favourable circumstances difficult to grow, requiring skill and close attention to develope it in its best form. Such a plant is the double Chinese Primrose. Mr. Barron shows the way in which this difficult subject can be brought to a high state of perfection, and his success may perhaps induce others to go and do likewise. *R. D.*

## GREENHOUSE FLOWERS.

AZALEAS.—Some varieties lose their leaves very much more than others at this season, and in some cases to such an extent as to cause considerable anxiety to the inexperienced. All the decayed leaves must be removed. Continue to train into shape any plants that have not yet been attended to. It is now time to place some of the plants into heat; those that naturally flower early should go in first, and all the flower-buds ought to be prominent by this time. It is very necessary to force slowly, as a strong heat at first causes the plants to start into growth, and the young wood is too far advanced before the flowers open. A low temperature to start with, advanced but slightly until it is seen the flower-buds are swelling, is the best. A moderate degree of moisture in the atmosphere is best, but the plants should be syringed overhead on the mornings of fine days. The Ghent Azaleas will stand a much higher temperature and abundant moisture in the atmosphere. Fumigate freely to destroy thrips, and also to prevent their appearance.

### CALCEOLARIAS.

The plants should now be in a healthy and clean condition, else there will be very little probability of a good bloom in the season. This has been a good season for them, as it has not been necessary to give much artificial heat. It requires considerable attention to prevent injury from an over-dry atmosphere. There is not so much danger when the houses are efficiently heated; but in truth other plants suffer besides Calceolarias through the want of a sufficient quantity of piping for the size of the house. For further cultural directions, see vol. xiv., p. 721.

### CAMELLIAS.

There will now be a succession of bloom until March if the plants have been cultivated for this purpose during the previous season. The plants require a rather liberal supply of water at the roots, and are apt to be injured if they become too dry; they also dislike an arid atmosphere. If both of these evils are combined, it is very likely that many buds will drop off. Much injury, too, is caused by the use of bad compost. Many kinds of peat soil and also certain sorts of loam are unsuitable; I find turfy yellow loam, in which Bracken and Heaths grow naturally, added to about one-third part of turfy brown peat, is the best lasting compost. Some crushed bones, charcoal, and a little rotten stable-manure, are good stimulants to mix with them. The part of the house that gets least sun and air is the best adapted for the Camellia.

### CHINESE PRIMULAS.

These plants are now exceedingly useful for decorative purposes in the greenhouse and conservatory. The modern strains continue to produce flowers for a much longer period than the old single forms, and now that there are so many really fine double varieties the interest in the plants is vastly increased. The plants in flower should be carefully watered, as too much water at the roots, and a moist atmosphere in the house, often causes the plants to damp off at the neck. Small plants, if potted on now, will soon throw up flower-trusses; they do best when placed in a house near the glass, and in a temperature rather warmer than that of an ordinary greenhouse.

### CINERARIAS.

During the damp weather we have had recently some of the leaves have rotted off; to avoid this as much as possible give plenty of air, and get up a moderate heat in the hot-water pipes. Cold frosty winds cause the leaves to curl; when these are blowing from the east the ventilators should be kept quite close on that side. Mildew may now be showing—dress the affected parts at once with flowers of sulphur. Tie out and peg down the shoots of specimen plants as they require it. It is best to fumigate once in three weeks, to prevent the appearance of greenfly, which does much injury by preventing the buds opening at this season. The early plants may be placed in a warm house to hasten the opening of the flowers.

### CHRYSANTHEMUMS.

We have been rather later in getting the cuttings put in this year, owing to the later bloom, but they will be put in very soon in the same way as previously advised. There is still bloom on the later varieties, and although the leaves are now decaying the flowers are useful for cutting from. The pots containing the cuttings should be put in a cold frame for some time, and in a few weeks after they may be placed in a hotbed, but avoid a violent heat, which draws the plants up, and is injurious to them. The cuttings should be dipped in strong soft-soapy water to kill greenfly before planting them in the pots.

### HYACINTHS.

Plants that were placed in a little heat in November will now be coming into flower, and they are very welcome as the Roman Hyacinths go out. The plants should be taken out of the forcing-house and be placed in the greenhouse as soon as the blooms on the base of the spike open; they will last a month or more at this season. Those intended for exhibition about the end of March should be taken out of the plunging material about the middle of January. Place them in a cool greenhouse or pit, near the glass of course. A small pot should be inverted over the crown of each plant for a few days to inure them gradually to the light. They will not require water for a week or more after placing them in the house, after that time they will require to be well attended to. They are easily over-watered, and do not require nearly so much as many persons suppose. Unless they are placed in heat they will not require it more than twice a week up to the time of the blooms being fully opened.

### STAGE AND FANCY PELARGONIUMS.

Where a good collection is grown there is plenty of work during the winter months. The early flowering plants which ought to have been potted in October will require continual attention to train the plants into proper form, and to keep the leaves free from insect pests. If the later-flowering varieties have not yet been potted see to it at once, and should the shoots be rather drawn, as they are apt to be at this time of the year, they ought to be stopped. Late potted plants have a tendency to grow much to leaf, with fewer flowers than those that are early potted. If it is intended to get any plants in very early they should now have a little heat, but to get a good bloom the decorative varieties are the best.

### ZONAL PELARGONIUMS.

The plants now in flower require only a moderate supply, and if any of the trusses are to be cut, it is as well to let all the pips bloom out first; the double varieties, white and rose-coloured, are really very pretty. Cuttings may be taken off and put in at any time now. They will soon form roots, and grow away freely on shelves near the glass in a cool house.

### VERBENAS.

Early spring-struck cuttings are the best to form good specimen plants for summer flowering, and to obtain these the old plants should be placed in a forcing-house to give them a little start. See that they are quite clean and free from mildew before being taken into a warmer atmosphere. The soft growths from the points of the shoots very soon form roots. The cuttings should be put in some light sandy soil in a moist bottom-heat. *J. Douglas, Loxford.*

# Garden Operations.

## PLANT HOUSES.

Stove.—It will be advisable, now that the days will soon begin to lengthen, to prepare for a general inspection of the plants in this department—to pot those that may require it, and to top-dress any others where necessary. The soil for potting purposes (at this season of the year especially) should be warmed to about the same temperature as the house in which the plants are grown. A good supply of nice fibrous peat ought to be prepared; in pulling it to pieces preserve all the fibre possible, and if on the under sides of the sods there should be any sour, inert soil it should be laid aside. Some good fibrous loam should also be prepared in the same way, keeping close watch for worms, which, if overlooked, will give trouble afterwards. Two-thirds of peat to one of loam, with a liberal addition of silver-sand, may be taken as a good average mixture for stove plants. In the case of plants which are intended to be grown on quickly the addition also of a few handfuls of bone-dust, soot or artificial manure, may be used with great advantage, especially in the case of Crotons, Dracænas, Palms, and other fine-foliaged plants. When the potting process is being carried on the paint, glass, and other parts of the structure should be cleaned. Previous to re-arranging the plants train and tie out any that may require it. Keep the house a few degrees warmer by night and closer during the day after repotting, with a frequent use of the syringe, but be very watchful not to over-water freshly potted plants.

A batch of Caladiums should now be started into growth; and where a good supply of Eucharis is grown, some pots kept in a cooler house after having made their growth, if kept dry at the root for a few weeks and then removed to the stove again can be had in flower with tolerable certainty in about six weeks. A small batch of Gloxinias may now be started where an early supply is desired. It is not advisable to force stove-flowering plants, such as Allamandas and Clerodendrons, too early, or the duration of their blossoms will be shortened. Gardenias and Stephanotis may be brought into early flower with a better result, in fact the former may be had in bloom the greater part of the year, if a good supply is grown with abundance of heat and moisture. Dipladenias will now be breaking freely into growth, and should be trained on wires near the glass. If not yet re-potted, this should be done without further delay.

Greenhouse.—Mignonette sown now in pots will be found useful for a succession; on the usual drainage a layer of fowl's-dung, filling up with good loamy soil, in which old mortar rubbish has been freely mixed; press the soil down very firm. Water liberally when the plants are in free growth, in fact Mignonette in pots should on no account be allowed to become dry, or the foliage will soon turn pale and sickly. The different kinds of Rhodanthe, also Ten-week Stocks sown now and the latter potted off three into a 4½-inch pot, will be of service. Other annuals may be treated in like manner; they should be more grown than they generally are. Cinerarias and herbaceous Calceolarias should have the coolest part of the house, where the frost is just excluded; the latter, if so far wintered in cold frames, must not be exposed to cold draughts, if circumstances necessitate their removal into a more airy position, or loss of foliage will be the result. Some early-struck Fuchsias will come in useful; by placing some old plants in heat a good batch may soon be had, which, if grown on quickly, may be made into good specimens by the autumn.

Forcing-house.—This structure will now be of great service in forwarding plants for cut bloom and conservatory decoration. Lily of the Valley should be introduced a few at a time, to keep up a supply of fresh spikes. For early work the single crowns are preferable. They will come on freely if plunged in a brisk bottom-heat, covering the pots and crowns slightly with cocoa-fibre. Lilac Charles X. is a good kind, flowering freely in a compact state. Azalea indica of the early flowering kinds, as Narcissiflora, Borsig, and indica alba among the whites; punctulata, Apollon and vittata elegans of the striped kinds; Roi Leopold, Madame Van der Cruyssen and Stella among the self-coloured sorts, will be found among the easiest to get into early bloom. A. amœna is still one of the best for early work; A. obtusa, similar in growth to the former, but of a bright red colour, is very useful; A. mollis, in its various shades of colour, should be grown largely for forcing purposes. Staphylea colchica is also proving itself to be an easy plant to force. Deutzia gracilis and Prunus sinensis alba fl.-pl. will now come into bloom freely. Pot Roses may be introduced into a Peach-house at work, where they can come on steadily. Rhododendrons will also do well with the same treatment. Roman Hyacinths and Paper White and Roman Narcissi will still be doing good service, easing the too early forcing of later kinds. Regular supplies of all forcing plants should be introduced into heat according to the demand. *James Hudson, Gunnersbury House Gardens, Acton, W.*

## HARDY FRUIT GARDEN.

The sharp frosts that we have recently experienced will be of advantage to fruit trees by retarding growth, which gave indications of coming on too fast. Severe weather of a continuous character may yet prevail, and many operations be proportionately delayed; therefore, no favourable weather for pushing on work in this department ought to be lost. The supply of food to the roots of fruit trees is an operation to which primary importance ought to be attached; yet borders planted with bush fruits and with pyramidal and espalier trees are often suffered to go for years with little manure, and that frequently of the most unsuitable description. To insure early fertility in most soils it is necessary to keep the roots as near the surface of the ground as possible; this precludes the possibility of working in much dung, and necessitates the employment of some rich thoroughly-decomposed material. Let the most favourable weather be chosen for forking-in the dressing. When the roots are very close to the surface it is well to merely scrape away as much of the surface soil as possible, replacing with manure, and finishing off with a sprinkling of soil from a portion of the ground less occupied with feeding-roots. We find no manure more suitable for the above purpose than that which is furnished by the vegetable-refuse heap—the accumulation of twelve months, which is then turned, and lies another year before being used, and from which all weeds, prunings, and sweepings are carefully kept. These latter, when charred, make equally good material for fruit borders, to which a larger proportion ought to be devoted than usually falls to their lot.

Where there are tanks for collecting the liquid manure from the stables, &c., the borders that require such assistance may receive copious waterings at this time of the year when the liquid is not in great demand, and is apt to run to waste. Let it, however, be used with discretion, and for such subjects as have been so long established as to suggest the partial exhaustion of the surrounding soil. It may generally be used at the full strength at this season where the rain-water from the roofs has access to the tanks. When the soil is moist there is less danger of injury, even when applied too strong, than when the soil and rootlets are in a thirsty state.

Maiden trees intended for pyramids may be headed-over to within 1½ foot from the ground if not furnished with shoots at that height; but where so furnished they may have the leader cut back to the length of 1 foot above the branches. Many young trees are prevented from becoming handsome pyramids by the neglect of this heading-back, while on the other hand some are cut back that do not require it—when, naturally, almost perfect in shape. Young trees that have been sufficiently long planted to allow time for subsidence of soil may be nailed in on walls; keeping the points of the lower branches ascending a little from the horizontal.

Where bush fruits are pruned early and bullfinches are numerous, there is often much injury done to the bushes by the birds. It is, therefore, advisable in some cases to put off the pruning as long as convenient; but as the buds now show unmistakable signs of swelling, it is well to prune at once all bush fruits that have not already been done. The principal object to be attained by pruning is that each branch may have its due share of space and light, and that the general symmetry of the bush be preserved or improved. In pruning Gooseberries let all shoots that are retained be those that radiate as regularly as possible from the centre, keeping no more than are required for furnishing the bush; all other shoots may be cut back to two or three buds, but strong shoots starting from the base, or from the main branches where not wanted, had better be torn off rather than cut. By pulling off those shoots the emission of many similar shoots next summer is avoided. Red and white Currants may be kept from over-crowding as recommended for Gooseberries; Currants are, however, naturally more inclined to make short fruitful growths, many of which may be left unpruned if by so doing the bushes be not crowded. Let black Currants have only such growths cut away as cross each other or are extending beyond the limits assigned them, and where any branches are crowded let a portion be cut clean out. Stocks required to be grafted may be headed over, and the necessary scions must be taken off, carefully labelled, and at once inserted in moist soil at the base of a wall with a northern aspect, as that position tends to retard them until the flow of sap in the stocks intended for their reception has commenced. *R. Crossling, St. Fagan's Castle, Cardiff.*

## FRUIT HOUSES.

Vines.—We are now experiencing unfavourable weather for forcing early Vines, so that great care must be exercised in admitting air, for Vines, like all other forced plants, will not bear cold draughts. Give a little air on all favourable occasions, and if the weather is very severe, a few degrees of lower temperature will do no harm, but a higher temperature in cold dull weather is very injurious to Vines, causing the leaves to grow thin and flabby, and to flag on the first appearance of bright sun. Vines showing fruit should be kept at a night temperature of 60°, with a rise of 10° by day, and the paths, walls, &c., must be damped with tepid water. As soon as the heat rises to 65° attend to the fermenting materials on both outside and inside borders; and if the heat is on the decline add fresh materials, turning that on inside borders every morning, as it gives off ammonia, which is very beneficial to the growth of Vines. Examine the inside border, and if at all dry water well with clear tepid water at 85°, and then it will carry them till they are set and thinned. Outside borders, as a rule, will not require water, at least before April. Attend to the succession-house started on January 1, and gradually increase the temperature as the buds commence swelling, damping well with tepid water both paths, walls and Vines. Now is a good time to start Muscats for those wishing to exhibit early in August, as if started later there will not be time to finish them off of a thorough golden colour. Pearson's Golden Queen also requires a long season of growth; if started now with Black Hamburghs it may be expected to be in good condition by the middle of August. Pot Vines coming into flower may be kept warmer and drier, tapping the rods occasionally to spread the pollen. Late Vines that are in a bad state had better be taken in hand at once, getting a compost of turfy loam, bones, lime rubbish and charcoal ready for them in a dry shed, also a good supply of brickbats or broken stones cleaned, so that all is ready for the first favourable opportunity; on the concrete put 15 inches of drainage, with a thin turf, grass side downwards, all over the drainage. Make the border 8 feet wide, with a wall of turf in the front. Take great care to preserve the roots, and lay them out evenly in the new compost, and tread the soil down firmly, then give a good mulching of manure over all. Our borders are both inside and out, which is no doubt the best plan, as the inside borders keep the Vines going until they make new roots in the soil outside. Now is a good time to put Vine eyes in turfs, 9 inches square, for planting permanent vineries. Place them in a heated pit, and stand the turfs close together; they can then be moved and planted where wanted. Late Grapes, cut and bottled in the fruit-room must be kept at a steady temperature of 45°, filling up the bottles with soft water when required. *Joshua Atkins, Lockinge Gardens, Wantage.*

Pines.

The remarks made in my last respecting temperatures, watering, and ventilation, continue to hold good. Those plants that have shown fruit since October should be well cared for, as they will come in at a time of the year when fruit is very scarce, and keep up a continuous supply until the summer fruit comes in. Give them a direct south aspect near the glass, to get all the light possible. The Charlotte Rothschild is a grand Pine, and, with the Smooth Cayenne, should be in every collection; neither of these sorts are, however, prolific in regard to suckers, which makes them very scarce. A good way to increase the stock is to take all the leaves off the old stools or stems, and place them in a horizontal position in boxes 4 inches deep in good light soil. Keep the soil moist until they form suckers—these, when large enough, may be taken off and potted. Another mode of propagation is to cut the old stools up into lengths of from 2 to 3 inches, and to place them in pots until they form suckers, when they are to be taken off and potted. Prepare soil at once to be in readiness for shifting those plants that require it next month; choose a good loam with a strong tenacious fibre and have the finer particles sifted out. To each barrow-load of soil put one 8-inch potful of half-inch crushed bones, and bone-dust in equal parts, with a 6-inch potful of well-prepared charcoal about the size of pigeon's eggs: this keeps the soil open and sweet. Put the soil in a warm place to take the chill off, and see that it is in a good medium state, neither too dry nor too wet. This is of special importance for potting. Avoid using an inert soil, as Pines make large roots like Orchidaceous plants. The best place to select soil from is the deer park, where the turf has not been moved for many years, but gradually enriched by the droppings of the deer. Assuming that fermenting materials have been prepared, commence to make up the hotbeds, which will give time for the heat to subside; make them a good size, build up the sides firmly, using the longest litter for them—let the inner layers bind the sides together, which will prevent them giving way. Use about two-thirds leaves and one-third litter: Oak leaves are best. When the beds are completed place the frames over them to keep out the rain; if the beds are thoroughly made less time will be required in renewing the linings. *D. Wilson, Castle Hill, Devon.*

APPOINTMENT FOR THE ENSUING WEEK.

THURSDAY, Jan. 20—Linnean Society meets at 8.

THERE is, perhaps, no greater need in cheap horticultural literature than a thoroughly good guide to builders, parish authorities, and others, in PLANTING NEW STREETS and NEW GARDENS; or, if such a book exists, nothing could be more desirable than that its precepts should be more generally carried into effect. Most architects and builders consider it necessary to do something in the way of planting, and some of them, judging from what we see, must lay out sufficient money on trees and shrubs to render the gardens and streets attractive; but, generally speaking, the result is unsightliness, more offensive than the original nakedness of the place. At the present time there seems to be a rage for planting trees in the streets and roads, regardless of the requirements of the one and the suitability of the other.

With regard to planting trees in streets, we have frequently pointed out that it is an expensive operation, if properly performed, and if not properly performed the money expended is worse than thrown away, because the starved and dying trees are an eyesore as long as they are permitted to remain. Furthermore, we cannot too often repeat that even where the streets are wide enough for trees to attain their full development, the question whether the street would not be better without trees should be duly considered. We mean in a humid almost sunless climate such as we enjoy, or endure, in this country; for there is no denying the fact that we get very little sunshine, though it is mortifying to have to concede it to a foreigner who talks about the sun as if it was his own property. Now, in spite of the narrowness of the roads, and almost every other unsuitable condition imaginable, trees are stuck in—not planted—in many of the new streets in the suburbs of London. If there is any suburb of London in which one might expect to see some judgment and taste exercised in planting streets and small gardens, it is, we should say, Chiswick; but the newer Chiswick is, perhaps, more disfigured by injudicious planting than any other locality we could name. Many of the new streets are made absolutely hideous by what, no doubt, was intended to embellish them. They are exceedingly narrow, both as to road and footway; but that has not prevented somebody from sticking in some miserable trees about 2 yards apart and 3 to 6 inches from the curbing. It is true that the distance apart and from the curbing is immaterial, because most of the trees will only grow smaller; and although we observed, in one instance at least, that a tree had been planted almost within a yard of a lamp, we doubt whether it will ever grow sufficiently to obscure the light. Most of the trees are slender sticks, with a few shoots at the top, and they are supported and protected by three tall stout stakes each, and, in some cases, tied up with straw-bands. In fact the "trees" are the only inconspicuous objects in this "arrangement," and they are likely to remain so. Perhaps some of the Willow-poles may grow instead. At all events, if left alone, the stakes and straw and struggling trees will long continue an eyesore to such of the inhabitants as can appreciate a tree in the proper place. It is right to mention that there are some praiseworthy exceptions to this bad planting, but they are not far from the gardens of the Royal Horticultural Society. What did we see in some of the small front gardens? Well, in gardens a few yards square, or rather we should say of a few square yards, we observed that there is a great preference for trees that grow to a large size. Within a few feet of a window is an Araucaria, a Wellingtonia, a Deodar, a Cupressus Lawsoniana, or some other equally large growing tree. In like manner the shrubs are planted as if, like the house, they would get no larger. What a contrast some of the tasteful little gardens offer! Unfortunately these remarks on villa gardening are of very general application. However, every one will do as he likes in his own garden, according to his lights; but it is to be hoped

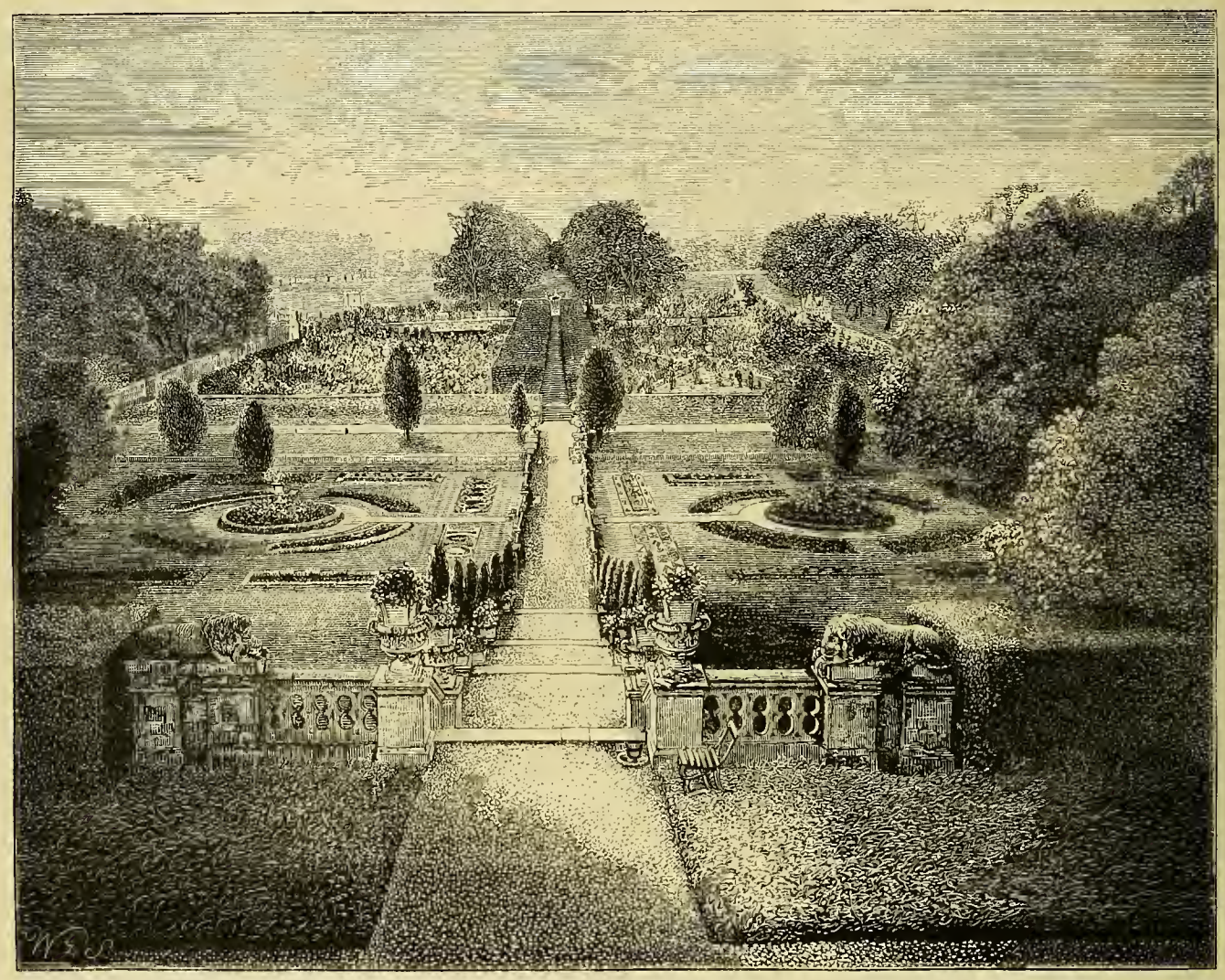

FIG. 15.—VIEW OF THE GARDENS AT EASTON HALL. (SEE P. 83)

that the craze for planting trees in narrow streets will soon die out.

Another point which urgently requires pressing on the notice of those concerned is, that some care is required after planting. In how many of the miles of new streets, year by year opened for traffic in the neighbourhood of the metropolis, do we find trees "stuck in," and then left to their fate. Even the friendly aid of a stake is denied, or, if granted, it is applied so as to throttle not support, the tree. In how many cases do we see the tree barked by the butcher's boy on foot, or snapped off by the cart-wheel of his brother functionary.

Again, as to pruning—save the mark!—see what is done by the jobbing gardener, in the perfect assurance that it is for the benefit of the tree. In a forecourt garden facing a new street we are too often witnesses of a process analogous to that of placing a basin on a man's head and then clipping his hair around the edge. In a little garden of this kind, where there are a pair of Laburnums, a pair of Almond trees, a pair of Thorn trees, a round-headed Acacia, and a Cupressus Lawsoniana or two, we have lately seen the jobbing gardener cut them all alike into a globular form. And all this is done with the idea that it is good for the trees, as we learnt one day lately, when, on passing, we were unable to refrain from comment — we were intrusive enough in our feeling of agony to remonstrate. In these cases we do not so much blame the jobbing gardener as the proprietors of the "villas," who must be so ignorant of the proper growth of trees, and so utterly indifferent to the interest and beauty of plants that they allow such barbarous mutilation to be done on their premises without protest. Unfortunately these are so far from being exceptional cases that you can hardly pass down a suburban road without being shocked at such frightful barbarisms as we have alluded to. Is this not a subject for local horticultural societies to take up?

FIG. 16.—EASTON HALL, THE SEAT OF SIR HUGH CHOLMELEY, BART. (SEE P. 83.)

—— A THORNY PATH.—The pitfalls in the way of translators are but too numerous. Here is an illustration which we have lately met with. The author, an American, was doubtless speaking of the Prickly Pear (Opuntia missouriensis), which his French translator, not recognising the meaning of the word "prickly," renders as "la poire de Prickley"!

—— THE SWEET CAPSICUM.—A short time since we figured a remarkable variety of this plant, and commended it to notice for its splendid appearance rather than for its esculent properties. The proper method of using it for culinary purposes is thus described in a recent number of the *Journal de la Société Nationale d'Horticulture de France*:—"It should be roasted over a moderate fire [for a short time?], when it may readily be deprived of its skin, and then sliced for use in salads or as a garnish."

—— VEITCH MEMORIAL PRIZES. — We may mention that the Trustees of the Veitch Memorial Prize Fund have voted a sum of £50 to be offered in ten £5 prizes, each accompanied by a Veitch Medal, at the Manchester International Horticultural Exhibition to be held in August, 1881.

—— "CORRESPONDANCE BOTANIQUE." — The eighth annual edition of this useful publication has just been issued. It comprises a list of the institutions, periodicals, and societies devoted to the promotion of botanical and horticultural science throughout the world, together with an enumeration of the names and addresses of those connected with them. Year after year there are necessarily changes in the contents of this publication, but as for the publication itself, the change is always for the better. It is published at 1, The Boverie, Liège, Belgium.

—— A FIRE AT THE FULHAM NURSERIES.—Mr. ROBERT OSBORN's many friends will regret to hear that the Fulham Nurseries were the scene of a fire on the evening of Friday, Jan. 7, which happily caused but slight loss, but which, had the wind been in a southerly direction, must have destroyed the whole of the buildings surrounding the packing-shed, in which the fire broke out. Although a considerable portion of the shed and its contents were destroyed, the fire was fortunately arrested before it could reach the office and seed-shop, but while it was proceeding almost everything was moved from those premises by the assembled mob, by whose hands windows were broken, and bags of seeds thrown out in the most

reckless manner, so that some of the latter and various "sundries" were lost. We are glad to hear that business will only be delayed in the seed deparment for a few days.

—— GARDEN TOOLS AND IMPLEMENTS.—At the great summer show, to be held at South Kensington from June 3 to June 7 next, the Council of the Royal Horticultural Society announce their intention of offering a Silver and a Bronze Medal for the best general exhibit in each of the following classes:—1, garden cutlery; 2, garden pottery; 3, garden tools; 4, wirework; 5, garden seats, chairs, &c.; 6, meteorological instruments; 7, ornamental flower-stands; 8, enting and shading material, &c.; 9, mowing machines; 10, garden engines, syringes, &c.; 11, rustic adornments; 12, heating apparatus; 13, hothouses and garden structures, modes of glazing, &c.; and 14, miscellaneous subjects not included in any of the above classes. Certificates of Merit will also be awarded to any special novelty approved of by the judges that may be entered and brought before their notice; and two Gold Medals will be awarded by the Council for the largest and most meritorious exhibit in this department.

—— BULLETIN DE LA FÉDÉRATION DES SOCIÉTÉS D'HORTICULTURE DE BELGIQUE.—The report of the Federation of the Horticultural Societies of Belgium for the year 1879, which has just reached us, contains, in addition to reports on the proceedings of the various societies, the list of botanic gardens, professors, &c., elsewhere noticed under the head of "Correspondance Botanique," and a translation of an interesting manuscript on the flora of Colorado. The details relating to the plants and to the meteorological and other conditions of the country, are of much value. A table of contents and an alphabetical list of the plants met with add greatly to the value of the document.

—— XANTHOCHYMUS PICTORIUS.—In a recent number of the *Revue Horticole* a figure is given of this plant in a fruiting state. The plant is not uncommon in botanic gardens, where its bold, leathery, deep green leaves are very effective, but it flowers rarely. The fruit is of the size of a large Plum, prolonged at the top into a short conical beak, which is bent to one side. It is a near relative of the Camboge plant, and, like it, produces a yellow juice.

—— POTATO EXHIBITIONS.—The fancy for Potato Exhibitions would seem to be growing. From the remarkable exhibition of Potatos held in Manchester a few years since grew the International Potato Show, now probably a permanent institution. From out of that has grown the Potato Show at Harborne, and now another country show, based on the International rules, is announced to be held at Kelvedon, for the county of Essex. As Potatos, and perhaps hardy fruits, present almost the only subjects which will admit of equal competition on the part of both farmers and gardeners, it will not be a matter of surprise to find that in a few years autumn exhibitions for the display of these products will be very general in the provinces.

—— RHODODENDRONS IN HYDE PARK. — We are informed, on good authority, that Her Majesty's Commissioner of Works has entrusted to Mr. ANTHONY WATERER, of Knap Hill, the task of providing and planting a large number of Rhododendrons and Hardy Azaleas in Hyde Park during the approaching season. The plot of ground commencing at Albert Gate, and lying between Rotten Row and the carriage drive, is to be wholly devoted to Rhododendrons and Azaleas, to the exclusion of summer bedding—an arrangement which will add greatly to the floral effect of the park during the height of the London season, and also to its permanent beauty. In addition to those on this prominent spot, a considerable number will also be planted on the north side of Rotten Row. Should the Fates prove propitious, 1881 promises to be a grand Rhododendron year, the plants being unusually well budded.

—— A NEW BANDAGE FOR FIXING GRAFTS.—A nurseryman named GRÜN, of Ingersleben, Thuringia, has invented a new bandage for grafts, for which, as we learn from REGEL'S *Gartenflora*, he has taken out a patent. It is a strip of caoutchouc, which is fastened by means of two little hooks in one of two holes, according to the circumference of the graft. Several different lengths are made. This invention is described as very convenient and practical, but not likely to be used by nurserymen on account of the cost being very much higher than that of the materials commonly used. Amateurs are, however, recommended to give it a trial.

—— AINSLIÆA WALKERI. — This graceful little composite from Hong Kong is a very rare and interesting species, discovered and introduced to this country since the publication of BENTHAM'S *Flora Hong-kongensis*. It grows about 1 foot high, and the slender, distant, shortly-stalked flower-heads are borne in erect or somewhat nodding racemes. The white corolla-lobes and the red-purple anthers make a pretty contrast. There are specimens in flower in the T-range at Kew.

—— GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At the annual general meeting, held at the Bedford Hotel, Covent Garden, on Thursday night, the following were the successful candidates for election as pensioners:—George McKay, John Connolly, George Curd, Ann Kay, Rebecca Laybank, William Morse, James Pike, Thomas Smart, Ellen Smith, Ann Wells, William Youell, James Duckett, and James Porterfield.

—— THE MECHI FUND.—At a preliminary meeting of the committee of the MECHI Fund, held on January 7, at the offices of the Royal Agricultural Benevolent Institution, it was resolved that a National Committee be appointed with the view of raising a fund to provide for the widow and family of the late Mr. J. J. MECHI, and a General Committee, consisting of the gentlemen present, with power to add to their number, was appointed for the purpose of carrying out that object. Mr. C. BOUSFIELD SHAW is the honorary secretary.

—— ANOPTERUS GLANDULOSUS.—The subject of this note is an evergreen shrub from Van Diemen's Land, handsome both in its somewhat healthery dark green foliage, and in its terminal erect clustered racemes of rather large, white, rose-tinted flowers. Nicely flowered plants are to be seen in the Conservatory at Kew. Many years ago it was stated that the species would probably succeed well in the open air of the milder parts of England. Has the experiment been tried?

—— GARDENING IN SPAIN.—We have received the first number of the *Revista Horticola Andaluza*, edited by Don RAFAEL CARILLO Y PAZ. The form is like that of the *Revue Horticole*, but without illustrations. We trust our contemporary may be able to do something towards making more generally known the rich flora of the Spanish peninsula, many representatives of which would form highly desirable subjects for introduction into our gardens. By making known these plants, and developing their capabilities, Spanish gardeners would do a greater service than by merely copying the horticulture of other parts of Europe.

—— MUD AS A FERTILISER. — One of our great railway companies is exhibiting considerable faith in the usefulness of river mud as a soil fertiliser. It offers to purchasers of this article the privilege of having it delivered at any of its stations at the charge of 6*s*. per ton in a dried and pulverised state. This material has been declared by a competent analyst to be worth 10*s*. per ton as a manure, which certainly does not appraise it at a high value, but no one could expect that such a deposit as river mud could possess any very large proportion of nutriment. This mud is chiefly composed of the soil washings from uplands brought down in solution by storms and flood-waters, and left to settle down when the various turgid streams have fallen into the slower and more placid flowing river. Some manure may be mixed in the deposit, some clay, and some sand. These latter are the heaviest bodies, and sooner find the bottom, the former and lighter particles float on for a longer period, some perhaps carried into the sea, whilst all are so much washed that the proportion of nutriment which falls to the bottom is very small indeed. Mud deposits of this kind would, no doubt, prove a considerable help to poor parched land, but be of little value to strong soils. Employed in this way landowners may find it profitable in assisting to bring poor land into a state of fertility, but it would hardly answer the purpose of a tenant so to apply it, as he can obtain manurial constituents in a more concentrated and more portable form than can be found in the richest of mud deposits. To horticulturists it may be worth a consideration whether this dried mud may not offer, in conjunction with sand and leaf soil, very good pot-plant compost; and no doubt those who find it difficult to cultivate the choicer kinds of hardy plants would materially improve the growth of these by adding to the soil a top-dressing of this dried mud deposit.

—— SPECIAL PRIZES.—We note in the schedule of prizes recently issued by the Royal Horticultural Society, that Mr. WILLIAM BULL again offers a series of valuable cups for new plants of his introduction; the competition for the same to take place at the first great show in June. At the same exhibition, Messrs. SUTTON & SONS offer medals and money prizes in classes for four dishes of Peas, and for two sorts each of Melons and Cucumbers, a brace of fruits of each variety; a five guinea Royal Polytechnic barometer is offered by Messrs. J. DAVIES & Co. for nine Zonal Pelargoniums, distinct; and Messrs. JAMES BOYD & SONS offer a five guinea silver cup for the best six distinct kinds of fruits. On June 28 and 29 the General Horticultural Company (JOHN WILLS), Limited, offer £65 in three prizes for the best group of plants arranged for effect on a space not exceeding 400 superficial feet, by gardeners or amateurs only; and a similar amount, under similar conditions, for competition by market growers. Messrs. CARTER & Co. give prizes for one dish each of four sorts of Peas; Messrs. SUTTON & SONS for twelve dishes of vegetables; Messrs. WEBB & SONS for six dishes of vegetables; Messrs. WEBBER & Co. for the best packed three boxes of fruit; and Messrs. THOMAS RIVERS & SON for six fruits of the Lord Napier Nectarine. A Fellow of the Society offers a silver cup and two money prizes for nine Hyacinths and nine pots of Tulips on March 22, and Messrs. HOOPER & Co. contribute prizes for the best collection of Calochorti in bloom on July 12; for Tomatos and Melons on August 9; and for Tuberoses and Potatos on October 11. An interesting competition, to be held on August 23, is instituted by Messrs. EWING & Co., of Norwich, who offer first and second prizes for a collection of shoots or twigs of twenty-four varieties of trees and shrubs, hardy in British gardens, the degree of hardiness to be taken into consideration in awarding the prizes. Messrs. SUTTON & SONS on November 8, and Messrs. JAMES CARTER & Co. on December 13, again offer liberal prizes for vegetables.

—— THE ROCHDALE GARDENERS' AID SOCIETY.—We have received a copy of the balance-sheet for 1880 of the Rochdale Professional Gardeners' Benevolent Aid Society, which was established in 1874 to aid its members in cases of sickness or other urgent necessity, to render assistance to members out of employment, and to aid gentlemen in procuring respectable gardeners. We are informed that in the Rochdale district about fifty gardeners and under-gardeners are employed, and the Society consists of about twenty of these, who pay 1*s*. 2*d*. per month. During the year the committee made grants to the amount of £9 10*s*., and commence the new year with a cash balance of £37 18*s*. 2*d*. The Secretary is Mr. GEORGE WOODCOCK, Falinge Fold, Rochdale.

—— PLANT GROUPS.—For the last ten years, or perhaps longer, plant groups have been a popular institution at flower shows. They have the special value dear to all show committes of filling up advantageously much space that otherwise might be empty, and they admit as exhibitors many plantsmen who otherwise would be unable to compete in the specimen classes, and would therefore be altogether shut out. But beyond these things plant groups were regarded as educators, the competition for what are termed the most artistically arranged groups presenting useful elements, teaching and instructing younger men in the production of the most pleasing effects. It is in this latter sense that we have to deplore a comparative failure in results. There is not a flower show in the kingdom where there are not to be seen these plant groups, but beyond the simple fact that they differ more or less in the character of the plants used there is little or no variety in the arrangement, whilst of special artistic effort, original or plagiaristic, there is none. In the big groups sometimes seen at South Kensington Mr. WILLS a few years since startled the world with some

novel and very beautiful arrangements. Hundreds of gardeners have seen these groups and admired them, but how few are there who have gone and done likewise. In London Mr. WILLS has found one or two humble imitators, but these only amongst trade growers, whose special vocation it is to cater for the public taste. What after ten years of surfeited experience do we find in plant groups? There is the stereotyped half circular outline, of course; that form of grouping seems to suit the committees and exhibitors equally well, but the result is inevitably a monotony that never varies. If the grouper has a tall Fern or Palm it becomes the centre-piece, overhanging and overshadowing all the rest: it is the apex of the cone, of which the floor is the base. Then come, arranged in perfect order, and always with due deference to the conical outline, other foliage plants, these almost always largely predominating, with just a flowering plant thrown in here and there, as though exhibiting on the part of the grouper some slight deference to a very depraved taste; and finally we get led down to plants of varied style and smaller in size, a base of Fern and Lycopod, margined with perhaps Isolepis, or Creeping Jenny, or, worse still, blue Lobelia. Thousands of gardeners will recognise and admit the truth of the picture, varied only by more or less of crowding, and all will admit that it represents what is held to be an "artistic and elegantly arranged plant group," in the estimation of that æsthetic and eminent art critic, the local reporter. But after all, are gardeners satisfied, and do they really believe that such groups, stiff, solid, and formal, present the highest point in plant grouping and arrangement to which they can hope to attain? Will they find anywhere in Nature anything that bears the highest resemblance to their crowded groups? Those who have from time to time seen Mr. WILLS' best efforts will remember that he rather attempted to produce natural effects out of artificial elements. A forest of Palms, Ferns, and Dracænas, growing out of a dense carpet of soft-hued flowering plants seemed usually to have been in his mind, and as nearly as the reality could be obtained it was. Will plant groupers strive in the future to see how much they can do in producing a charming arrangement, rather with few plants than with many—what they can do to obtain the maximum of beauty and elegance with a minimum of stiffness and formality, how far they can make use of inexpensive material instead of wasting costly plants, and how far they can display originality and an absence of rule of thumb? Our flower shows are getting very vapid objects of attraction. Who will help to give them some new feature?

—— COTONEASTER ACUTIFOLIA.—What a fine show is afforded during the dull winter months by the handsome, glossy, orange-scarlet fruits of this shrub in places where the birds have allowed them to remain on the bushes. It is certainly one of the best and most ornamental species of a decidedly ornamental genus. The name under which it is most generally known is C. Simonsii; it is also grown in some gardens as C. himalaiensis.

—— ORANGE CULTIVATION IN SPAIN.—The cultivation of Oranges at Cadiz is largely increasing. Within the last few years many new orchards have been planted. As the trees require from fourteen to fifteen years to come to the fruit-bearing state, this increase in the supply of Oranges will be felt more in the future than at the present time. A new industry has been opened at Cadiz through the enterprise of the firm of Messrs. JOHN MOIR & SON, the well-known marmalade makers, who have started a marmalade factory just outside the town. The Oranges are brought there in carts, and cut up and prepared in the usual way, excepting that sugar is not added, on account of the heavy duty on that article. The marmalade is then placed in hermetically sealed iron drums, and shipped to England, where the final operation of sweetening is performed.

—— THE EFFECTS OF THE COLD OF LAST WINTER IN THE BOTANIC GARDEN AT TURIN.—In the last number received of the *Bulletino della R. Societa Toscana di Orticultura*, Prof. ARCANGELI publishes a report on this subject. The months of December and January were very much colder at Turin than in the neighbourhood of London; and on January 25 the thermometer fell as low as 2°.3 Fahr. Such trees as Araucaria imbricata, Cryptomeria japonica, Sequoia sempervirens, Cedrus Deodara, Picea cephalonica, Abies Smithiana, and Pinus pyrenaica, were killed outright. On the other hand, many plants that are really less hardy escaped, doubtless owing to quite local conditions. Although the frost was continuous from December 13 to January 30, save slight interruptions in the daytime on fifteen days, and down as low (or lower) than 14° Fahr. on thirty-six nights during this period, the wet at Turin, as elsewhere, was, in conjunction with the frost, accountable for much of the damage.

—— THE METEOROLOGICAL SOCIETY. — The annual general meeting of this Society will be held at 25, Great George Street, Westminster, on Wednesday, the 19th inst., at 7 P.M., when the report of the Council will be read, the election of officers and Council for the ensuing year will take place, and the President will deliver his address.

—— THE QUEEN'S OAK AT GRAFTON. — The *Journal of the Northamptonshire Natural History Society* for November, 1880, contains a photograph and description of the tree known as the Queen's Oak at Grafton. This tree is more interesting from the story connected with it than remarkable for size, though its hollow trunk measures upwards of 22 feet in circumference at 5 feet from the ground. It was under this Oak, according to tradition, that the widow of Sir JOHN GREY, of Groby, first met EDWARD IV., whom she had sought to implore the restitution of her slain husband's forfeited estates. EDWARD was captivated with her person and manners, and finding her virtue inflexible, was married to her, though the marriage was not proclaimed till some months afterwards. BAKER, *History of Northamptonshire*, says:—"ELIZABETH WIDEVILLE, an ancestress of the present Royal Family, and the first British lady, subsequent to the Norman Conquest, who shared the throne of her Sovereign, was eldest daughter of RICHARD, Earl RIVERS. Her first husband was Sir JOHN GREY, of Groby, who fell at the battle of St. Albans, and being a zealous Lancastrian his estates were forfeited by the victorious EDWARD, and the widow returned to her parental home at Grafton."

—— THE WEATHER.—General remarks on the weather during the week ending Jan. 10, issued by the Meteorological Office, London:—The weather has been dry and very fine and bright in nearly all parts of the kingdom, but in the south of Scotland and north of England some fog or haze was experienced. The temperature was below the mean in all districts, the deficit being as much as 8° in "Scotland E.," and from 3° to 6° in nearly all other places. Readings on the first few days were much higher than those observed during the latter part of the period, when the thermometer fell to 14° at Glenalmond and Parsonstown, to 17° at Manchester, 19° at Churchstoke, and to between 20° and 24° except over the central and southern parts of England, where the minima ranged from 26° to 29°. The rainfall was scarcely measureable n any district. Bright sunshine was much more prevalent than of late in all parts of the kingdom. The recorded percentage of total possible duration was greatest in "Scotland, E." (48°) and "Ireland, S." (44°), and least in "England, N.E." (21°). The wind in Scotland was exceedingly light and variable during the whole period, but over England and Ireland an easterly or north-easterly current prevailed, which, though moderate generally, blew freshly or strongly in most places on the 5th, 6th, and 7th. A fresh to strong easterly gale was experienced on the south and east coast of England on the 6th.

—— GARDENING APPOINTMENTS.—Mr. GEO. FAIRBAIRN (son of Mr. E. F. FAIRBAIRN, of the Edentown Nurseries, Carlisle,) who for the last eight years has been Gardener to the Marquis of WATERFORD, at Curraghmore, has resigned that post, and been succeeded by his brother, Mr. ROBERT FAIRBAIRN. Mr. GEO. FAIRBAIRN has, we understand, purchased the extensive premises at Botcherby, Carlisle, which belonged to Messrs. THOMAS HAMILTON & SONS, and intends there to carry on the business of nurseryman and florist.—Mr. F. THOMSON, for the last eight years Gardener at Bruntwood, near Cheadle, has succeeded Mr. SIMPSON as Gardener to W. BARING, Esq., at Norman Court, Dean, Salisbury.—Mr. B. HOPE, for the last seven years general Foreman at Escrick Park, York, has been appointed Gardener to the Earl of JERSEY, at Middleton Park, Bicester, Oxon.

## EASTON HALL.

THE Easton estate, the property of Sir Hugh Cholmeley, Bart., adjoins that of Stoke Rochford, and Easton Hall, the subject of our illustrations on pp. 80, 81, stands on the brow of an eminence on the eastern side of a beautifully undulated and well-wooded park of some 200 acres, the entrance to which is about 6 miles south of Grantham, on the Great North Road. The timber, which is very fine, mostly consists of Oak and Ash, except the plantations bordering the park, which are planted largely with Fir and Larch.

The River Wytham runs for some distance through the estate, taking its rise about 4 miles from Easton, and emptying itself into the German Ocean at Grimsby. In its ordinary condition the Wytham at Easton is a very modest stream, but during excessively wet periods it quickly overflows its bounds and floods the low-lying lands, including the flower garden, which three times last season was under water for a considerable depth, each time leaving a deposit of mud on the carpet-beds which it required much labour and patience to remove.

The illustrations were engraved from photographs taken from positions looking east and west. In fig. 16, with the Wytham in the foreground, we have the eastern view; and in fig. 15, the western, taken from the top terrace and overlooking the flower garden, with the kitchen garden beyond the Wytham, and in the background a fine avenue of Limes (four rows), which extends up to the North Road. The kitchen garden is about 2 acres in extent and walled in, with two towers on each side, the largest on the left being occupied by the gardener; that in the right-hand corner being the bothy, and the other two are used as store-rooms. The garden is divided in the centre by two immense Yew hedges; that on the left, which is the largest, measuring 18 feet through at the base. Of the planting of this line there is no record, but that on the right was planted about forty years ago by the late Sir Montagu Cholmeley. The site is an unhappy one for a fruit garden, lying low and being subject to an intensity of frost in winters like the last, that kills some trees outright and much cripples others.

From the top of the steps on the highest terrace a fine view of the flower garden below is obtained, and very effective is the style of bedding carried out by Mr. Nixon, the gardener—a combination of boldly designed carpet-beds on either side of the raised road leading to the bridge over the Wytham, and along the front of the river, with the circular beds and quarter circles surrounding them filled with flowering plants. When the late Mr. John Edlington was here the garden was for the most part filled with herbaceous plants, and it has been altered to its present form by Mr. Nixon. Many of the pyramidal trees seen in both illustrations were seriously injured by the severe frosts of last winter, and the fine Irish Yews, planted on either side of the four flights of steps, were injured beyond the hope of recovery. Standard Roses were killed outright, and dwarfs down to the ground line, as also were Box trees, Portugal and common Laurels, and even a couple of fine Cedars of Lebanon.

Looking westwards from the top of the steps may be seen on the right a very handsome Copper Beech, and behind that a noble Ash, which partially screen from view a series of old-fashioned plant and fruit houses; beyond them again a considerable space of ground is devoted to rough vegetables. The conservatory is on the west side of the mansion—a large lofty structure, containing some fine Orange and Shaddock trees, large Agaves, Palms, and Camellias, interspersed with smaller flowering plants, and draped overhead with Habrothamums, Maréchal Niel Roses, and Abutilons. On the northern side of the conservatory is a spacious billiard-room, overlooking a small garden tastefully laid out in Box and gravel; and on the south side an entrance is gained to a long corridor or lean-to greenhouse, about 10 feet wide, with a path down the centre lined on either side with ornamental foliaged and flowering plants, and the wall of the mansion draped with the foliage of a grand old Brugmansia, combined with Cobœa scandens and Plumbago capensis, &c. From a bay in the centre, covered with a curvilinear roof, a view is obtained of a small flower garden on the south side, with the park beyond. There is no special feature in the place to claim one's attention more than another, but taken altogether the garden department is very creditably managed by Mr. Nixon.

## TRESCO ABBEY.

IT was my pleasure to visit the Abbey Gardens, Isles of Scilly, on the 6th inst., and I was surprised to see vegetation so luxurious. In the absence of the head gardener, Mr. Vallance, who was in another part of the island superintending some forty people planting Potatos (Myatt's Ashleaf), of which they put in something like 50 tons for market, besides several tons of late ones for home consumption, I walked around with his foreman, and noticed the annexed list of plants with an abundance of flowers. Mr. Vallance tells me that he has to dress from forty to fifty vases and glasses several times a week, yet the garden has been full of blossom all the winter. The Aloe socotrina is magnificent, with scores of beautiful spikes, and the Acacia lophantha tremendous-sized plants, with a profusion of flower. The Lasiandra macrantha, which is on a wall, looks splendid. I could have very much enlarged the list, but it is sufficient to say that all the plants named are in full vigour and full of flowers. It would well repay a visit to see such plants doing so well in mid-winter out-of-doors. *J. G. Mitchinson, Penzance.*

Aloe ciliaris
,, socotrina
Acacia lophantha
,, Golden Wattle
,, brachybotrya
,, Newmanni
Arctotis grandiflora
Antholyza æthiopica
Aralia papyrifera
Anopterus glandulosus
Aponogeton distachyon
Banksia littoralis
Berberis Darwini
Clianthus puniceus
Correa virens
,, alba
,, carnea
Candollea tetrandra
Callistemon linearis
Camellias, in variety
Casuarina, three sorts
Cineraria maritima
China Roses
Daphne indica rubro-variegata
Dolichos lignosus
Escallonia organensis
,, macraotha
,, floribunda alba
Epacris alba
,, rubella
Erica melanthera
,, Wilmoreana
Echeveria metallica
Fuchsia cordifolia
,, splendens
,, thymifolia and others
Gazania
Genista filipes
,, fragrans
Hakea prostrata
,, suaveolens
Habrothamnus elegans
Habrothamnus fasciculata
Hydrangea hortensis
Leptospermum bracteatum
Lachenalia tricolor
Lithospermum fruticosum
Lasiandra macrantha
Lavender
Mignonette
Medicago arborea
Malvastrum capense
Marguerites (in variety)
Mesembryanthemum (several sorts)
Narcissus Paper White
,, Soleil d'Or
,, Roman
,, Tazetta, &c.
Nasturtiums
Oxalis sp.
Pelargoniums
Puya tectora
Pittosporum Tobira
Polygala Dalmaisiana
Pyrethrum grandiflorum
Passiflora cœrulea
Richardia æthiopica
Rhododendrons
Sparmannia africana
Senecio Petasites
Sedum arboreum
,, albicans
,, aureum
Saxifraga latifolia
Spartium junceum
Tetranthera californica
,, japonica
Tussilago
Ulex europæa
Veronica (in abundance)
Westringia grandiflora
Yucca gloriosa
,, filamentosa

## ORCHIDS IN BELGIUM.

M. D. MASSANGE DE LOUVREX, Château de Baillonville, près Marche, Belgium, possesses one of the finest collections of Orchids on the Continent. The display of flower of the last few months, and especially that of December, 1880, has been so remarkable that I feel constrained to give a short description of it. The most beautiful of the Odontoglossums is certainly O. Alexandræ, of which seventy-four plants are in flower or ready to burst into blossom. Their different forms and varied colours, from tender lilac to pure white, delicately spotted with brown, from light to dark, would seem to say that Nature in creating them had been in one of her most bountiful moods. I will now mention some rare varieties :—O. blandum—with three stems), O. nevadense, the superb O. polyxanthum (with nine flowers), O. Coradinei (two stems), O. purum, and two plants of O. Wilckeanum—a superb and distinct variety, nat. hybr. between O. Alexandræ × O. triumphans—which the learned Professor Reichenbach honoured me by dedicating to me (*Gardeners' Chronicle*, March 6, 1880, p. 298).

One of the finest in the collection is Odontoglossum Pescatorei (of which there are thirteen plants in flower), O. Hallii (four plants, xanthoglossum and leucoglossum), O. gloriosum (the lovely), O. triumphans, O. Andersonianum (two plants, one of which is a superb variety with twenty-six flowers, very large, spotted with extremely dark brown, the column with a brown-purple spot), the fine O. Rossii majus (with sixteen flowers), O. cristatum, O. roseum, O. Insleayi leopardinum, O. maculatum and O. m. Dowianum, O. nebulosum, O. bictoniense, O. pulchellum, O. grande, O. cirrhosum, O. hystrix, O. odoratum, O. sceptrum, O. Roezlii, O. tripudians, all with several stems—in all 137 Odontoglossums.

In the same house are the Masdevallias, amongst others M. tovarensis, with twenty-eight flowers; the little gem, M. Estradæ, with seventeen flowers; the graceful M. polysticta, M. amabilis, M. Veitchii, M. Davisii, M. bella, and the splendid variety with very large flowers, M. ignea Massangeana, which may be seen in Mr. B. S. Williams' nursery. A specimen of Restrepia antennifera has thirty-eight full blown flowers; a plant of Ada aurantiaca is in rich bloom, and the Sophronites cernua coccinea and grandiflora are worthy of notice.

In the Cattleya-house may be seen, on entering, the strikingly beautiful C. labiata, var. Pescatorei, with wo stems, of which each bears five flowers; another C. labiata (autumn flowering var.) with three flowers, of which the throat and the lip are darker than in the above mentioned; Lælia Perrinii nivea, with five spikes and nine flowers, pure white, the lip slightly tinged with tender lilac; several fine varieties of L. pumila, in all twenty-four flowers, and especially the variety mirabilis (Morren) with five flowers, are very attractive; a specimen of the beautiful L. anceps splendens has eight spikes; the lovely and rare L. Stelzneriana, with two spikes and eight flowers. Still more remarkable is a fine variety of L. elegans (L. elegans Massangeana), of which the sepals and petals are creamy-white, richly tinted, and spotted with crimson, lip white, except the velvet-like middle lobe, which is of an excessively deep violet-purple; the throat is lemon colour, as are also the two lateral lobes and the extremity of the column, which is enriched with a purple-violet spot. Cattleya maxima has nine flowers; a specimen of Pilumna nobilis, with thirteen spikes and thirty-seven flowers may also be mentioned. A Cattleya species from Minas Geraes, of the Loddigesii section, is very fine; it bears on a small bulb of 3 inches in length a splendid flower, of which the sepals and petals are a rich mauve, the lip rather lighter, with the centre pale yellow, and the middle lobe of which has a spot of pale violet. Calanthe Veitchii, Lycaste Skinneri, Oncidium Forbesii, crispum, cheirophorum, and Lanceanum, with numerous flowers, are all noteworthy.

In the East India-house the Vanda tricolor, V. t. insigne, V. t. flavescens, V. t. formosa, V. t. Schruberti (a form of formosa), V. t. cinnamomea, and V. t. suavis Veitchii, with in all eighteen spikes full flowered. A Vanda cœrulea, with nine flowers, is very fine. Phalænopsis Schilleriana grandiflora and P. amabilis, beautiful plants, are full of bloom. Dendrobium formosum giganteum and Findleyanum, Colax jugosus, Cypripedium Dominianum, Crossianum (insigne × venustum), Harrisianum, barbatum var. Crossi, Hinksianum, Veitchii, Sedeni, Lowii, insigne, Chantini, pardinum, Roezlii, Hartwegii, with an inflorescence which will bear comparison with any similar plants in Europe. Finally, I will mention the rare and magnificent Pescatorea Klabochorum, with two flowers perfectly developed. *Wilcke, Jardinier en chef.*

## Home Correspondence.

**Orchids at Messrs. Veitch's.**—In Mr. Douglas account of these plants, which appeared on p. 43 of last week's *Gardeners' Chronicle*, he states that I, in a former number (p. 787, vol. xiv.), gave various systems of cultivating Vandas, adding that he thought neither was quite right. The number of systems I gave was two, both of which systems I will stand by until some one shows me better Vandas than I have, grown and managed differently. The Vandas at Messrs. Veitch's are in excellent health and thoroughly well grown, which is much more than could be said of them when grown the whole year round in an East Indiao temperature. The system they are now under is nothing more nor less than the one I recommended when I wrote, "The other method is to keep them the whole year round in a moist, airy, intermediate temperature, drying them slightly at the roots from December till March, but never so that the moss dies." Here is what Mr. Douglas says concerning the culture at Messrs. Veitch's :—"Thus, in a few words, the conditions are a moderately moist atmosphere, in which a constant circulation of air is kept up, and sufficient slightly warmed water sprinkled on the sphagnum to keep it growing." There is a good deal of the "two Dromios" here—certainly it is difficult to tell "t'other" from which. I do not like that "sprinkling," as my idea is either to water an Orchid thoroughly or not at all. I like still less the shaking of a Vanda out of its pot every February, just for the sake of giving it a new pot, crocks, &c. If a Vanda wants repotting February is an excellent month for so doing, but I confess I fail to see that any good effects would accrue from disturbing the roots of a Vanda unless it does require a fresh pot. On the other hand, I know that some of the finest Vandas under cultivation have been in the same pots for several years, although they have often had fresh moss, and, to a certain extent, fresh crocks. Mr. Douglas winds up by saying :—"Under th's system (Messrs. Veitch's) the plants do not lose their leaves, even after flowering freely." Now with all courtesy to Mr. Douglas I beg to state that those Vandas never did flower freely, nor will they ever while growing under the system mentioned. Abundance of foliage with a well-developed spike about three times a year, or two spikes in the spring and one in the autumn, is the result of that system. No nurseryman nor yet his customers ever wish for more. To see what I term a free-flowering Vanda Mr. Douglas must visit an exhibitor of such, when he will see the other system I mentioned carried out. It was under this system that the only exhibition Vandas worthy of the name which have appeared in London during the last twelve years were grown. These came from Robert Hanbury, Esq., The Poles, Ware. The largest specimen was Veitch's variety of suavis, and had five leading growths 5 feet high each, with two breaks clothing its base. The exhibition form of this plant was three spikes from each of the five leads, or about forty-five individual flowers. The greatest number of flowers ever obtained on one spike was seventeen, and as some readers like to know this sort of thing, I may say that nineteen flowers is the most I have ever obtained on a V. cœrulea spike. The plant of V. suavis had about two bushels of sphagnum moss to root in over its crocks. The surface of this moss grew freely through the summer. Every December the plant was removed from the East Indian-house to the cool end of a stove, where the night temperature rarely exceeded 50°, and was sometimes at 45°. Water was given only at very long intervals, and if the moss felt the least moist large holes were bored through it, and enough water by means of a tube was sent down amongst the crocks to keep the roots below from perishing. About the last week in February the cone of moss was thatched over with living moss, the plant returned to the East Indian-house, and a thorough watering given. In a very short time the leaves pulled themselves up to the horizontal, and roots and spikes were soon in full activity. Here the plant would remain till within a week of the show, as we found that the flowers lasted much better in this temperature than any other. The greatest length of time was ten weeks. In the week previous to the show we followed the instructions of that excellent cultivator and ardent lover of Vandas, Mr. B. S. Williams, and gradually cooled the plant down. *J. C. Spyers.*

**Exhibition Morality.**—Under the above heading appears an article in your issue of December 18, p. 790, in which the writer infers that blindness is a frequent characteristic of managers of exhibitions, and that rules laid down by some for the protection of honest exhibitors from the invasion of others who would be dishonest is a farce, and tends to tarnish with suspicion the honest reputation of exhibitors who would blush at the idea of attempting to gain prizes in any other way, save by their own industry and abilities. If rigid rules laid down by managers of exhibitions, giving them power to deal with cases of dishonesty, are to be looked upon as tarnishing the reputation of all members of the horticultural world, surely we may view in a like manner the laws of every nation of the globe. Would it not be madness to suppose for one moment that because our statesmen make laws giving the authorities power to inflict certain punishments upon offenders against those laws, that they look upon the whole community as being dishonest? And it would be equal madness to suppose that because managers of exhibitions publish rules for the protection of honest exhibitors that they look upon the whole gardening fraternity as being dishonest? The great desideratum in the framing of all laws should be the prevention of crime, the protection of honest principles, and the punishment of dishonest ones when detected. The writer then goes on and asks why, where such rules exist, no steps are taken to enforce them. To this I think I may safely say that it is the existence of these rules which prevents there being any cases necessitating their enforcement; and even when we think we have a case for investigation we invariably find a conspicuous absence of proof, and no one would think of inflicting punishment upon any other grounds. To punish a man simply because he is suspected would be a weak and dangerous procedure, and would surely sap the very foundation of any society, however strong. With regard to the necessity of such rules, I for my own part have not the least doubt, neither would any one else who has had any practical experience in the management of horticultural exhibitions; in proof of the necessity I will merely give two instances which came under my

observation some few years ago. The first, then, is a case in which a tradesman took a gardening friend to London and secured the best eighteen cut blooms of Chrysanthemums he could get (not perhaps all from one grower), and afterwards exhibited them at one of the largest shows in the Midlands, thereby securing the 1st prize. These blooms, he told me, cost him something like £10. The second is a case in which a gentleman's gardener exhibited fruit that was not grown upon his employer's place; but this was not found out till the following year, when the gentleman came himself to the secretary's office and denounced the actions of his late gardener, and since then has come to the conclusion that flower shows are more demoralising than otherwise to gardeners in general, and as a consequence has withheld his subscription to the society. Actions of this kind not only create an ill-feeling amongst exhibitors, but they tarnish the reputation of the gardener, prove a source of annoyance to the employer, and tend to diminish the funds of the society. Surely such evils as these are a sufficient reason for adopting the rigid rules complained of. Most of us know that there are men in all trades and occupations whose craving for honours and a reputation in the world is so great that they will stoop to any action, however mean, contemptible, and dishonest, in order to gain that which by their own skill and industry they would fail to obtain. Having had several years' experience (officially) in the management of horticultural exhibitions, and knowing such things as these to be true, I am fully convinced that it is the duty of all managers of exhibitions to protect by rigid rules or otherwise the honest exhibitor, and thereby secure a fair and honest distribution of prizes, upon which depends the continued existence and success of flower shows in general. *J. Hughes, Chadwick, Temple Balsall, Birmingham.*

**Packing Cut Flowers.**—In a communication on this subject your correspondent, "X.," remarks how few gardeners understand it, and gives some directions how flowers should be packed to travel a distance uninjured; but he is not sufficiently explicit, and fails to mention some important points necessary to ensure success. Certainly one of the most important things is that the flowers be dry when packed, for external moisture is very destructive, particularly when there is rubbing as well. Some cut flowers benefit by being placed in water, so that they become fully charged before being packed. Only the tips of the branches or stalks should be inserted in the water, and these wet tips should be cut off before packing, if they can be spared—if not, dried by means of a bit of cotton wool or some such material. *W. B. H.*

**Peas in Pots.**—At this season of the year, when seed catalogues are finding their way into every garden in the kingdom, it may be useful to offer one or two remarks upon early Peas. The seedsman's catalogue of the present day is nothing short of a puzzle to all who are not fully experienced and posted up in the merits of the different kinds of vegetable seeds now offered for sale. And although my purpose is to offer a few hints upon the utility of cultivating Peas in pots, I am able to state at the same time that the variety that succeeds best in pots is also the best for growing out-of-doors. William I. is, in my opinion, unquestionably the best early Pea in cultivation. It is early, vigorous, and a heavy cropper. Wherever there is an orchard-house this Pea should be grown in quantity. I grew an equal quantity of William I. and Maclean's Little Gem in 10-inch pots last year, and I am within the mark when I say that the yield of the former was double that of the latter, if not more. Our orchard-houses are, however, high at the front, and William I. being a tall grower (nearly 4 feet) had the advantage of more light than its dwarfer growing rival. Out-of-doors it behaved in the same manner. A sowing of this variety made in pots or deep pans early in the present month will produce full pods early in May, and will yield a quantity hitherto unprecedented in any other early variety grown under similar conditions. *W. Hinds.*

**Early Peas.**—In my previous remarks under this heading (see p. 792, vol. xiv.), my aim was not to speak of the merits or demerits of any particular variety of Pea for early work. If such had been the case I certainly should not have omitted to mention William I., as in my opinion this is the best of all the earliest sorts, it having claimed my attention from the time of its first introduction to public notice; therefore I can fully endorse Mr. Gallop's statement in reference to this variety (see p. 20). Another Pea worthy of notice for first crop is Multum in Parvo, or as the appellation implies, "much in a little compass," and a more appropriate name could not have been given, for all who are aquainted with this Pea must agree with me as to its wonderful productiveness considering it scarcely attains the height of 2 feet. Thus it becomes specially adapted for gardens of limited size and means, as it can be grown much closer together than taller growing sorts, and without the aid of sticks (a serious item in some of our suburban gardens), yet at the same time I find it preferable on account of its strong branching habit of growth to give it some support. With regard to the quality of this Pea I can also speak highly in its favour, being a long way ahead of the majority of early Peas. Although Multum in Parvo may be a day or two in the rear of some other sorts, it may nevertheless be turned to good account for frame-work. Can any of your readers inform me of the origin of this Pea, and the time of its distribution? *E. Morgan, The Butts, Harrow-on-the-Hill, Jan. 3.*

**Rhododendron Gibsoni.**—What a grand old plant is this Rhododendron for forcing! Only a few days ago I saw a nice plant of it smothered with buds, which were swelling fast, and will soon be quite a sheet of flowers, at Paulton Park, Hants. I once had a plant of it from 8 to 9 feet high, which was brought forward gently in the Camellia-house, and which was always a welcome addition to our stock of cut flowers early in the year. I was not, however, aware that it would submit so agreeably to early forcing. The handsome trusses of pure white flowers which the plant produces are at all times valuable, pleasing, and effective, and are of considerable substance, lasting well in a cut state. In the same garden I noticed a fine batch of Amaryllis showing flower, which deserve more than passing notice. The bulbs are potted in 6-inch pots, and some of them nearly fill the pots. This is a useful way to grow them for furnishing purposes or for grouping in the show-house in combination with other plants. *Visitor.*

**Honeydew.** — Having read the remarks of "G. M. W.," at p. 20, I think it will be of interest if I relate an experiment I performed a few years ago. It appeared to me possible to prove conclusively what honeydew really is, and so far as anything generally known as such is concerned, there can be no doubt. I made a box by cementing glass slides together (such as used for miscroscopic mounting) for the bottom and two sides, fixing thin perforated card at the ends for ventilation and providing a cover of the same material, also perforated with pinholes. Into this I put a number of aphides from a Lime tree which having collected beneath the cover, in a very short time thickly covered the glass with dots of excreta—honeydew precisely. There are of course other sources of "sweet syrup-like fluid," but which it is improbable have ever produced the appearance known as honeydew. Berberidopsis corallina in the conservatory at Kew used to make a conspicuous mess of its nectar or stigmatic mucus on the floor, but this kind of thing can only be considered as outside the question. Drops of nectar large enough to fall could not produce the numberless dots, which by their confluence cover the leaves as if with solution of gum. *R. I. L.*

**Potato Covent Garden Perfection.**—Having but now become aware of inquiries respecting this Potato, made in your paper some few weeks since, I must beg pardon for having withheld until now particulars I feel bound, as a matter of duty, to furnish. This variety was placed in my hands for trial by Mr. Clarke in the same season as I had the good fortune to prove the famous Magnum Bonum. The season of 1875 was one of the best for the Potato crop in the past five-and-twenty years, as we had high production and high quality combined. In that year was held the first International Potato Exhibition at the Alexandra Palace, Muswell Hill, whereat I exhibited a collection of fifty dishes of twelve tubers each, remarkable for fine growth and typical purity, but wanting in finish, for they were grown in lime rubbish on a basis of undrained clay. The variety under notice was included in the group of fifty sorts, and was also shown separately in a dish of very choice nice tubers, and I endeavoured to obtain a certificate for it and failed. It was then shown under a name sanctioned by Mr. Clarke as "King of the Kidneys." When the crop was nearly ready for lifting in the gardens at Hermitage, it was seen by Mr. Martin Sutton, of Reading. On the day of his visit I, with my own hands (and fork), lifted stools of King of the Kidneys making 4 to 7 lb. each of ware size, and of Magnum Bonum making 5 to 9 lb. each of ware size, and beyond. The tonnage per acre of such a crop would so alarm people that I never dared to calculate it. Messrs. Sutton purchased the Magnum Bonum, and to praise it now would be like painting the Lily or gilding refined gold. But the other sort is as yet comparatively unknown, one reason being that at the International Show in 1875 the judges would not look at it, although I assured them it was the "finest Potato in the world"—a declaration I now stick to, after six years' knowledge of it on the ground and on the table. It was again shown and again passed by at the Aquarium in the year 1877. In this respect it affords a parallel case to the famous Pelargonium Christine, which was never certificated anywhere or anyhow. But King of the Kidneys was appreciated in the end, and was purchased by Messrs. Hooper & Co., of Covent Garden, who threw over my name, and sent it out as Covent Garden Perfection. They acted within their rights, and, moreover, they had to regard the matter commercially, but my name was a good one, for this *is* the King of the Kidneys, and you will not equal it in many a day's march. It is less prolific and less disease-resisting than Magnum Bonum, but, nevertheless, it is a heavy cropper, and in a large degree safe in unsafe seasons, and its quality is such that I would forgive any man who should say that until he had seen and tasted Covent Garden Perfection he was absolutely ignorant of the proper qualities of a Potato. It is of fair size and good form, but, so far as I know, it will not come to hand nicely finished for exhibition. During six successive years, four of which were bad years, this variety gave me clean and heavy crops on my undrained clay; and, in fact, the crops on the clay were always better than in the sheltered garden, where the drainage was perfect and the soil a nice mellow well-worked loam. On the clay I have never grown to my own satisfaction a crop of Early Rose or any other light-textured American Potato; but Covent Garden Perfection liked the clay as earnestly as *Mr. Punch's* old lady liked the street "orgins." If I were planting with a view to the table solely, I would sooner put down an acre or two of this Potato than any other out of a hundred sorts, and I do not doubt that in taking up I should sing the same song as in putting down—to the effect that Covent Garden Perfection is "the finest Potato in the world." A large story is not appropriate to a small thing: but this is not a small thing. If what I say be true, it means thousands of money to the country, and comfort coming home to one at the blessed family table. *Shirley Hibberd, Stoke Newington.*

**Eucharis amazonica.**—Like your correspondent, Mr. H. Ellis, we have found the Eucharis invaluable at this season, having had a succession of flowers for cutting throughout November and December, this being the third and fourth time the bulbs flowered during last year. Our plan is to shake out the bulbs early in January, select the largest, repotting them five to seven in 8-inch pots in soil consisting chiefly of loam, with a little leaf soil, decomposed manure, and sand added. The pots are plunged with the plants well up to the glass, in a bed of leaves and fermenting manure, with hot-water pipes underneath in a pit destined for Melons later on. In a few weeks the pots are pretty full of roots, when they are lifted out into a warm greenhouse for about a fortnight, then placed in a warm, moist stove, in a light position, where the flower-spikes soon appear. After flowering, the plants are grown on for a time with occasional doses of manure-water; again removed to the greenhouse and back again, with the same results. Mr. Rentown, of Dover House Gardens, Roehampton, has been most successful with Eucharis in comparatively small pots, having had some in flower nearly the whole year through, under much the same conditions of culture. Mr. Jordan, late of Canizaro House, Wimbledon, was an excellent cultivator—growing large specimens, flowering them profusely, and pretty well when he liked; his plants were grown on over tanks of water in a low, light span-roof house, which, with skilful treatment, suited them admirably. *S. Pragnell, The Cedars Gardens, Roehampton.*

—— Valuable as this is at any other season, it is doubly so when white flowers are so scarce, and were it possible to mount them singly in some way that would supply the individual blooms with water to keep them alive, their usefulness might be added to, and a good saving effected, as then there would be no need to cut them *en masse* with unexpanded buds, entailing such loss. I have tried them by inserting the stalks in small Bamboo tubes with worsted run through, but as yet have not been successful in getting them to last nearly so long as they do on their own stems; but, perhaps, some one may be able to suggest a plan of treating them that will render them more durable than they are in the way mentioned, and if so, I for one shall be glad to know what it is, and to learn how to carry it out. *J. S.*

**Hardiness of Agapanthus umbellatus.**—I was pleased to notice your remarks upon the doubtful hardiness of this most useful plant at p. 18 of your issue of Jan. 1. The succession of mild winters that preceded the severe ones of 1878-79 and 1879-80 gave rise to many conjectures as to the hardiness of a great many plants by people whose knowledge was confined chiefly to cursory observation or notes taken on a hurried visit. It is not enough to be told that a plant is hardy unless we are also told the conditions as regards soil, situation, and climate, under which it has succeeded. My personal experience of the hardiness of the Agapanthus is in exact accord with that contained in your remarks. Several plants that were left standing out-of-doors during the winter of 1878-79 were so badly cut up that I despaired of their recovery, whilst others that

were plunged in their pots in the ground, and had taken root in the soil through the bottoms of the pots as well as from the surface, escaped the winter uninjured, with a slight surface covering of leaves. In addition to the various ways you mention that it may be used; I may add that it also makes a noble vase plant for the flower garden. It used to be employed largely for this purpose in the gardens at Eden Hall, Cumberland, many years ago, where it was a great favourite with the late Sir George Musgrave. *W. Hinds.*

Green v. Light-coloured Peas and Beans.—That this question may have been under the consideration of seedsmen, I am not in a position to say, but however that may be it is, I am pretty sure, a matter of growing importance to many consumers of these beautiful vegetables. Here Peas and Beans, (broad and kidney Beans alike) are not approved of unless they are of a deep green colour when cooked; and I endorse that opinion, for as a rule the pale-coloured Peas and Beans are far inferior in flavour and appearance to the green varieties. Those Peas and Beans that possess the combined qualification of being green and sweet, are more esteemed by those who are fond of them than the light-coloured, which are generally mealy and wanting in flavour. I do not wish my readers to understand me that I condemn all light-coloured Peas and Beans—far from it, because I am well aware that some of them are of delicious flavour, but lack the colour I advocate. Without further comment upon these very popular vegetables, I simply venture to offer a suggestion to those who may be engaged in raising new varieties, to turn their attention to green Peas, &c., rather than the paler coloured ones, for I feel morally sure that the former will be generally and highly appreciated, while the latter will eventually be lost sight of. *J. Gardner, Elsham Hall Garden, Brigg, Lincolnshire.*

Christmas Roses.—Having read Mr. C. W. Dod's letter on Christmas Roses, as published in your issue of January 8, with much attention, I am prepared to endorse all the writer has advanced concerning the difficulty of rearing them, at least so as to produce fine healthy flowers. Plants of Helleborus niger were planted in a large garden on the Harrow Road in the autumn of 1879, but no flowers have as yet appeared. In the autumn of last year (1880) I had inserted plants of H. niger and of H. olympicus, the latter having been reported to me as very tolerant of London fog, and possessing another—that when the bloom of H. niger has disappeared, that of H. olympicus should be in the ascendant. All my plants just now look very miserable, the blossom of H. niger is of the feeblest kind, and I doubt whether H. olympicus will have any bloom. Whether autumn is the right season of the year to remove these plants, exposed as they certainly are and must be to early winter fogs, I leave to horticulturists to determine. Although I believe large quantities of Helleborus flowers are sent every season from Cornwall to London (the west coast of it, as is well known, being warmed by the Gulf Stream), I have seen the flowers in other southern counties peeping through snow, and apparently flourishing in great luxuriance. I regret that my plants of H. olympicus have hitherto failed; from representation I was led to expect they would have blown well, but when one puts book-reading to the actual test in the earth, what totally different results often ensue. *John Colebrooke.*

—— This, like most alpine plants, loves a pure air, a situation moderately moist, and a soil of a rich loamy nature. The plant does well here planted in any of the borders. It makes large, healthy, vigorous foliage, and produces an abundance of flowers. Three or four years since I noticed something had been eating the flower-buds off the plants in a border; on search we caught a rabbit under the foliage. This will give an idea of the health and vigour of the plants. It is increased by division; after being divided and planted it does not make much progress for a year or two until it gets well established. I put several large clumps into a gentle heat the latter part of last November; these have produced quantities of flowers the last three weeks. When the bulk of the flowers are over the plants will be put into a cold pit until March, when they will be divided and planted out into the borders. The flower-buds are generally so numerous that many of them do not open whilst in heat; after the plants are planted out these buds keep opening for weeks afterwards. In this way I have had flowers up to July. After the plants are planted in the borders they should not be disturbed by frequent hoeing and raking; when it is necessary to hoe and rake about the plants it should be done with the greatest care, so as not to injure the foliage. Probably Mr. Dod's plants get more attention in this way than is good for them. It is a plant that should not be much disturbed. When the plants get into large clumps they should be divided, as moderate-sized clumps flower more freely than very large ones. *M. Saul, Stourton.*

—— It is very singular that two of the hardiest and most easily cultivated plants as are the Christmas Rose and the common white Lily should so perplex Mr. C. W. Dod, and his failure with them seems quite unaccountable, as they succeed almost anywhere and everywhere, and, as is well known, are the two best and most reliable things in a garden [?] It may be that slugs infest the ground where Mr. Dod has his, and that they eat the embryo crowns out during the spring, or leaves would surely come, and flowers always follow these in abundance. Ours have been very full this year, and have supplied us with a quantity of cut bloom, and, as will be seen, plants were shown fine from Chiswick the other day; besides which growers are taking them in hand for market, and no doubt they will be seen there in a year or two in quantities, when they are sure to become great favourites and sell well in pots. I find they grow best in rich vegetable soil that is light and loose, and by mulching and watering they always make plenty of foliage. *J. S.*

Cypripedium insigne.—I send for your inspection two well-developed blooms of Cypripedium insigne on one stem. Having never seen a similar instance of the kind, it occurred to me that some of your Orchid-growing correspondents might be interested by this singular freak of Nature. *P. Davidson, Iwerne Minster, Blandford, Dorset.*

Improved Forms of Vegetables.—The remarks of "W. H." in your last number on this subject will commend themselves to all honest and candid minds. The inquiries of R. Rushall show what confusion may be caused by the reprehensible practice adopted by some seedsmen of tacking on the word "improved," in conjunction with their own name, to well-known kinds of Potatos and other things. An improvement on the "improved" system has, however, been invented, a specimen of which may be found in your last number, and this is, boldly to ignore the original distributors, and to lay claim to the productions, without the transparent "improved." Of course these tactics do not deceive well-informed gardeners, but in the interest of the less knowing, and of seedsmen themselves, it is time this kind of quackery should cease. *J. G. N.*

Weeks' System of Heating and Ventilating.—Only a few words are necessary for replying to Mr. Fletcher's comments upon our improved mode of warming and ventilating. In the matter of Tobin's Tube, we have never seen or heard of its use except in conjunction with the introduction of cold air, whereas ours is for warm or cold at pleasure. Surely this is sufficient, but if not, we may add that by our improvement no tubes are required; the builder simply builds the walls under the window-cills hollow, we introduce the coils and ventilators, and all the expense of tubes and valves is saved and greatest efficiency obtained. With reference to Mr. A. L. Taylor's patent, we can only say that until the appearance of Mr. Fletcher's letter we were not aware of the existence of such a patent. On looking it up, however, we find it dates from 1870—some ten years ago, and although we travel about a great deal not one of our firm has ever seen or heard of it. On examining the specification, however, we find that it does exist, and consists of what appears to be a 4-inch pipe having its uppper half enveloped in a zinc or metal trough with a lid. The disparity of the two systems is so great (as any one who will take the trouble to examine into the matter may see for himself), that we venture to believe Mr. Fletcher was scarcely in earnest in endeavouring to establish between them the least similarity. With regard to the position of our coils, Mr. Fletcher's theory is totally opposed to our experience, which tells us that the windows are the proper places for the coils, they being placed there to prevent the coldness of the glass acquired by its contact with the outer air being radiated into the building and not, as Mr. Fletcher naïvely supposes, that the fresh air may be cooled by passing the glass. *J. Weeks & Co., Chelsea.*

New Bouvardias.—Mr. J. W. Laurence, formerly a gardener at Farnham Castle, and recently at Newstead Abbey, is now with his family in Philadelphia, with good prospects before him—thanks to his friend Mr. Meehan, the well-known nurseryman there, and in a letter just received from him he writes, "I notice that the finest white Bouvardia is a sport from B. elegans, and is named Davidsoni, and it is a grand thing. I also hear rumours of a double Bouvardia not yet out." And speaking of Tree Carnations, he adds, "the best English varieties, such as La Belle, Miss Joliffe, and others, are useless here. The two sorts preferred here are are President Degrau, white, and Purité, red; which produces 100 blooms to each plant in a season. They are not in pots but planted out on the stages of houses, so that they are never in pots at all after the cutting stage, but planted out in the ground, and from thence in September to the houses." Bouvardias appear to be treated in a similar way. *D. W.*

## Foreign Correspondence.

VIENNA.—In the large French garden of the Imperial Castle of Beloe, near Vienna, which was built by Prince Eugene of Savoy, is walled-in an area 300 paces long and 200 wide. This, at the end of twenty years, was converted by the botanist, D. N. Horst, into a landscape garden, and by command of the Emperor Francis I. it received the name of the Garden of the Flora of Austria. It was destined to receive all the Austrian species of herbs, shrubs, and trees, to serve the Imperial Princes for the study of botany. It was there that the late Emperor Ferdinand I. developed his well-known love for plants; and at the present time the Archduchess Elizabeth, mother of the reigning Queen of Spain, may often be seen studying the plants which she knows so well, and of which she is so great an admirer. The garden, moreover, is remarkable. Although enclosed within four walls, and so limited in area, it forms a perfect landscape garden, having its water-scenery and an extensive rockery for the cultivation of alpine plants. Noteworthy among the trees (some of which are upwards of sixty years old) growing in this cherished spot are Pistacia Terebinthus (having a trunk 5 feet in girth), Zizyphus vulgaris, Diospyros Lotus, Acer monspessulanum, Acer Heldreichi, a beautiful variegated Maple intermediate between A. platanoides and A. Pseudo-Platanus, Lonicera glutinosa from Dalmatia, &c. But the most imposing feature is the great rockery, which was constructed for alpine plants, of which it shelters probably one of the largest collections in existence. It is now under the charge of Mr. Maly, who has managed it most successfully, not only keeping up the old collection, but adding to it yearly by trips to the Alps of Dalmatia, Siebenbürgen, &c.

The following beautiful plants are in the collection, and though not of the newest they deserve notice, as they are seldom well cultivated:—Echium lanatum, Boiss., from the Levant, remarkable for its silky snow-white tomentum, and very ornamental dark red flowers; Saponaria cæspitosa, Sibth., a native of Greece, forming a beautiful carpet, covering itself with lovely lively red flowers, suitable for bordering, especially as it thrives well in a loose, sandy soil; Saxifraga lantoscana, Boiss., closely allied to S. lingulata, and supposed by some to be a hybrid from S. longifolia, the queen of the Saxifrages: its pyramids of snowy-white flowers are so heavy that they incline to one side. *Nagy.*

## Reports of Societies.

Royal Horticultural: *Jan.* 11.—Sir Trevor Lawrence, Bart., M.P., in the chair. The Rev. G. Henslow commenced his lecture by describing the peculiar method of burying the pods executed by the Cyclamen, as detailed in Mr. Darwin's new work on *The Movements of Plants*, and further illustrated it by Trifolium subterraneum, which buries the entire head of fruits and abortive florets: the latter have a claw-like calyx which bends backwards like the hands of a mole, thereby aiding the peduncle in forcing the pods below the soil, and partially covering them with earth. The use of thus burying them appears to be to enable them to absorb moisture and nutritious matters, and so cause the fruits to mature better, as those which are not so buried fail to ripen in many cases. He suggested that it might be worth while for growers of Cyclamens to try experiments to see whether they could improve them by thus nourishing the ripening pods artificially. Groups of China Primroses, Abutilons and Pelargoniums furnished substance for remarks on the various methods adopted by flowers for fertilisation; the first being "heterostyled," the second and third being strongly "proterandrous"—the former preventing self-fertilisation by the essential organs acquiring different lengths, the latter by the stamens and pistil maturing at different times. He observed that these conditions must never be regarded as absolute but only relative, though very constant to the species. Thus the Chinese Primrose not unfrequently becomes "homostyled" by the pistil equalling the stamens in height; and Pelargoniums become "homogamous" and self-fertilising by reducing the time between the maturation of the organs. Double Primroses were described, and the various kinds of "doubling" alluded to as found in different flowers. An interesting group of succulent plants called forth a few

remarks on "representative plants," illustrating how the Euphorbias of Africa assume all the quaint appearance of the succulent Cactaceæ of America, apparently by the circumstance that they are grown under similar climatal conditions. With regard to Camellias, which botanists now regard as the same genus as Thea, the lecturer suggested that an attempt might be made to brew tea from them to see if it was palatable, for plants of the same genus usually contain the same physiological peculiarities, and he instanced the case of the peasants in the Black Forest, who make tea of the common Holly, which is a species of Ilex—Ilex paraguayensis being another species from which Paraguay tea is made in South America.

SCIENTIFIC COMMITTEE. — Dr. Maxwell T. Masters, and afterwards Sir J. D. Hooker, K.C.S.I., in the chair. At this, the first meeting of the year, several new members, including Messrs. John Ball, Boulger, Church, and Pascoe, took their seats.

*Models of Plants.*—Mr. Boulger showed large models in *papier maché* of various so-called carnivorous plants suitable for lecturers' purposes, and prepared by Herr Brendel, of Breslau. The exhibition of these models gave rise to a discussion on the part of the chemical members of the committee and others. It was pointed out that while some, such as Sarracenia and Utricularia, simply absorb decomposing matter, in others, as Drosera and Nepenthes, there was a true process of solution and subsequent digestion by means of a ferment. Professor Church observed that the presence of peptones is no longer to be considered a proof of fermentation, inasmuch as peptones have been proved to be normal products of the plant, having been found in the matured but not in the germinating seed.

*Cyphomandra betacea.*—Fruits of this were shown by Dr. Masters, as sold under the name of Passion fruit, but which the President recognised as belonging to the above-named plant. Since the meeting fruits of this Solanum-like plant have been seen in Covent Garden under the erroneous name of the Passion fruit (Passiflora edulis), a widely different and much better fruit. The fruits in question are imported from the Azores.

*Potato Penetrated by Quitch.*—Dr. Masters showed a Potato perforated by the underground stem of Triticum repens, sent to him by Mr. D. P. Laird, of Edinburgh, and made some observations on the wriggling movement of shoots and roots, as lately studied by Mr. Darwin, and which would facilitate the perforation.

*Unequal Growth of Stock and Scion.*—The Rev Geo. Henslow (Secretary) showed a specimen of Abies Lowiana grafted upon the Silver Fir. The stock had grown much more rapidly than the graft, so that the stock formed a large turnip-like mass beneath the scion.

FRUIT COMMITTEE.—Mr. Harry J. Veitch in the chair. Mr. Woodbridge brought up from Syon a few fruits of one of a set of Brazilian species of Musa which he has under cultivation in the Duke of Northumberland's garden. The plant which produced the fruits shown belongs to the slender growing group, being about 12 feet high, and measuring only 6 inches in circumference at the base of the stem. The fruits weigh about 2 oz. each, and are not mealy, but firm and melting, and of a pleasing sugary acid flavour. From Chiswick Mr. Barron brought up samples of Parsnips grown from seeds supplied by various growers under the names of The Student, Maltese, Elcombe's Improved, and Guernsey Half Long, but it was impossible to see any appreciable difference between them. Some doubts having been expressed as to the distinctness of Messrs. Saltmarsh & Son's new Apple, The Queen, from Cox's Pomona, specimens of both were shown to-day and the distinctness of one from the other was satisfactorily demonstrated. Messrs. Veitch & Sons again exhibited forced examples of the Lily White and Fulham Purple varieties of Seakale, to show the decided difference between them, and the superiority of the former over the latter. The Chelsea firm also sent a large sample of leaves of prettily variegated Kales.

FLORAL COMMITTEE.—Dr. Denny in the chair. The opening meeting brought a strong muster of members, but owing to the raw cold weather they had very little to do. In the vestibule Messrs. James Veitch & Sons had a pretty collection of hardy ornamental Conifers in a small state, and which were much enlivened by a number of small baskets filled with heads of variegated Kales. The same firm also staged in the Council-room a choice group of Orchids, which included nineteen species and varieties of Odontoglossums, a fine mass of Leptotes bicolor, and the new Cypripedium polymorphum ×, described in our columns last week; also a fine bank of Cyclamens, and half-a-dozen well-flowered small standard specimens of the pure white-flowered variety of Laurustinus grown on the Continent—a very good plant. A Silver Banksian Medal was awarded. Mr. B. S. Williams also sent from Holloway a choice group of flowering and ornamental foliaged plants, the former consisting of Orchids only, and including a good specimen of the sweet-scented Saccolabium guttatum with half-a-dozen spikes of flowers; Dendrobium heterocarpum, also very sweet; Barkeria Lindleyana, invaluable for its high colour at this season; Cypripedium Haynaldianum and C. Boxallii, the richly-coloured Calanthe Veitchii, the white Masdevallia tovarensis; and the singular little M. Wagner-

FIG. 17.—POTATO PENETRATED BY COUCH-GRASS.

iana. A Silver Banksian Medal was awarded to Mr. Williams; and also to Messrs. William Paul & Son, of Waltham Cross, for a very fine display of cut blooms of Camellias and Tea Roses—nine boxes of the former and one of the latter, which included Safrano, Madame Falcot, Niphetos, and Isabella Sprunt. Of the Camellias Alba plena amongst whites and Marchioness of Exeter amongst the reds, were in the greatest force. From Chiswick came a large collec-

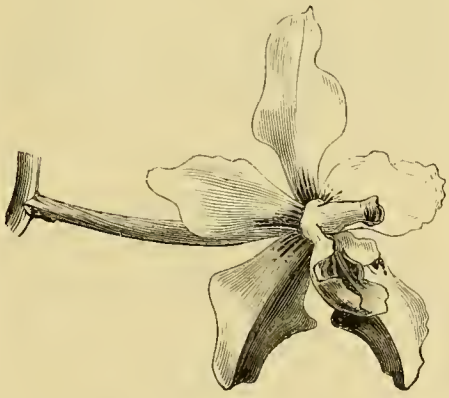

FIG. 18.—VANDA LAMELLATA BOXALLII.

tion of varieties of double Chinese Primulas, some comments on which will be found in another column. Mr. Cannell showed several single Primulas of various shades of colour, and also a stand of cut blooms of Zonal Pelargoniums of the finest possible quality. Mr. H. Boller, Kensal New Town, sent a collection of small succulents; and Messrs. James Carter & Co. exhibited a good group of plants of the Holborn Gem Primula, a very distinct variety, with flowers of a lavender-blue colour, good in size and form, but simply "killed" in the light of the Council-room.

First-class Certificates were awarded to Mr. C. J. Salter, Selborne, Streatham, for Vanda lamellata Boxallii, the fine new variety discovered by Mr. Boxall in the Philippine Islands while collecting for Mr. Low, and which was described in our columns for June 12 last year by Professor Reichenbach (see fig. 18). To Mr. Cannell for Zonal Pelargonium Eureka, the purest white-flowered variety yet raised, a very free bloomer, and most persistent in holding its petals, on which account it will be most useful to market growers and decorators. It was raised by Mr. Windsor of North Cray. To Mr. Hill, gr. to Sir N. de Rothschild, Tring Park, for Carnation Andalusian (as a decorative flower), a free-flowering variety with primrose-coloured blooms, fringed petals, and no scent, the latter being its only distinctive quality and that a negative one.

## THE TRADESCANTS' HOUSE AND GARDEN.

ON December 3 last the Metropolitan Board of Works approved a plan for the formation of two new roads to lead out of the east side of South Lambeth Road, on the site of the house, with grounds, known as Turret House, and of the names Tradescant Street, S.E., and Walberswick Street, S.E., for the same. These two streets will finally obliterate an extremely interesting vestige of Old London, although the names given them will serve to recal to some extent the associations connected with the site. The house called Turret House was the residence of the Tradescants, "gardeners to the Rose and Lily queen" (*i. e.*, Henrietta Maria, consort of Charles I.), and the garden attached to the house upon which the new streets will be formed was the first botanical, or, as it was formerly called, "physic garden," established in this country.

The Tradescants, father and son, were very remarkable men—the elder especially so—and we are indebted to them for the so-called Ashmolean Museum at Oxford, which, although in itself of no great value nowadays, was of great service to science by leading to the formation of collections of a similar character by Sloane, Banks, Lever, and others, which finally resulted in the establishment of a national museum. To their efforts we also owe the introduction of a great number of new plants into this country—a service which can be scarcely overrated, and which frequently involved a certain amount of personal risk. The introduction of foreign plants seems to have taken place very slowly for many years after the Conquest; for in the sixteenth century we find that only eighty-nine foreign woody plants were known to be cultivated in Britain, exclusive of two varieties of Laurustinus. In the seventeenth century the example of Sir Walter Raleigh and Gerarde, whose *Herbal* was written in 1597, and was afterwards republished by Johnson in 1633, appears to have produced some effect, for about 131 woody plants were introduced. In the eighteenth century greater progress was made, for 445 trees and shrubs were added to our collection; and in the first thirty years of the nineteenth century no less than 699 were introduced. The efforts of the Tradescants, Ray, Compton, and Evelyn, in the seventeenth century, contributed greatly to these results.

The Tradescants were formerly supposed, on the vague authority of Antony à-Wood, to have been Dutchmen or Flemings; but it is satisfactory to our insular self-love to know that the researches of Dr. Hamel, of St. Petersburg, show that they were Englishmen, and that, in all probability, they were Warwickshire men. There is no record of the birth of the elder Tradescant, but it is certain from the parish register of Meopham that he resided there, and that the younger was born there in August, 1608. The will of the younger Tradescant mentions the Tradescants of Walberswick, in Suffolk, in a manner which would seem to imply that they were his kinsmen.

The elder Tradescant made a journey to Archangel in 1618, in the suite of Sir Dudley Digges, the English Ambassor to Russia, and Dr. Hamel discovered in the Ashmolean Library a MS. diary of the voyage in the handwriting of the elder Tradescant. In the year 1629 he was appointed gardener to Charles I., having previously served the Lord Treasurer Salisbury, the Duke of Buckingham, and other noblemen in a similar capacity. He died in 1638, and was buried in Lambeth Church.

The younger Tradescant appears, from the admirable portrait-etching by Hollar, prefixed to the

catalogue of the museum at South Lambeth, to have been a man of inferior intelligence to his father, who must have had a singularly handsome and intellectual face. Young Tradescant was childless, and seems to have come under the influence of Elias Ashmole, a crafty, scheming man, who pretended to a knowledge of astrology and the transmutation of metals. Their acquaintanceship began in 1650, and in 1657 the younger Tradescant is said to have made over the whole of his museum to Ashmole, the gift to take effect on the death of the former, which event happened on April 22, 1662. Tradescant, by his will, dated May 4, 1661, left the museum to his wife, Hester, for life, and after her decease to the University of Oxford or Cambridge at her discretion, and makes no mention of Ashmole or the alleged deed of gift to him. Ashmole filed a bill in Chancery against the widow, setting up that the museum had been given to him by deed, but that he was unable to produce the document in consequence of Mrs. Tradescant, to whose custody he had committed it, having burned or otherwise destroyed it. This extraordinary explanation appears to have been accepted by the Court of Chancery, for, notwithstanding the non-production of the deed of gift (which, if executed, as alleged, must have been set aside by the will of 1661), the Lord Chancellor, who was no other than Clarendon, made a decree in Ashmole's favour, subject to the trust for the defendant during her life. Poor Mrs. Tradescant signed an abject recantation of everything she had asserted against Ashmole, and was found drowned in the garden at South Lambeth on April 3, 1678.

Ashmole considerably increased the collection of curiosities accumulated by the Tradescants, chiefly by the addition of books and medals, and in 1682 presented it to the University of Oxford, having, as it would seem, carefully destroyed everything that could recal the memory of the two assiduous collectors to whom it owes its origin.

"John Tradescant the elder," says Dr. Hamel,* "was the man to whom is certainly due the no small merit of having founded the first museum for objects of natural history and art in England; he also promoted one of the first, and in his time, one of the best botanical gardens. Both establishments were close to each other in South Lambeth at the time, not far from London. The house containing the museum, which was called Tradescant's Ark, where the Tradescants, father and son, as well as Esther, widow of the latter, and afterwards Ashmole, resided, has been so often changed in its internal arrangements and outward appearance, and moreover, so many additions have been made to it that at the present day it can no longer be discerned which were the apartments originally devoted to the museum, and which were inhabited."

It appears from the list given in Parkinson's *Garden of Pleasant Flowers*, printed in 1636, that Tradescant the elder introduced a large number of plants into England, among others the greatest double yellow bastard Daffodil, the Moly Homericum, Moly indicum, Virginian Spiderwort (which is named after him), Gladiolus byzantinus, white Hellebore, knobbed Mountain Valerian, a new Strawberry from Brussels,† plants from Turkey, and the Algerian Apricot. "But," says Ducarel, writing in 1772, "whether or no these plants bear his name at this period I can no more pretend to assert than that all the species therein mentioned are even now existing in our gardens."

"It were much to be wished," says Ducarel, in a letter to Dr., afterwards Sir W. Watson, "that the lovers of botany had visited this once-famous garden before, or at least in the beginning of the present century. But this seems to have been totally neglected till the year 1749, when yourself (Dr. Watson) and the late Dr. Mitchel favoured the Royal Society with the only account now extant of the remains of Tradescant's garden." (*Philosophical Transactions*, vol. xlvi., p. 160.)

Dr. Watson's paper, read before the Royal Society on May 25, 1749, is very short, and contains but little information. The author remarks that "Mr. Tradescant's garden has now been many years totally neglected, and the house belonging to it empty and ruined, but that though the garden is covered with weeds, there remain among them manifest footsteps of its founder." He noticed two large Arbutus trees—the largest he had ever seen,—and in the orchard a tree of the Rhamnus catharticus, about 20 feet high and near 1 foot in diameter. Watson states that Tradescant first planted here the Cupressus americanus acaciæ foliis deciduis, which was much esteemed, and at that time one of the great ornaments of the Duke of Argyll's garden at Witton. This statement is, however, contradicted by Dr. Hamel.

It would appear that the present house was built by Ashmole, between 1678, the date of Mrs. Tradescant's death, and 1692, the date of his own decease, but it has very few features which can be attributed to that period. Tradescant's tomb, in Lambeth churchyard, was erected by the widow of the younger Tradescant to the memory of the father and son. An illustration of this tomb will be found attached to Ducarel's letter to Dr. Watson, already referred to. It appears even in that time to have fallen into disrepair; the sculpture on the two ends seems to have been recognisable, but that on the two sides was so much decayed that Ducarel refers to a drawing preserved in the Pepysian Library for an explanation of the subjects. In 1773 part of the tomb appears to have been repaired. In 1853 the tomb, having still further deteriorated, was "entirely restored" after the fashion of that period, at a cost of about £100, or, in other words, was completely renewed. The original slab covering the tomb was removed to Turret House, and it would be interesting to know where it is at present.

The inscription on the tomb, which is given at length in *Old and New London*, vol. vi., p. 446, is not the original inscription, the verses forming no part of the first memorial, but were preserved by Aubrey. This is important, and goes to prove how misleading these restorations may become.

There is an excellent view of Tradescant's house in Smith's *Antiquities of London and its Environs* (1791-1800), which shows that the house has undergone but little alteration during the present century. The interior of the house has been entirely modernised, with the exception of the staircase and entrance-hall, which appear to be of Oak, and are of the time of Charles II.

The iron gate and piers next the road are of later date, probably of the reign of George I. The house inhabited by Ducarel and Moore was pulled down in the course of last year. The original plates of Hollar's etchings of the portraits of the two Tradescants are preserved at the Ashmolean Museum at Oxford.

Writing in 1786, Nichols says that but few of Tradescant's rare plants were remaining at South Lambeth in 1718; only a very few Horse-Chestnut trees, some Pine trees and Sumach trees, Phillyreas, &c.; and at the entrance into the gate over the bridge of the moat were two vast ribs of a whale.

There were two fine Cedars near the house; one of these, however, died last summer, and was removed; the other yet survives, and "spreads its broad green layers of shade," but must soon of necessity also disappear. These trees formed no portion of Tradescant's garden, the Cedar not having been introduced into England until the reign of William III.

Tradescant's house and grounds were sold by auction, at the Auction Mart, Tokenhouse Yard, on June 22, 1880, by Messrs. Driver & Co., for £16,150. *From the "Builder."*

* *England and Russia*, p. 243-4. By Dr. John Von Hamel. 1854.

† Dr. Hamel has pointed out this must be a mistake for Borussia,—*i.e.*, Russia.

## Natural History.

THE GOLDFINCH.—I have had the happiness to reside some years in a land of little groves and copses, of woods, and wastes, and commons, all bounded by those smooth downs which Gilbert White called mountains. Small birds therefore abound. The goldfinch had sensibly diminished within my recollection, having been annually netted on the downs, near Worthing and Brighton, to the number of 2000 or 3000 dozens (see report of the Select Committee on the Wild Birds Protection Act). Gaiety and song are always pleasing, and the goldfinch possesses these endowments, and adds to their beauty an affectionate disposition and several accomplishments which he acquires with great facility. "Handsome as a goldfinch," said a countryman, speaking of the prettiest girl in the parish, and I thought he praised the bird and the girl too! In some midland counties goldie is called "Proud Tailer." A still commoner local name is "King Harry." There are a dozen caged goldfinches in this south country village, and five or six of them are "draw waters," so called from their performing the bucket trick and drawing water for their own use. We have goldies ten or eleven years caged, and I have heard of them twice as old. They flock on the downs in early autumn, and visit our gardens and village hedgerows in spring and early summer. Hurdis, the curate of the Sussex village of Burwash, put the pleasing habits of this bird in very pretty verse in his *Village Curate*, in these words:—

"I love to see the little goldfinch pluck
The Groundsel's feathered seed, and twit and twit;
And then in bow'r of Apple blossoms perch'd,
Trim his gay suit, and pay us with a song."

They build a nest variously compounded, according to the materials that come to hand, or, more strictly, to bill. They prefer an Apple or a Pear tree in this parish, but I read of their selecting the end of a leafy bough of the Horse Chestnut or Sycamore. The outer part of the nest is neatly and compactly woven with fine stuff, such as worsted, wool, moss, bents, small twigs, and slender roots. I have sometimes assisted a pair in the orchard in the building of their nest by supplying them with fine materials, which they never fail to appropriate. The nests of finches are always round and neat, and that of the goldfinch is particularly so, and lined with soft materials. The 10th of May is a birthday in our house, and on that day (as quoted by Yarrell in another case) our goldfinches have been seen putting up their outer walls. The work began on Monday, as at the Creation, and three days later the nest was finished, and lined with cotton-wool, in a very birdlike manner. On the Sunday following an egg was laid—"the better the day the better the deed." But for our assistance in the building the egg would have been more exactly timed in regard to the completion of the nest.

The food of the goldfinch is such as none can grudge them, consisting of the seeds of syngenesious plants generally. The cultivation of wastes and extirpation of weeds on land in cultivation have curtailed their feeding grounds in most parts of England. In this district the bird-catchers are their worst enemies, though the Act has checked their proceedings in recent years. One may see them on the downs and waste places of Sussex, Hants and Surrey roving in small flocks and feeding on the seeds of the Thistle, Burdock, Dandelion, Groundsel, Chickweed or Plantain. These foraging parties usually consist of a score or less of birds, often of only half-a-dozen. They are tame, and will permit your approach within gun-shot on open ground, and much nearer if there be cover. Anybody may know them by their handsome burnished plumage, their undulating flight and their twittering when they rise. Yarrell says they are found throughout the United Kingdom as far as Sutherland, and that they nest in almost every English county, "Northumberland perhaps excepted." Mr. J. Aitchison, the naturalist, of Glendale, in some recent letters to a local paper, mentions half-a-dozen places in Northumberland where the goldfinch nests to his knowledge. So we may hope that this most beautiful of British finches has become more numerous under the protection of the Act. It is, however, a migratory bird, shifting its quarters in quest of food, seeking the Sussex coast, as we have seen, as a rendezvous, and moving thence eastward into Kent till the opposite cliffs are visible, when it flits across the Channel, leaving in this country a few hardy birds which are better able to bear the cold weather of our winter than goldfinches usually are, and only in those parts of the country where their food may still be found from the abundance of waste land. It is a visitant, either in winter or in summer, of all parts of Europe from Archangel to Italy and the South of Spain, and is plentiful in Algeria and common in Egypt. We are wandering perhaps too far from our orchard and from Sussex, whence we set forth. Coming nearer home, the name of "Cheveril," applied by bird-fanciers to the goldfinch, has been derived by some from the Cheviot Hills, one of the head-quarters of the bird, and by others from an old English verb, "chevelen," to chatter, though the goldfinch is not by any means the chief chatterer among finches. *Y.*

THE WILD BIRDS' PROTECTION ACT.—The following is a list of the birds protected during the breeding season—from March 1 to August 1—by the new Act, which came into operation on January 1. During the period named no one may either shoot or

attempt to shoot, catch or attempt to catch, or have in possession (after March 15) newly killed or caught, any of the birds scheduled, under a penalty not exceeding £1 for every bird :—

| | | |
|---|---|---|
| American Quail | Kittiwake | Sea Lark |
| Auk | Lapwing | Sea Mew |
| Avocet | Loon | Sea Parrot |
| Bee Eater | Mallard | Sea Swallow |
| Bittern | Marrot | Shearwater |
| Bonxie | Merganser | Sheldrake |
| Colin | Murre | Shoveller |
| Cornish Chough | Night Hawk | Skua |
| Coulterneb | Night Jar | Smew |
| Cuckoo | Nightingale | Snipe |
| Curlew | Oriole | Solan Goose |
| Diver | Owl | Spoonbill |
| Dotteril | Oxbird | Stint |
| Dunbird | Oyster Catcher | Stone Curlew |
| Dunlin | Peewit | Stonehatch |
| Eider Duck | Petrel | Summer Snipe |
| Fero Fowl | Phalarope | Tarrock |
| Fulmar | Plover | Teal |
| Gannet | Ploverspage | Tern |
| Goatsucker | Pochard | Thicknee |
| Godwit | Puffin | Tystey |
| Goldfinch | Purre | Whaup |
| Grebe | Razorbill | Whimbrel |
| Greenshank | Redshank | Widgeon |
| Guillèmot | Reeve or Ruff | Wild Duck |
| Gull (black-backed excepted) | Roller | Willock |
| | Sanderling | Woodcock |
| Hoopee | Sandpiper | Woodpecker |
| Kingfisher | Scout | |

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
FOR THE WEEK ENDING WEDNESDAY, JAN. 12, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 6 | 30.25 | + 0.52 | 41.1 | 33.5 | 7.6 | 37.1 | + 0.7 | 31.4 | 80 | E.N.E. | 0.00 |
| 7 | 30.38 | +0.64 | 40.7 | 31.5 | 9.2 | 36.0 | — 0.3 | 31.0 | 82 | N.E. | 0.00 |
| 8 | 30.35 | +0.62 | 37.5 | 30.3 | 7.2 | 34.2 | — 2.0 | 29.6 | 83 | ENE. N.N.E. | 0.00 |
| 9 | 30.11 | + 0.34 | 38.2 | 33.5 | 4.7 | 35.8 | — 0.4 | 32.3 | 86 | N.E. | 0.00 |
| 10 | 29.82 | +0.09 | 35.0 | 33.0 | 2.0 | 33.9 | — 2.4 | 28.6 | 83 | N.W. | 0.00 |
| 11 | 29.57 | — 0.16 | 34.7 | 31.0 | 3.7 | 33.0 | — 3.3 | 28.2 | 82 | W. | 0.00 |
| 12 | 29.33 | —0.39 | 31.8 | 25.0 | 6.8 | 28.5 | — 7.9 | 24.7 | 80 | WSW | 0.00 |
| Mean | 29.77 | + 0.18 | 37.0 | 31.1 | 5.9 | 34.1 | — 2.2 | 29.4 | 82 | N.E. | sum 0.00 |

Jan. 6.—Fine, clear, and bright day : strong wind.
— 7.—A very fine, clear, and bright day ; frost in morning.
— 8.—Dull, cold morning, afterwards partially clear and bright.
— 9.—Fine day, clouds thin.
— 10.—Dull, heavy morning, cold ; afterwards still dull but pleasant, the barometer reading decreasing steadily.
— 11.—Dull, cold, thick, and rather misty morning, slight snow at intervals ; afterwards the sun's place was visible at times, but the day was dark throughout ; some snow fell in the evening.
— 12.—Snow to the depth of 3 inches ; fine and bright at times, misty ; the minimum temperature of 25° took place at midnight.

LONDON : *Atmospheric Pressure.*—During the week ending January 8, in the neighbourhood of London, the readings of the barometer at the level of the sea increased from 30.38 inches at the beginning of the week to 30.45 inches by midnight on the 2d, decreased to 30.24 inches—the lowest reading in the week—by noon on the 4th, increased to 30.60 inches, —the highest reading in the week—by midnight on the 7th, and then decreased to 30.49 inches by the end of the week The mean reading at the sea level was 30.40 inches, being 0.67 inch higher than the mean of the preceding week, and 0.46 inch above the average.

*Temperature.*—The highest reading in the week was 48°, on the 2d ; on the 8th the highest reading was 37°.5. The mean of the seven high day readings was 42°. The lowest reading in the week was 30°.3, on the 8th ; on January 3 the lowest reading was 38°. The mean of the seven lowest readings was 34°.2. The greatest range of temperature in one day was 13°.5, on the 2d ; and the least was 5°.2, on the 4th ; the mean of the seven was 7°.8.

The mean daily temperature of the air and the departures from their respective averages were :—January 2d, 42°.3, +5°.1 ; 3d, 40°.7, +3°.8 ; 4th, 39°, +2°.4 ; 5th, 39°.7, +3°.2 ; 6th, 37°.1, +0°.7 ; 7th, 36°, —0°.3 ; 8th, 34°.2, —2°. The mean temperature of the week was 38°.5, being 1°.8 above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, did not rise above the highest temperature of the air on the 2d, viz., 48°, owing to the density of the clouds ; on the 5th it read 72°.8 ; on the 6th, 77°.8 ; and on the 7th, 80°.4, being the highest in the week. The mean of the seven readings was 63°.4.

The lowest reading of a thermometer with its bulb resting on grass differed but little from the minimum readings of the air, owing to the continued cloudy state of the sky. The mean for the week was 31°.

*Wind.*—The direction of the wind was mostly from the N.E.

*Rain.*—No rain fell in the week.

*Weather*—The weather was generally gloomy and dull, the mornings of the 6th, 7th, and 8th were partially fine and bright, and they were frosty on the 7th and 8th.

ENGLAND : *Temperature.*—During the week ending Saturday, January 8, the highest temperature of the air by day was 48° or 49° at Truro and Plymouth, and at Leeds and Sunderland—at extreme North and South stations ; at Norwich the highest temperature in the week was 43°, at Leicester 43°.5, and it was nearly as low at all Midland stations ; the general mean for the week from all stations was 46¼°

The lowest temperature in the week was between 24° and 26° at Bristol, Sheffield, Liverpool, and Bradford, and was 32° at Truro, Norwich, and Sunderland ; the mean from all stations was 28¾°.

The range of temperature in the week was between 20° and 21½° at Bristol, Sheffield, Liverpool, Bradford, and Leeds, and it was 11° (the smallest) at Norwich, 13¾° at Leicester, and 14° at Hull ; the mean from all stations was 17½°.

The mean of the seven highest day temperatures was 45°.3 at Plymouth, 44°.3 at Truro, 43°.7 at Leeds, and 43°.1 at Sunderland ; at Bristol it was 40°.6, at Leicester 40°.4, and generally at all stations excepting the extreme North and South the value was about or less than 42°. The mean from all stations was 42°.2.

The mean of the seven lowest night temperatures was 37° at Truro and 38° at Sunderland, being of higher value than at any other stations. At Wolverhampton and Nottingham it was 33°.1 and 33°.2. The general mean from all stations was 34°.9.

The mean daily range of temperature was 9°.1 at Plymouth, and 9°.2 at Nottingham, at Sunderland it was 5°.1 only ; at Norwich, 6°.1 ; and the general mean from all stations was 7¼°.

The mean temperature of the air for the week was the highest at Truro, 40°.5 ; Plymouth, 4°.6, and Sunderland, 40°.6 ; it was the lowest at Liverpool, 36°.8, Leicester, 37°, and Wolverhampton, 37°.2 ; the general mean from all stations was 38°.3.

It would therefore seem that during the week a band of low temperatures has reigned across the country between latitudes 51° and 53¾°, the temperatures both by night and by day being higher at places south of 51° and north of 53¾°.

*Rain.*—The only stations at which rain fell during the week was Nottingham, when rain fell on three days to the amount of 0.32 inch, a scarcely mentionable rain fell at Plymouth, Bristol, Leicester, Wolverhampton, and Sheffield, at all other stations no rain fell.

SCOTLAND : *Temperature.*—During the week ending January 8 the highest temperatures of the air were 49°.2 at Aberdeen and 49° at Paisley ; at Edinburgh, Dundee, Leith and Perth the highest temperature was 46° or 47° ; the general mean was 47°.5, being 1¼° higher than in England. The lowest temperature of the air in the week was 16°.7 at Aberdeen, and 18° at Perth ; at Paisley it was 25°, and at Glasgow 23° ; the mean of all was 21°.8, being 7° of less temperature than in England.

The mean temperature of the air for the week was 36°.9 at Paisley, the highest, and 33°.5 at Perth, the lowest. The mean from all stations was 36°.2, being 2°.1 of lower temperature than in England.

*Rain.*—Scarcely any rain fell during the week ; there were only slight showers at Edinburgh, Greenock and Perth.

JAMES GLAISHER, F.R.S.

# Obituary.

IT is with great regret that we have to record the sudden death of WILLIAM GORRIE, the well-known Scottish forester and garden architect. But a few weeks ago our readers had the privilege of judging of the intellectual calibre displayed in his remarkable address "On Acquiring, by Selection, Hardier Varieties or Forms of Half-hardy Exotics," delivered on vacating the presidential chair of the Edinburgh Botanical Society. They had previously been informed of his successful introduction of beautiful and useful New Zealand plant forms at his little garden paradise at Rait Lodge, Trinity. Now these and similar plant rarities, invaluable to the florist and rural economist alike, will no more be cared for by the kindly eye and loving hand of their foster-father to British horticulture. Mr. Gorrie came of a race of gardeners and tree planters. He was born in the Carse of Gowrie, Perthshire, but spent the greater part of his public life about Edinburgh. Whether as land factor, as manager to the late Mr. Lawson's nursery, or latterly as consulting landscape gardener and forester, he won golden opinions. As one said, he never made an enemy. His papers and reports in the *Transactions* of the Highland and Agricultural, of the Botanical, and other societies, are well known. He has besides shown his taste and judgment otherwise than by printers' ink in many works done under his professional supervision ; notably in his own small garden, which he made one of the horticultural sights of Edinburgh. In dictating a notice of his neighbour, the late Miss Frances Hope, of Wardie, he emphasised her love of cultivating beautiful flowers in order to have the pleasure of giving them away. He thus unconsciously delineated himself. Many a visitor to Rait Lodge will now remember the beautiful nosegays, not to be had for silver or gold, so freely given. Mr. Gorrie had been complaining within the last year or two, but latterly he improved in health and spirits. On Thursday, the 6th inst., he started for Dumfriesshire, remarking how well he then felt. He climbed a high hill throughout the day ; reached the Edinburgh station of the Caledonian Railway in the evening nothing amiss ; when the train on the Leith branch stopped at Newhaven to collect tickets the porters found him dead, apparently of heart disease, in the sixty-ninth year of his age. Professors, leading nurserymen, and humble working gardeners, gathered round William Gorrie's grave in the Warriston Cemetery on Tuesday the 11th, making common lament.

—— We greatly regret to have to announce the death, in his seventy-second year, of Mr. JOHN SPENCER, of Bowood. He died on the 10th inst., at his residence, Buck Hill House, Calne. It is some forty-five years since—about 1835—as we are informed by one of his old friends, that Mr. Spencer went to Bowood, having been recommended to the Marquis of Lansdowne by the late Joseph Sabine, Esq., then Secretary to the Horticultural Society of London. At Bowood Mr. Spencer occupied for many years one of the foremost positions amongst British gardeners, displaying his great talents and his sound judgment, not only in his gardening pursuits, in which he greatly excelled, but also in other branches of science, being a geologist and mineralogist of no mean order. He was a man of high and honourable character, much esteemed by his employer, and by all who knew him. In 1860 the late Marquis of Lansdowne placed in his hands the entire management of his Wiltshire estates, and for many years he filled this more responsible post with full credit to himself and entire satisfaction to his employer. During the period of his more intimate association with gardening pursuits he assisted, in 1852, in founding, and jointly with Dr. Hogg occupied the position of Honorary Secretary to, the British Pomological Society — an association which, after four years of useful labour, finally merged into the Fruit Committee of the Royal Horticultural Society, as the National Floricultural Society did into the same Society's Floral Committee. Outside the gardening world Mr. Spencer filled several important public offices in the county and district ; amongst others sharing the directorate of the local bank, and being vice-chairman of the Calne Union and chairman of the Assessment Committee. Though of late years less intimately associated with horticulture than was the case in bygone days, he has been from time to time met with at the various gatherings of the craft ; and though we shall now see his portly form and bright and beaming countenance no more, his kindly genial disposition and his high intellectual attainments will not be soon forgotten by those who knew him personally. Our deceased friend was, from the establishment of the *Gardeners' Chronicle*, a valued contributor to its pages, and continued to be so throughout his gardening career, in the course of which he acquired a high reputation as a cultivator of the choicer fruits. To him we are indebted for the Bowood Muscat Grape, a seedling from the Muscat of Alexandria, and a variety of some repute for its setting and

bearing properties. From 1854 to 1862, Mr. Spencer was associated, first with Mr. Charles Turner, and subsequently with Dr. Hogg, in the proprietorship and management of the *Florist*, of which the second enlarged series, entitled the *Florist and Pomologist*, was commenced during his connection with the work. After entering on the more comprehensive duties of estate agent, his connection with horticultural literature was broken off, and has not been subsequently renewed. Now at the close of an honourable and highly successful professional career, while the affectionate sorrow of many a personal friend will follow him to the grave, his memory will remain as a bright spot in the recollections of the past, and his name will shed a lustre on the garden history of our time. *M.*

## TRADE MEMORANDUM.

A CORRESPONDENT asks whether Mr. Robert Hurst, who sends him an order from Mansfield, Notts, is or was connected with Messrs. R. & E. Hancock, formerly of Newcastle-upon-Tyne?

## Answers to Correspondents.

DYING ELMS: *W. P.* It is impossible for us to tell the cause of death. It may be from undrained soil, from the action of frost after the trees had begun to grow in spring. The fungus is Tubercularia cinnabarina, and has nothing to do with the death of the tree, being a consequence, not a cause.

PRUNING GOOSEBERRIES: *Y. J.* The accompanying illustration (fig. 19), aided by the remarks of Mr.

FIG. 19.

Crossling at p. 79, should afford you all necessary information.

HEMP: *A. W. F.* (See p. 24.) Details of methods of cultivation of this crop are given in *Our Farm Crops*, by J. Wilson, vol. ii., pp. 325—343, with some notes of cost and return per acre in Lincolnshire, Cambridgeshire, and Suffolk, with details of expense and return on one acre given in full. The paper also mentions "that there may exist conditions of soil, and of general husbandry arrangements—take Ireland, for instance—where it may be profitably grown." *O.*

GERMAN BOTANICAL PERIODICAL: *E. S.* The *Linnæa*, published at Berlin, is [the only one we know of, independently of the *Transactions* of the Natural History Societies.

INSECTICIDE: *A. H.* If you will send a small quantity we will try it and report on it; but in no other way can we mention it—no, not even for a consideration, as you seem to suppose. You should advertise in the usual way.

NAMES OF FRUITS: *E. H.* 1, Not known; 2, most probably Keswick Codlin.

NAMES OF PLANTS: *J. G. Mitchinson.* The common Butchers' Broom (Ruscus aculeatus).—*E. Bullmore.* Solanum jasminoides, Clematis calycina or balearica, and Cytisus microphylla. — *Bell & Son.* Leonotis Leonurus, a good old greenhouse plant.—*F. Freeman.* Ruscus aculeatus (Butcher's Bloom).—*J. Stewart & Sons.* Petasites fragrans, a nice old-fashioned herbaceous plant for the wild places and shrubberies.—*A. G.* 1, Asplenium myriophyllum; 2, Lastrea glabella; 3, Litobrochia aurita; 4, Polystichum coriaceum; 5, Veltheimia viridifolia; 6, Amomum cardamomum. — *J. C. G.* 1, Thunbergia Harrisii; 2, Eriobotrya japonica (the Loquat).—*H. Roberts.* Kleinia tomentosa.

PRIMULAS: *Francis C.* The flowers generally are scarcely up to the average compared with the best strains grown at the present time; but one of the doubles with white centre and rosy margins looks as if something good might be got out of it.

VINES: *C. E.* The Vines you speak of may be transplanted at the present time if you exercise great care in doing so. Begin as far from the stem as you can to remove the soil from the roots, thus gradually tracing them all out; as soon as lifted plant, laying the roots out carefully and covering with good soil; allow them to break naturally, and if all the buds do not break you may cut back the stem as required; but with care they will do very well, only rather weak the first year. Do not bother about fruit the first season.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

DANIELS BROTHERS, Norwich — Illustrated Guide for Amateur Gardeners.

DICK RADCLYFFE & CO., 129, High Holborn, W.C.—Vegetable and Flower Seeds, Garden Requisites, &c.

C. FIDLER, Friar Street, Reading—Prize List of Seed Potatos.

CHARLES TURNER, Slough — Seeds for the Kitchen Garden, the Flower Garden, and the Farm.

THOMAS M'KENZIE & SONS, 34, Dawson Street, Dublin —Vegetable and Flower Seeds; and Amateurs' Guide.

J. C. WHEELER & SON, Gloucester—Little Book, or Select Seed List.

W. B. SMALE, Fleet Street, Torquay — Vegetable and Flower Seeds, and Horticultural Sundries.

JAMES YATES, Stockport, and 34, Hop Exchange, Borough, S.E.—Trade List of Garden and Flower Seeds.

WILLIAM PAUL & SON, Waltham Cross, N. — Vegetable, Flower, and Agricultural Seeds.

KENT & BRYDON, Darlington — Kitchen Garden and Flower Seeds.

STEPHEN BROWN, Weston-super-Mare — Flower and Vegetable Seeds.

ALFRED LEGERTON, 5, Aldgate, London, E.—Trade List of Garden and Agricultural Seeds.

ALEX. DICKSON & SONS, 2, Donegal Street, Belfast—Vegetable and Flower Seeds, Gladioli, &c.

D. GUIHÉNEUF, Nantes, France—Wholesale Seed List.

M. BRUANT, Poitiers, France—New Zonal Pelargoniums, Petunias, Verbenas, and Begonias.

HAAGE & SCHMIDT, Erfurt, Germany — Flower and Vegetable Seeds, and Plants.

STUART, MEIN & ALLAN, Kelso, N.B. — Vegetable and Flower Seeds; Bulbs for Spring Planting, &c.

COMMUNICATIONS RECEIVED.—E. A.—W. E.—Colonel Puckle.—J. V. V.—J. Sadler.—M. C. C.—A. Milne.—B. D.—C. J. de Monteiro.—D. Massange de Louvrex.—S. H. V.—A. H.—H. H.—J. R. J.—H. G. B.—E. B.—G. N.—M. J. B.—J. G.—C. S S.—J. B.—J. Hart (yes, please).—A. T.—E. J.—P. C.—J. R.—C. H. S.—J. S.—A. D.—P. G.—H. W. W.—J. L.—W. H.—C. T.

# Markets.

*COVENT GARDEN, January* 13.

Market stagnant; sole demand being for good well-kept Grapes. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 1 6– 5 0 |
| Grapes, per lb. | 3 0– 8 0 | Pine-apples, per lb. | 1 0– 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Asparag., Fr., bndl. | 25 0– .. | — Cos, each | 0 6– 1 0 |
| — Sprue, per bund. | 1 6– 2 0 | Mint, green, bunch | 0 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Parsley, per bunch | 0 4– .. |
| Celery, per bundle | 1 6– 2 0 | Radishes, per bun. | 0 2– .. |
| Chilis, per 100 | 3 0– .. | Rhubarb, per bund. | 1 0– .. |
| Cucumbers, each | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| Garlic, per lb. | 1 0– .. | Spinach, per bushel | 4 0– .. |
| Herbs, per bunch | 0 2– 0 4 | Tomatos, per lb. | 0 9– 1 0 |
| Horse Radish, p. bun. | 4 0– .. | Turnips, new, bunch | 0 4– .. |

POTATOS:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ferns, in variety, doz. | 4 0–18 0 |
| Begonias, per doz. | 6 0–12 0 | Ficus elasticus, each | 1 6– 7 6 |
| Cineraria, per doz. | 10 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cyclamen, per doz. | 12 0–18 0 | Genista, per doz. | 12 0–18 0 |
| Cyperus, per dozen | 6 0–12 0 | Hyacinths, per doz. | 8 0–12 0 |
| Dracæna terminalis | 30 0–60 0 | — Roman, doz. | 12 0– .. |
| — viridis, per doz. | 12 0–24 0 | Lily of the Valley, per pot | 2 0– 4 0 |
| Epiphyllum, per dozen | 18 0–30 0 | Myrtles, per doz. | 6 0–12 0 |
| Erica gracilis, dozen | 9 0–18 0 | Palms in var., each | 2 6–21 0 |
| — caffra, per doz. | 8 0–12 0 | Poinsettia, per doz. | 9 0–18 0 |
| — hyemalis | 12 0–36 0 | Primula, single, per dozen | 5 0– 6 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 9 0 |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 3 0– 6 0 | Marguerites, 12 blms. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 1 0– 2 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Bouvardias, per bun. | 1 0– 3 0 | Pelargoniums, 12 sprays | 1 6– 2 0 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 9 0– 1 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Poinsettia, 12 blooms | 3 0– 6 0 |
| Chrysanthemums, 12 blooms | 2 0– 4 0 | Primula, double, per bunch | 1 0– 1 6 |
| Cyclamen, 12 blms. | 3 0– 6 | — single, 12 sprs. | 0 6– 1 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Roses (indoor), doz. | 2 0– 6 0 |
| Eucharis, per doz. | 4 0– 9 0 | — yellow Fr., doz. | 2 0– 4 0 |
| Euphorbia, 12 sprays | 3 0– 5 0 | — red French, doz. | 3 0– 4 0 |
| Gardenias, 12 blms. | 15 0–30 0 | — Christmas, 12 bl. | 1 0– 2 6 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Hyacinth, Roman, 12 sprays | 1 6– 2 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Tuberoses, per dozen | 4 0– 8 0 |
| — red, 12 blooms | 1 0– 3 0 | Violets, 12 bunches | 1 6– 2 6 |
| Lilac, Fr., per bunch | 8 0–10 0 | — Neapolitan, Fr., per bunch | 5 0– 7 0 |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | — Czar, Fr., bunch | 2 6– 3 0 |

## SEEDS.

LONDON: *Jan.* 12.—Messrs. John Shaw & Sons, of 37, Mark Lane, report that samples of new red Clover seed continue in meagre supply, and fine qualities are very scarce. For the few parcels of choice new English which have this week come to market, more money is asked. Trefoil and Italian keep firm, Alsike is now remarkably cheap. Increased offerings of white are shortly expected. There is a good sale for spring Tares. The wintry weather has improved the demand for boiling Peas. Linseed is in better request. Canary and Hemp seed move off slowly.

## CORN.

Trade at Mark Lane on Monday in home-grown Wheat was greatly wanting in animation. The better qualities realised full prices, but inferior sorts were difficult of sale, though not cheaper. For foreign it was impossible to obtain higher prices. Good and fine qualities of Barley attracted more attention, and extreme prices were paid, but inferior sorts were neglected; grinding Barley sold slowly on former terms. Malt was in slow request at late rates. Indian Corn was without material change in prices. Oats were held for rather more money, but no improvement was established. Beans and Peas were in slow request at previous quotations. Flour was in moderate demand, without change in prices.—On Wednesday trade in Wheat was decidedly firm in tone, and higher prices were demanded. Good Barley was in fair request at extreme rates, but medium and inferior sorts met with a slow sale. Oats were without material change in value. Beans and Peas sold slowly at late rates. For flour the trade was quiet on former terms.—Average prices of corn for the week ending January 8:—Wheat, 43*s.* 4*d.*; Barley 31*s.* 6*d.*; Oats, 19*s.* 10*d.* For the corresponding period last year:—Wheat, 46*s.* 2*d.*; Barley, 36*s.* 8*d.*; Oats, 20*s.* 11*d.*

## CATTLE.

At Copenhagen Fields on Monday prices were lower for all descriptions of beasts. A considerable portion of the sheep on offer being of inferior quality, choice ones found purchasers, but at a reduction in price. The new order that all animals sold here must be slaughtered within the metropolis caused a very dull trade in all departments. Good calves met with a fair sale. Quotations:—Beasts, 4*s.* 4*d.* to 4*s.* 10*d.*, and 5*s.* 2*d.* to 5*s.* 8*d.*; calves, 5*s.* 4*d.* to 6*s.* 6*d.*; sheep, 5*s.* 4*d.* to 5*s.* 10*d.*, and 6*s.* 2*d.* to 7*s.* On Thursday the cattle trade was quiet and without feature. Beasts sold slowly at weak currencies, and sheep were without change. The calf market was inactive.

## HAY.

Tuesday's Whitechapel Market report states that the supply of fodder on offer was large and the trade good, at the following quotations:—Prime Clover, 100*s.* to 120*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 105*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 41*s.* per load.—On Thursday the supply was rather short. Trade was steady, and Tuesday's prices were firmly maintained.—Cumberland Market quotations:—Superior meadow hay, 95*s.* to 105*s.*; inferior, 50*s.* to 74*s.*; superior Clover, 114*s.* to 120*s.*; inferior, 84*s.* to 95*s.*; and straw, 38*s.* to 42*s.* per load.

## POTATOS.

The Borough and Spitalfields markets reports state that the markets were well supplied with Potatos, for which a dull enquiry prevailed, at the following rates:—Scotch Champions, 75*s.* to 85*s.*; Scotch Regents, 80*s.* to 100*s.*; Essex Regents, 80*s.* to 90*s.*; Essex Champions, 70*s.* to 80*s.* per ton; Belgian kidneys, 3*s.* 9*d.*; German reds, 3*s.* 6*d.* to 4*s.* 9*d.* per bag.—The imports into London last week were upon a reduced scale; 717 bags were reported from Hamburg, 400 Rotterdam, 292 St. Nazaire, 297 Boulogne, 136 tons Antwerp, 54 tons St. Valery, 8 bags 80 barrels Ostend, 400 bags Harlingen, and 41 tons from Dahoueff.

## COALS.

The following are the prices current at market during the week:—Bebside West Hartley, 14*s.* 9*d.*; East Wylam, 16*s.* 6*d.*; Ravensworth West Hartley, 14*s.* 9*d.*; Walls End—Hetton Lyons, 16*s.*; Lambton, 17*s.*; Wear, 16*s.*; Tunstall, 16*s.*; Tees, 17*s.* 3*d.*; Hetton, 17*s.* 6*d.*; Hawthorns, 16*s.* 3*d.*; South Hetton, 17*s.* 6*d.*; Radford Navigation, 16*s.* 6*d.*; Westminster-Brymbo and Wrexham Navigation, 15*s.* 6*d.*

# OSBORN & SONS

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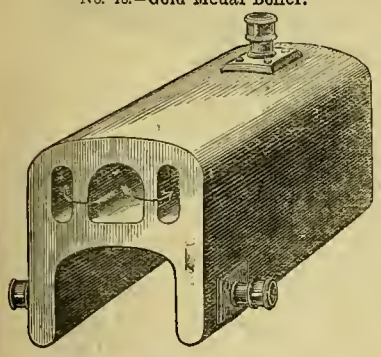

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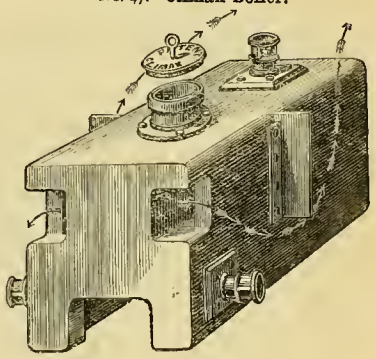

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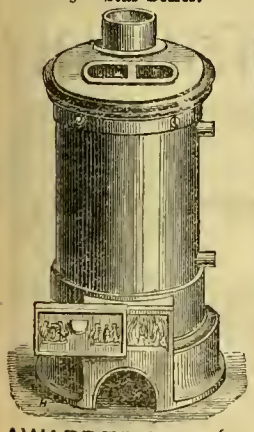

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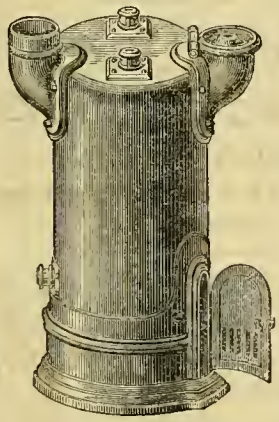

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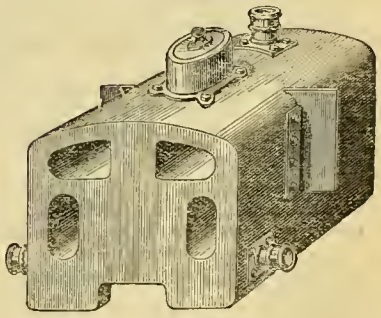

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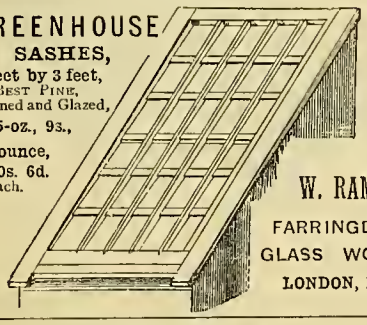

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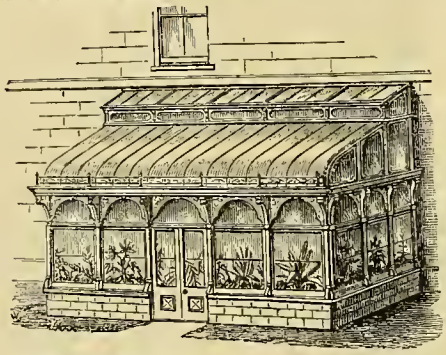

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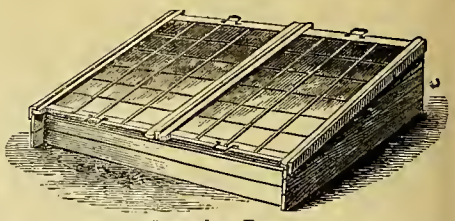

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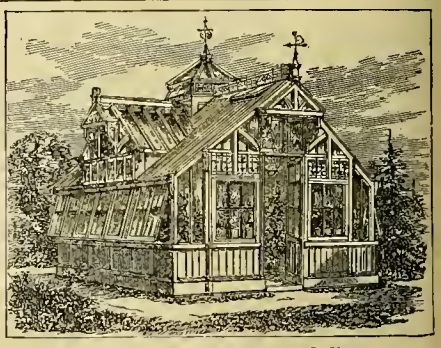

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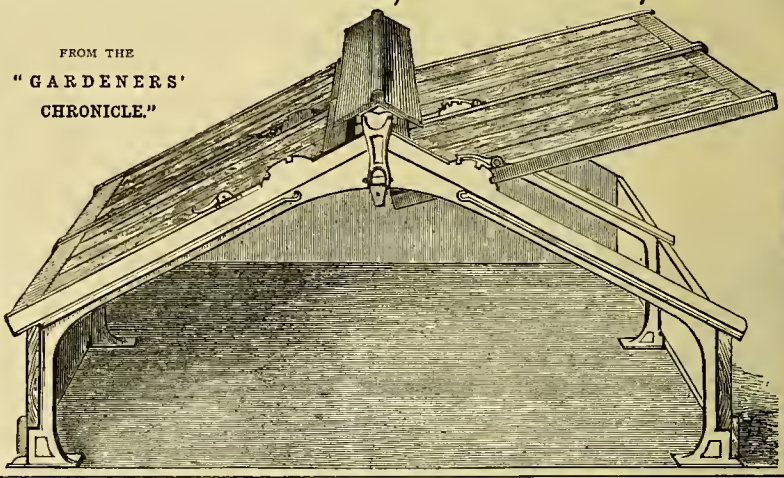

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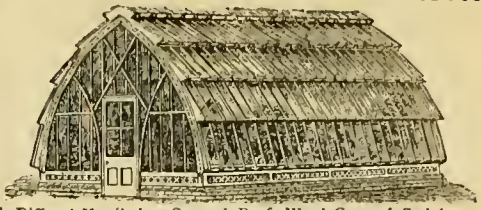

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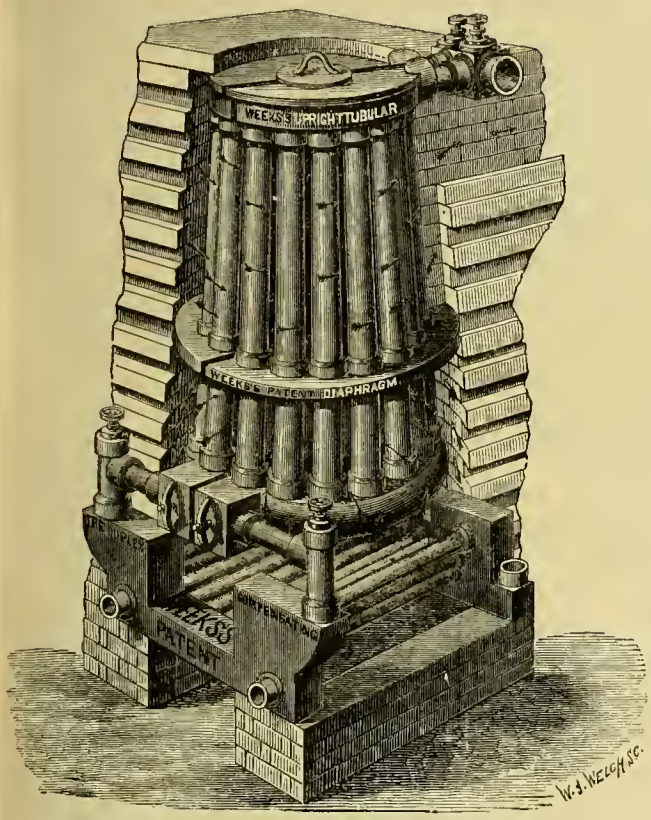


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Post-office Orders to be made payable to M. E. PYNAERT, at the Chief Post-office, Ghent.

THE SYDNEY MAIL AND NEW SOUTH WALES ADVERTISER.

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WANTED, at Lady Day, a First-class WORKING HEAD GARDENER, under Glass, as MANAGER of a COMPANY having a well-established Trade in the Sale of Flowering Plants, Cut Flowers, Grapes, Peaches, &c. Minimum salary (including cottage, overtime, and commission on sales) guaranteed £100 per annum, with ample scope for increase by energetic man thoroughly competent. Applicants must have long undeniable characters for honesty, morality, sobriety, energy, and general ability, enjoy good health, be married, of middle age, good writers, able to keep accounts. Total abstainer preferred, but not essential. Must have had much experience—especially in the Trade—in the Propagation, Growth, and Forcing of Plants and Fruits; be accustomed to the management of men; good Salesmen, with obliging manners, willing to act not only as Managers, but as Fellow Workers with the men. Only applicants stating age, present position and wages, former places, number of children, and full particulars on all points, will be replied to. Writers of letters ten days unanswered to be considered declined. Copies, but not original testimonials, may be forwarded.—Apply (at first by letter only) to MANAGING DIRECTOR, Netley House, Bournemouth.

WANTED, a thoroughly practical man as GARDENER, to take charge of Kitchen Garden, Conservatory, and Greenhouse, with help. Wages, 25*s.* Must have good character from last place.—Apply, by letter only, to E. B. R., Winton House, Ealing, Middlesex.

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WANTED, AT ONCE, a FOREMAN (age not over 30) for a Nursery just about to be started (South-West of London). Must be a good Propagator, and have a general knowledge of Plants, Indoors and Out. Roses a speciality, no Forest Trees. Must also write a clear distinct hand, and be able to Execute Orders with despatch. This is a good opportunity for a clever young man of energy to improve his position. Wages according to ability.—Reply by letter to HOUSEKEEPER, 59, Mark Lane, London, E.C.

WANTED, a young MAN, well up in Potting and Watering: one with a fair knowledge of Propagating preferred.—State age, experience, and wages required, to TURNER BROS., Florists, Garston, Liverpool.

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WANTED, a young MAN, to Work entirely under Glass, in a Gentleman's place near Dublin. Must have had experience in the Houses. Would be under a good Head Gardener. Wages 18*s.* per week, free lodging, with fuel and light. Travelling expenses paid. Applicants to be Church of England.—State age and every particular of experience to A., Balrath Burry, Kells, Co. Meath, Ireland.

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WANTED a SHOPMAN in a Wholesale House. Must have experience and write well.—Apply, by letter only, stating age, salary, &c., to H. & W., Tavistock Row, Covent Garden, W.C.

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WANTED, IMMEDIATELY, two or three experienced young man for the Counter; must thoroughly understand the Retail Trade,—Apply, with full particulars, copies of testimonials, &c., to DANIELS BROS., The Royal Norfolk Seed Establishment, Norwich.

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WANTED, an experienced CLERK, acquainted with the Retail Seed Trade. Salary £100 per annum.—Applications address, B. S., 12, King Street, Covent Garden, W.C.

**Seed Trade.**

WANTED, a YOUTH who understands the Vegetable Seed Trade, and to fill up time in office in Country town. State age and salary by letter.—B., 64, Leighton Road, Kentish Town, London, N.W.

WANTED, a young Lady of good address to take charge of a Seed, Florist, and Fruiterer's Shop at a watering-place in the North of England; to live in. A person that would take an interest in the business would find this a comfortable situation.—Apply, with all particulars, to R. MARIES, Florist, Lytham, Lancashire.

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B. S. WILLIAMS begs to intimate that he has at present in the Nursery and upon his Register some excellent Men, competent either to fill the situation of HEAD GARDENER, BAILIFF, FOREMAN, or JOURNEYMAN. Ladies and Gentlemen requiring any of the above will please send full particulars, when the best selections for the different capacities will be made.—Holloway, N.

GARDENER (HEAD).—No incumbrance; good reference; satisfactory reasons for leaving.—S. BAILEY, Post-office, Langford, near Maldon, Essex.

GARDENER (HEAD).—Age 35, married; twenty-three years' professional experience. Nine years Head in last situation. Excellent references.—W. L., Mrs. Bristow, 3, Beech Villas, Milton Road, Acton, Middlesex.

GARDENER (HEAD).—Married, no family; certificated 1st Class; eight years' reference. English or foreign service.—J. S., 74, Aldred Road, Kennington Park, London, S.E.

GARDENER (HEAD); age 30.—W. G. PRAGNELL, Gardener to G. D. W. Digby, Esq., Sherborne Castle, Dorset, can recommend his late Foreman to any Lady or Gentleman requiring the services of a thoroughly practical man.

GARDENER (HEAD).—Age 37, married, no family; steady, energetic, and trustworthy. An excellent Grape Grower, also a good Plantsman, and well up in every other department of Gardening. Excellent references.—JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool.

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GARDENER (HEAD).—Age 40; a thorough practical knowledge of the profession in all its branches, Land and Stock. Wife good Cook, thoroughly understands the Dairy. Eight years' undeniable character.—HENRY DOWNS, Aldon Offham, Maidstone, Kent.

GARDENER (HEAD).—Age 31, married, one child; thoroughly understands the profession in all its branches. Fifteen years' practical experience. No Single-handed place accepted. Good references, &c.—G. P., Mr. Keem, Market Place, Faversham, Kent.

GARDENER (HEAD).—Age 40, married, no family; twenty-five years' practical experience in all branches of the profession—Orchids, Early and Late Forcing, Fruits, Flowers, and Vegetables. Fourteen years' Head Gardener. Good character.—E. H., 7, Percy Villa, Upper Norwood, S.E.

GARDENER (HEAD).—Married; Scotch; steady, energetic, and trustworthy. Twenty-five years' practical experience in all branches of gardening. An excellent Grape Grower, and good Plantsman. Thirteen years' excellent reference from last situation.—JAS. GALBRAITH, 14, Mary Ann Place, Catford, S.E.

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GARDENER (HEAD, WORKING).—Age 27, married, no family; practical and trustworthy. Six years' good character.—M. M., The Gardens, Glenhurst, Esher, Surrey.

GARDENER (HEAD, WORKING); age 32.—J. SIMMONS, late Garnener and Bailiff to J. S Wheatley, Esq., Calverton Hall, Notts, wishes to engage as above.—28, Hill Street, Leamington.

GARDENER (HEAD, WORKING).—Age 30, single at present; sixteen years' experience in all branches of the profession. Good references. State salary and particulars.—HENRY KITCHIN, 9, Clark's Buildings, Snaresbrook, E.

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GARDENER (HEAD, WORKING), in a Nobleman's or Gentleman's Family.—Married; has had experience in good families, where gardening has been extensively carried on. Thoroughly understands Gardening in all its various branches. Five and a half years' good personal character.—GARDENER, 8, Lorne Terraace, Myrtle Road, Acton, W.

GARDENER (HEAD, or good SINGLE-HANDED).—Married. Five years' character from last situation.—GARDENER.—Mr. Head's, 4, College Street, Highbury Vale, London, N.

GARDENER (HEAD, or good SINGLE-HANDED).—Age 33, married, no family; thoroughly understands his business.—G. M., 20, Warren Road, Addiscombe, Croydon, Surrey.

GARDENER (SINGLE-HANDED).—Young, married, respectable; good character.—F. PAYNE, Langley Common, Kingslangley, Herts.

GARDENER (SINGLE-HANDED, or where help is given).—Age 25; respectable. Eighteen months in present situation. Good reference.—W. COOPER, Warnford, Bishop's Waltham, Hants.

GARDENER (SINGLE-HANDED), or where another is kept.—Age 28, single; eight years' good character.—State particulars to R. LAKE, 3, Sydney Cottages, Grosvenor Road, Twickenham, S.W.

GARDENER (SECOND).—Age 24; experience North and South. Four years in present situation. Good references.—State particulars to H. F., 1, Wingfield Terrace, South Lambeth, London, S.E.

GARDENER (SECOND, in a good establishment, or good SINGLE-HANDED).—Age 23; three years' good character.—W. RICHARDSON, Barttow, near Linton, Cambridgeshire.

GARDENER (SECOND), or under a good Foreman in a large place.—JOHN CHESHER, Gardener to J. M. Heathcote, Esq., Connington Castle, Peterborough, wishes to recommend James Upex (age 20), his present Foreman. Two years' as Second in present situation.—JAMES UPEX, Sawtry, Peterborough.

GARDENER (UNDER).—Age 24; eight years' practical experience in all branches.—T. S., 10, Hopkins Street, Golden Square, London, W.

GARDENER (UNDER).—Age 21; six years' experience; good references; bothy preferred.—W. J. MASKELL, Mr. Keem, Market Place, Faversham, Kent.

GARDENER (UNDER), or under a Nursery Foreman; indoor and out. Fifteen months' recommendation.—W. WELLER, 2, Mead Place, West Croydon, Surrey.

GARDENER, under a Foreman.—ADVERTISER (age 22, single), desires to improve himself, and has no objection to pay a small Premium if required. Good character.—FREDERICK COOPER, Sands Seale, Farnham, Surrey.

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FOREMAN, in a Nobleman's or Gentleman's establishment.—Age 26; two years in present situation as Foreman.—J. B., Oakly Park Gardens, Bromfield, Salop.

FOREMAN, in the Houses.—Age 24; highly recommended by late employers.—T. P., 61, Clarendon Street, Clarendon Square, N.W.

FOREMAN, in a large private establishment; age 26.—S. PULLMAN, Frampton Court, Dorchester, can confidently recommend his Foreman to any one requiring the services of a competent man.

FOREMAN, in a good establishment.—Age 26; eighteen months in present situation. First-class references from present and previous situations.—FOREMAN, Haydon Hall Gardens, Pinner, Middlesex.

FOREMAN, in a good establishment.—Age 25; eleven years' experience, four years as Foreman. First-class character.—W. A. COOK, The Garden, Norman Court, Dean, Salisbury.

FOREMAN, in a good establishment.—Age 24; eight years' experience in Early and Late Forcing, also Stove and Greenhouse Plants and Orchids. Good character from last situation.—R. T., New Street, Brompton Road, S.W.

FOREMAN.—Well up in the Propagation of Coniferæ, Roses, Rhododendrons, Clematis, &c. Eight years in present situation as Manager. Leaving on account of the proprietor making alterations by taking his son into the business. Will be highly recommended.—S. LEY, Malmesbury Road, Springbourne, Bournemouth.

FOREMAN and PROPAGATOR, and General PLANT GROWER,—Twenty years' experience. Six years' character. Please state particulars.—J. L., 30, Townshend Cottages, Avenue Road, St. John's Wood, N.W.

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FOREMAN PROPAGATOR (INDOOR); age 30, active, and sober.—ADVERTISER desires situation in a good Nursery, where plants are grown in quantity for market and other purposes. Thoroughly competent to take charge of a general collection, including Bouvardias, Eucharis, Poinsettias, and Tuberoses, the forcing of Lilies of the Valley, and other popular flowers and plants; first-class hand at Bouquet work. Four and a half years with present employer at Chad Valley.—J. P., 7, Greenfield Terrace, Harborne, Birmingham.

FOREMAN and PROPAGATOR, or PROPAGATOR and GROWER for Market, or otherwise. Twenty-five years' practical experience in some of the leading nurseries. Good references from last place.—G. S., 7, Victoria Cottages, Holmsdale Road, Selhurst, Surrey.

FOREMAN PROPAGATOR and GROWER of Stove and Greenhouse Plants, including Ericas, Epacris, Camellias, Azaleas, Roses, Bouvardias, &c.—V. Z., 31, Moore Park Road, Fulham, S.W.

NURSERY FOREMAN (OUTDOOR).—Great experience in Fruit Trees, &c.; good testimonials.—A. M., Shorrold's, North End, Fulham, S.W.

GROWER, or MANAGER of a Branch.—Roses, Strawberries, Cucumbers, Ferns; also a Collection of Plants for Cut Flowers. Good knowledge of the Budding of Roses, also the culture of Outdoor Strawberries.—H. H., Mr. W. Grace, 29, Shadwell Road, Grove Road, Upper Holloway, N.

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PROPAGATOR (INDOOR) of Hard and and Soft wood.—Age 25. State wages.—B. R., Mr. Thackray, 5A, Denbigh Road, Bayswater, S.W.

JOURNEYMAN, in a Gentleman's Garden, in the Houses.—Age 22; can be well recommended.—JAMES GREGGE, Ringwood Lodge, near Chesterfield, Derbyshire.

JOURNEYMAN, in a good establishment, or FOREMAN in a smaller one. Age 26.—M. W. CHARLTON, Cope Street, Barnsley.

TO GARDENERS.—ADVERTISER (age 20) wishes to place himself under a good Practical Gardener, in a good establishment, where he would have opportunities of learning the profession. Premium given.—Z., Mr. Chester, Furness Abbey, Lancashire.

IMPROVER, in the Garden and Houses.—Age 19; had four years' experience in both branches.—G. R., Bray Court Lodge, Maidenhead, Berks.

IMPROVER, in the Houses, under the Foreman.—Age 18; two years' good character from present employer. Bothy preferred.—A. SHEPPARD, Rectory Farm, Ascot, Berks.

TO NURSERYMEN.—ADVERTISER desires a superior situation in a Nursery. Has good experience and education, and is thoroughly acquainted with the trade in all its branches. Good references.—C, Mr. Carpenter, Grocer, Richmond Road, Twickenham, S.W.

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NURSERY MANAGER, FOREMAN, or SALESMAN.—Twenty years' experience in all branches of the trade, in the best nurseries. Qualified to take journey; energetic, obliging, and of good address. First-class references.—S. B., 21, Grayland Villas, Forest Hill, S.E.

MANAGER and TRAVELLER.—Twenty years' practical experience in every branch of the trade. Well known in the Trade, and amongst Noblemen's Gardeners. Highest references as to ability, &c. Now open for a permanent engagement.—R. H. A., *Gardeners' Chronicle* Office, W.C.

GENERAL HAND on ESTATE, &c.—ADVERTISER (who is married) desires a re-engagement on an Estate, or in a Nursery, as General Hand.—Carpentering, Painting, Glazing, Repairs to Hot-water Pipes, &c. Good references and testimonials.—J. PIKE, Caversham Grove Oxon.

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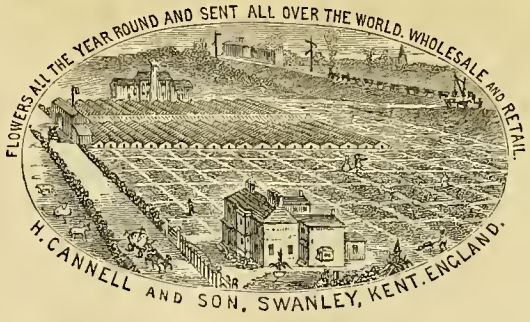

To Her Most Gracious Majesty Queen Victoria.

Awarded Several Gold Medals by

THE ROYAL HORTICULTURAL SOCIETY FOR EXCELLENCY OF FLOWERS.

SEED FOR SOWERS.

Extract from *Christian Union Summer Annual*, 1880.

FLORAL CULTURE.—The Home for Flowers of Messrs. H. Cannell & Sons, at Swanley, in Kent, was never in more admirable condition than this season. The professional skill and extraordinary care in selection of flower seeds, for which this firm enjoys such high repute, could not have a grander or more conclusive illustration than in the flowers of every kind, and suited to every climate, which they grow under their own hand in their own pleasant English soil. The gardens at Swanley are as glorious a sight as any lover of flowers could visit just now. Everything seems to grow in perfection under the training bestowed on the innummerable beds and greenhouses, and the maze of brilliant colour is dazzling. The house of Primulas, in particular, has been eminently worthy of observation, for we question whether any display of this genus of early-flowering plants so uniformly good was ever seen before. If the splendour of the flowers produced by Messrs. Cannell

were in any debate, the controversy would be pretty well determined by their exhibits in the flower shows, and the medals they have gained successfully in this department from the Royal Horticultural Society. But it is as a flower seed bed that the Swanley gardens are so deeply interesting to the florist in all parts of the world. This is the business to which the Swanley firm addresses all its science and experience. But you cannot get prime seed without a prime plant, and the perfect flowers of the plant follow in the course of the same natural magic. The traffic in the Swanley flower seeds is much more extensive than we have time or space to detail, but some of the facts widen one's views considerably of the extended *locale* of flowering plants. There is scarce a latitude to which the Swanley flower seeds of the most various kinds are not exported in ordinary commerce.

# FOREIGN FACTS, AND JUST AS THEY COME

*From* Mr. G. H. McColley, *Public School, Black Town, via Sydney, N. S. Wales.*—"I received the Pelargoniums by post in capital order. They were making fresh growth; this was in August, now (October) they are robust plants. Dr. Denny and Guinea are showing for bloom. I am extremely pleased with the result, and cannot speak too highly of the neatness and ingenuity of your packing. My friends to whom I show the plants are almost incredulous when I tell them that they came tossed about in a mail bag all the way from England. I am happy, also, to say that your seeds have proved highly satisfactory both in germinating power and quality, and were honourably mentioned by the Parramatta Horticultural Society. Send off enclosed order soon as you can."

*From* Mr. H. Lumgaro, 176, *Randolph Street, Chicago, U. S. America.*—"Plants safe to hand, in splendid condition."

*From* Mr. E. B. Conrad, *Winona, Ohio, U. S. America.*—"The seed I purchased of you of Carnation and Picotee did well, and I have had some very handsome sorts which are very much admired; colours beautifully bright and size good."

*From the* Garden and Field, *Adelaide, South Australia, May* 1, 1879.—"NEW CATALOGUES.—By last mail we were favoured with a copy of 'H. Cannell & Sons' Illustrated Floral Guide,' for 1879. It contains about 200 pages of small print, describing the very large collection of plants and seeds to be obtained from them at their place in Swanley, Kent. Our city seedsmen are constantly receiving and forwarding orders to England, and those of our friends who wish to obtain the new and beautiful plants, &c., mentioned in this catalogue cannot do better than send their orders through them. Cannell & Sons' Catalogue can be seen at the Chamber of Manufactures' Hall, amongst the books belonging to the Gardeners' Mutual Improvement Society."

*From* Mr. Clark Woodman, *Omaha, Nebraska, U. S. America.*—"Your two packets of Fuchsias to hand; they were in good condition, and are already putting out new shoots. There will be no trouble in the future in getting plants from you, as they come all right by post, and without duty or delay."

*From* Mr. W. Pearson, *Springston, Christchurch, Canterbury, New Zealand.*—"We received the Geraniums on August 16. They were in very good order; one of them had shoots about an inch long when they arrived. They are growing very well now."

*From* Mrs. Dr. Kimball, *Lowell, Mass, U. S. America.*—"The plants have arrived in good condition. I think your system of packing unequalled by anything in this country."

*From* Major Murray, *Portiglio, Ajaccio, Corsica.*—"I am sure you will be glad to hear that the 100 Zonals arrived by post in very good condition."

*From* Leeds & Co., *Cascade Rose Nursery and Greenhouses, Richmond, Ind.*—"We received another consignment by post from you this morning, We feel certain the venture will prove a success."

*From* Mr. G. Jemmison, G. T. R., *Stratford, Canada (West).*—"Enclosed please find P.O.O. for selection of Geraniums received Saturday, 9, all safe; they are all doing well at present, and I don't think I shall lose one."

*From* Mr. John Johnson, *Nurseryman and Seedsman, Laghlan Nursery, Bourke Street, Surrey Hills, Sydney.*—"The parcel is to hand in good order, for which please receive my best thanks."

*From* J. D. Hatton, Esq, *Saville Cottage, Launceston, Tasmania.*—"It is with very great pleasure I have to inform you of the arrival of four plants of New Life (two by each mail). The first two arrived June 12, both having made shoots during the trip; they were potted at once, and are now doing well. The second two arrived July 16."

*From* Mr. J. A. Fisher, *Dundas, Canada.*—"My plants were in splendid order when I got home."

*From* S. V. Hofmeyr, Esq, *Cape Town.*—"All the seeds received from you which I have sowed have come up well."

*From* Chicago Floral Society, *Grand Boulevard, Chicago.*—"Ten packages of plants by post, just received, in splendid condition."

*From* Messrs. Delaux et Fils, *Près Toulouse* 21, *France.*—"We have received your consignment in perfect condition, the plants having made, or making, a new growth. We return our sincere thanks to the packer of this sending; they are beautifully young and green."

*From* Mr. T. McMurray, 134, *Church Street, New York.*—"Your packages of plants by post arrived safely on the 9th inst., in good condition; they are all growing nicely, and I don't expect to lose any of them.

*From* Mr. H. Harris, *Halifax, Nova Scotia, Dominion of Canada.*—"The box of plants has just arrived, but owing to the admirable manner in which they were packed I shall only lose three or four plants."

*Leeuwhenhof Garden, Cape Town.*—"I hasten to inform you that since I wrote to you on the 21st inst. the plants have come to hand, and are doing well. I am very glad they arrived before my departure from home, so that I could attend to them, and may now safely leave them during my absence to the care of my gardener. Allow me to thank you for the care you have taken in the proper transmission of the plants, which I have no doubt will do well.—Believe me to be, dear sir, yours truly, P. J. Kotze."

*From* Mr. W. Andean, *Victoria, Vancouver's Island, British Columbia.*—"The seeds came to hand in good order last spring. The seedlings are turning out well."

*From* J. H. Milner, *Adjutant-General's Office, Army Head Quarters, Simla, India.*—"I have seen the plants you have from time to time sent up here to Mr. B. W. Freeman (a friend of mine), and the excellent condition in which the plants have arrived, with a very few exceptions induces me also to apply to you for plants, and should I be fortunate enough to receive mine in as good condition I shall always get them from you. I trust that you will kindly give your attention to the packing, despatch, &c."

*From* R. Larios, Esq., *Malaga, Spain.*—"I have received the four Coleus and two Zonals by post, in perfect condition"

*Archer Street, North Adelaide, South Australia.*—"I have to thank you very much for Geraniums 'New Life' and 'White Vesuvius,' which I have received by post, per last mail, which came out in very good order, just showing shoots. Your method of sending them answers admirably.—Yours truly, R. T. Wylde, J.P."

*Christchurch, New Zealand.*—"The boxes of plants you sent came duly to hand. The Begonias, all the Dahlias, and nearly all the Geraniums are right.—Yours truly, John Greenaway."

*From* Mr. D. Barker, *Brambledon Nurseries, Norfolk, Va., U. S. America.*—"The twelve plants of 'New Life,' by post, came to hand in splendid condition, and doing remarkably well. Your system of packing cannot be improved upon."

*From* H. Sewell, *Payneham Nurseries, Payneham, South Australia.*—"I am pleased to acknowledge your post sample of Pelargoniums, Fuchsias, &c., which were well packed, and came to hand in good condition, notwithstanding the extremely long voyage. I now enclose you Post-office Order, and beg to tender you my sincere thanks, and will thank you to send me a dozen of your newest Zonal Pelargoniums by return post."

*From* Mr. F. T. Barker, *Arahura Nursery, Hokitika, New Zealand, October* 4, 1880.—"The seeds you sent me arrived safely, and are all coming up well. You sent me seeds several years ago, and some of the seedlings turned out first-rate, Zonal Geraniums in particular. A single scarlet I named Harry Cannell, and I have never seen one to approach it."

*From* Messrs. Sheppard & Sons, *Lowell, Mass., U. S. America.*—"We received the plants in due time; they arrived in splendid condition. Enclosed please find draft."

*From* Mr. Scott, *Catherine Street, Philadelphia, U.S.A., January* 8, 1880.—"The rooted cuttings of Zonals, which we ordered from you last spring, came in perfect order, and we did not lose a plant."

*From* Messrs. Hoopes Bros. & Thomas, *Cherry Hill Nursery, West Chester, Pa., U.S.A.*—"The case of plants arrived in excellent condition."

H. P. Halcott, Esq., *Cambridge, Mass., U. S. America, November* 19, 1880.—"The Chrysanthemums came by post in perfect condition. I must express my admiration at a system of plant packing superior to anything I have ever seen, and apparently faultless."

*From* H. Middlemist, *Nurseryman, Cape Town, South Africa, November* 15, 1880.—"I have this day received the four packages of Fuchsias quite safe by post, and they are all alive."

*From* Messrs. R. Parker & Co., *Florists, Boston, U. S. America, July* 28, 1880.—"Your four packages of plants came to hand. The Zonals are in good condition, shall save them all; the extras appear to be very fine, and we thank you very much for them. Received your postal of second shipment, and are looking anxiously for them."

*From* Messrs. Blodgett & Chany, 12, *India Street, Boston, U.S.A., January* 9, 1880.—"We have to acknowledge receipt of plants per mail this day, and beg to state that they are all wonderfully fresh, many of them having made growth on the way. And we confess we are much surprised, but then your style of packing is superior."

*From* William Wedd, Esq., *Mount Gambier, South Australia, May* 13, 1880.—"I have to thank you for the parcel of Pelargoniums, which arrived in good condition. I cannot speak too highly of the seeds obtained from you. All were really good, but especially the Polyanthus, Picotee, and Carnation. I obtained 1st prize for Zonals from your seed."

Messrs. Storrs, Harrison & Co., *Painesville, Ohio, U. S. America, December* 23, 1880.—"Your favour with four packages of plants came to hand on the 20th in good condition, making the trip in fourteen days.

H. CANNELL & SONS, THE HOME FOR FLOWERS, SWANLEY, KENT.


Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, January 15, 1881.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 369.—Vol. XV. { New Series. } SATURDAY, JANUARY 22, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. { Post Free, 5½d.

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***IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.***

LILIUM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz.; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

**Seeds.**

CHARLES TURNER'S Descriptive Price LIST for the present season is now ready, and may be had on application.
The Royal Nurseries, Slough.

ARAUCARIA IMBRICATA.—A large Stock of fine Specimens of the above, from 6 to 9 feet high. Price on application to
T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

DRACÆNA TERMINALIS, &c.—Beautiful Plants, 12 to 13 inches. Price per dozen or 100 on application to
JAMES DON AND SON, Wardhead Nurseries, near Denny, N.B.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

**Grapes this Year.**

FRUITING CANES, thoroughly ripened without bottom-heat, 7s. 6d. to 10s. 6d. each. PLANTING CANES, 3s. 6d. to 5s. each. Leading kinds.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**Roses, Fruit Trees, &c.**

WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.
Ottershaw Nurseries, Chertsey.

CHRYSANTHEMUMS.—210 Best Varieties only.—Rooted Cuttings, 2s. 3d. per dozen; 12s. per 100. Now ready. LIST one stamp.
WM. ETHERINGTON, Manor House, Swancombe, Kent.

CABBAGE PLANTS, very strong autumn-sown Early Enfield, Rainham, Robinson's Drumhead, Russell's (true) Thousand-head, &c., at 3s. per 1000 (1200), 25s. per 10,000 (12,000).
N.B. Plants warranted free from club-root, grown on strong soil from best seed stocks. Low quotations for very large quantities. Descriptive LIST and testimonials on application.
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming

SEED POTATOS for SALE. Approved Sorts.—LISTS on Application.
JNO. RICHARDSON, Staynor Hall, Selby, Yorks.

1881 "Novelties." SUTTON'S NOVELTIES. LIST may be had on application.

1881 "Prizes." SUTTON'S PRIZES at the ROYAL HORTICULTURAL SOCIETY and other important Shows. Intending Competitors should send for particulars at once.

1881 "Potatos." SUTTON'S POTATOS (Disease-resisting). Descriptive List now ready. Gratis on application.

1881 "Lawns." SUTTON'S INSTRUCTIONS for LAWNS, TENNIS GROUNDS, BOWLING GREENS, &c., so indispensable to all who propose Laying Down New or Improving Old Grounds. Gratis on application.

SUTTON AND SONS, The Queen's Seedsmen, READING.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

HAZEL and EVERGREEN PRIVET.—Price on application to
GEORGE TOWNSEND, Nurseryman, Fordham, Cambridgeshire.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Sample hundreds or thousands. Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

EVERLASTING FLOWERS, any quantity. Price on application.
CHARLES AYRES, Florist and Seedsman, Cape Town, South Africa.

**Seeds of Superior Quality. Carriage Free.**

OUR DESCRIPTIVE PRICED and ILLUSTRATED CATALOGUE of Select Vegetable and Flower Seeds, Potatos for Planting, &c., is now ready, and will be forwarded post-free on application.
DICKSON AND ROBINSON, 12, Old Millgate, Manchester.

**Bulbs, Orchids, &c.**

THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.
Lion Walk, Colchester.

**Seventh Year of Distribution.**

TELEGRAPH CUCUMBER (Warranted), 18 Seeds, 1s.; 7 Seeds, 6d., post-free. The Seed has been collected from handsome, well-grown fruit. Price per ounce on application.
R. W. BEEDELL, The Nurseries, Wallington, Surrey.

BUYERS wishing to avail themselves of a CHEAP OFFER of various TREES and SHRUBS should refer to large Advertisement appearing in this Paper on the 8th of this month, or see T. L. MAYOS' reduced LIST.
Highfield Nursery, Hereford.

GOOD PRICES RETURNED for MARÉCHAL NIEL and other ROSES.
WISE AND RIDES, Horticultural Agents, Tavistock Court, Covent Garden, W.C.

**Floral Commission Agency.**

WANTED, CHOICE FLOWERS and MAIDENHAIR FERNS.—Letters to
W. CALE, 4, Tavistock Row, Covent Garden, W.C.

WANTED, EUCHARIS AMAZONICA; bulbs out of pots.—State quantity and lowest price to
J. C. SCHMIDT, Erfurt, Germany.

**Gardenias.**

WARREN AND CRAIK will return the highest Price for GARDENIAS, TUBEROSES, and MARÉCHAL NIEL ROSES. Not for commission.
43, Jermyn Street, St. James's, London, W.

WANTED, MANETTI STOCKS. State quantity and price to
R. AND F. ALLUM, Nurserymen, Tamworth.

WANTED, FIVE Standards of ALOYSIA CITRIODORA, with stems from 4 to 5 feet. Also Four Bushes, from 2 to 3 feet in diameter.—Apply, stating price, &c., to
M. STALKER, Gardener, Hemsted Park, Staplehurst.

WANTED, strong LARCH.—Samples and prices to
CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, Hereford.

WANTED, OAK, 2 to 3 feet. Quote price and state quantity to offer.
FELL AND CO., Wentworth Nurseries, Hexham.

WANTED, SHALLOTS.—Sample, price, and quantity, to
G. AND W. YATES, Seed Merchants, Manchester.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

**Trade Price Current.**

THE LAWSON SEED AND NURSERY COMPANY (Limited) have posted their SEED CATALOGUE for 1881, but should any omissions have inadvertently occurred copies will be sent on application.
106, Southwark Street, London, and George IV. Bridge, Edinburgh.

**Garden Seeds.**

DOWNIE AND LAIRD having now posted their Garden Seed CATALOGUES to their Customers, will be glad to send a copy to any one who may have been overlooked.
DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh.

**Gold Medal Begonias.**

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 1s. and 2s. 6d. each. All first quality. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

MY ENGLISH CATALOGUE of German Flower Seeds, and also my German CATALOGUE of Vegetable Seeds, Agricultural and Horticultural Seeds, Bulbs and Flowers, have been published, and will be sent free and prepaid on application.
FRDR. SPITTEL, Seed Grower and Merchant, Arnstadt, near Erfurt, Germany.

SPRUCE FIRS for Christmas Trees, well formed, 3 to 4 feet, 30s. per 100; 4 to 5 feet, 40s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**To the Trade.**

CHARLES SHARPE AND CO., Seed Growers, Sleaford, are in a position to offer NE PLUS ULTRA and CHAMPION of ENGLAND PEAS. Samples and Prices on application.

STRAWBERRIES IN POTS. Crop at once.
Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.
H. CANNELL, Swanley, Kent.

FOR SALE, 600 GARIBALDI STRAWBERRY, in pots, for Forcing. To be Sold cheap. Fine plants. For price apply to
IRELAND AND THOMSON, 20, Waterloo Place, Edinburgh.

TELEGRAPH CUCUMBER PLANTS (True).—Seed of the same kind, 1s. 6d. and 2s. 6d. per packet. STRAWBERRY PLANTS, 2s. 6d. per 100, or £1 per 1000. Trade supplied.
G. WALKLING, College Park Nursery, Lewisham, S.E.

MANCHESTER MARKET CUCUMBER.—We have a small quantity of Seed to offer of this remarkable productive variety, so successfully grown by us for the above market. Price 1s. per dozen seeds.
TAYLOR AND CO., Timperley, Manchester.

ASPARAGUS for FORCING.—A large supply of the above still on hand, which can be supplied at a very moderate price. Also good Planting Roots.
OSBORN AND SONS, The Fulham Nurseries, London, S.W.

SEAKALE.—SEAKALE.—SEAKALE.—Also ASPARAGUS and RHUBARB, for forcing and planting. Prices on application. Our Seed CATALOGUE is now ready, and will be forwarded free on application.
H. THORNTON AND CO., Nurserymen and Seedsmen (Dancer's Nurseries), Fulham, S.W.

RHUBARB FOR SALE, CHEAP.—Strong Planting Roots, 15s. to 20s. per 100; ditto for Forcing, 25s. per 100, 6s. per dozen. Package free for cash with order to
S. BIDE, Alma Nursery, Farnham, Surrey.

CLAYWORTH PRIDE CELERY has proved to be the hardiest and best in cultivation. It blanches very readily, and will stand the frost and wet better than any other variety. In packets, 13 stamps; per ounce, 5s.
R. OGLEY, Clayworth, Bawtry, Yorkshire.

## SALES BY AUCTION.

**Postponement of Sale**
to JANUARY 31.

MESSRS. PROTHEROE AND MORRIS beg to announce that owing to the inclemency of the weather, the SALE advertised for MONDAY NEXT has been POSTPONED until the FOLLOWING MONDAY, of which particulars will appear in next week's issue.

Offices, 98, Gracechurch Street, E.C.

**5000 Lilium auratum, just received from Japan.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, January 24, at half-past 12 n'Clock precisely, an importation of 5000 Bulbs of LILIUM AURATUM, just received from Japan; also fine English-grown Bulbs of LILIUM WASHINGTONIANUM, L. BROWNII, L. GIGANTEUM, L. PARDALINUM, and many other rare LILIES; a consignment of several thousand Bulbs of TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, and GLADIOLI, from New Jersey; a quantity of fine tubers of HIMANTOGLOSSUM HIRCINA, the great Lizard Orchis; a consignment of 2000 double Italian TUBEROSES from America, and a great variety of choice hardy BULBS and PLANTS from various parts of the world.

On view morning of Sale, and Catalogues had.

**Valuable Imported Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 3, at half-past 12 n'Clock precisely, by order of Mr. F. Sander, of St. Albans, large importations of ORCHIDS, consisting of extra fine pieces of Anguloa eburnea—this fine pure white Anguloa produces its large sweet-scented flowers during the late autumn and in great abundance; about 2000 Masdevallia tovarensis in splendid condition; Colax jugosus, Sophronites grandiflora, Oncidium phymatochylon, O. sarcodes, Epistephium elatum, a very fine lot of Masdevallia maculata, of which some will soon flower; Masdevallia triangularis, Odontoglossum constrictum, Epidendrum ionoplebium, Anthurium Andreanum, Luddemannia species; the Sale will also contain a very splendid specimen of LÆLIA ANCEPS ROSEA or DAWSONI—the mass is in finest health, and has some 200 bulbs.

May be viewed the morning of Sale, and Catalogues had.

**To Gardeners and Others.**

FOR DISPOSAL, a FRUITERER'S, GREENGROCER'S, and CUT FLOWER BUSINESS. Good 6-roomed House, well fitted Shop, Plate-glass Front. Trade £15 weekly. Price £35, or would not object to female partner with about £25.

Apply, W. G., 1, Dart Street, Lancefield Street, near St. Jude's Church, Queen's Park Estate, Harrow Road, W.

**Brentwood, Essex.**
Half an hour's ride from Londoo, in the best position in the Town.

AN OLD-ESTABLISHED FLORIST and SEED BUSINESS, presenting an excellent opening to a man of experience with limited capital, there being no Stock to take to, and no Goodwill to pay for. Comprises an eligible House and Shop, several ranges of Glass, and capital Peach-house in full bearing. Rent on application to

Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C. Unexceptional references will be required.

**To Market Gardeners.**

TO LET, in the neighbourhood of Liverpool, a large well-stocked KITCHEN GARDEN, with Vineries, Forcing Houses, &c., with other Ground, and with a Cottage on the premises.

For particulars apply to Mr. DAVIS, Nursery Gardens, Wavertree, Liverpool.

TO BE LET, and may be Entered on February 2, a SMALL NURSERY BUSINESS, comprising 1 Acre of Land, moderately well stocked with thriving young stock, with additional Land if required; 1 large Span-roof Greenhouse, 29 by 18 feet; also 1 Propagating House, 18 by 10 feet; also a 6-light Pit, all well heated with Hot Water, with a good Dwelling-house and Stabling on the Premises. The Nursery Stock and Greenhouses to be taken at a valuation. Satisfactory reason given for leaving.

Apply to JOHN E. CLEGG, Warren Nursery, Silcoates, near Wakefield.

**To Gardeners.**

TO LET, on LEASE, a HOUSE, containing eight rooms, and extensive Forcing Houses, fitted up with Hot-water Pipes, all in good working order. The Forcing Houses produce £500 per year. About 10 miles from London.

For particulars, apply to Messrs. GILBERT AND COX, Enfield Highway, and 38, Threadneedle Street, E.C.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.

CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

RASPBERRY CANES.—100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30s. per 1000; samples of 100 for 4s., free in London, no change of rail. Also 100,000 FASTOLF, price 10s. per 1000; samples of 200 for 2s. 6d. free on rail, sent to any station in Great Britain. Payments to accompany order. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to

A. AND E. BATH, Colgates Farm, Sevenoaks, Kent.

**Seed Potatos.**

H. AND F. SHARPE'S Wholesale Priced CATALOGUE has been issued. It comprises all the best varieties most worthy of cultivation. Every care has been taken in the selection of the stocks entirely for Seed purposes. They can, therefore, recommend them with every confidence. Further particulars may be had on application.

Seed Growing Establishment, Wisbech.

## ARTHUR VEITCH MEMORIAL

Amoogst Gardeoers who had the privilege of being personally acquainted with the late Mr. ARTHUR VEITCH, there is a very general expression of opinion that something ought to be done to perpetuate the memory of his innumerable acts of kindness to every gardener, young and old, who came in contact with him, and therefore, after consulting with and obtaining the consent of the widow, the undersigned have undertaken to receive the names of friends who would be willing to assist them in the promotion of a MEMORIAL worthy of so good a man. It is believed the form of Memorial proposed—viz., the raising of a Fund for the Gardeners' Benevolent Institution (such Fund to bear our honoured friend's name)—will commend itself to all, as being in every way a suitable Memorial to one who was eminent for charity. Subscriptions (not to exceed a Guinea from Head Gardeners) will be received and acknowledged by any of the undersigned, or may be paid to friends whose names will be hereafter advertised as collectors in their various districts. No List of Subscribers will be published, but as soon as the fund is closed, each subscriber will be furnished with a full statement of particulars.

J. ROBERTS, The Gardens, Gunnersbury Park, Acton, W.
J. HUDSON, The Gardens, Gunnersbury House, Acton, W.
J. AUSTEN, Ashton Court Gardens, Bristol.
W. WILDSMITH, The Gardens, Heckfield, Winchfield.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At a General Meeting of the Members of this Institution, held on the 13th inst., for the purpose of Electing 11 Pensioners on its Funds, the following were the successful Candidates:—

| | |
|---|---|
| GEORGE McKAY | 2054 Votes |
| WILLIAM YOUELL | 1962 ,, |
| GEORGE CURD | 1485 ,, |
| REBECCA LAYBANK | 1391 ,, |
| JOHN CONOLLY | 1262 ,, |
| ELLEN SMITH | 1122 ,, |
| WILLIAM MORSE | 1051 ,, |
| ANNE WELLS | 1023 ,, |
| THOMAS SMART | 916 ,, |
| ANN KAY | 771 ,, |
| JAMES PIKE | 744 ,, |

In consequence of certain vacancies having occurred in the List of Pensioners since the Candidates were selected it was resolved that the following Candidates, being the two next highest on the Poll, be declared Pensioners:—

| | |
|---|---|
| JAMES DUCKETT | 726 Votes |
| JAMES PORTERFIELD | 521 ,, |

EDWARD R. CUTLER, Sec.
14, Tavistock Row, W.C.—Jan. 15.

ECONOMY in the GARDEN.—CARTERS' SELECT CATALOGUE of BOXES of POPULAR VEGETABLE SEEDS bears this Original Title. JAMES CARTER & Co. find it necessary to issue this CAUTION, as the above Title is being extensively pirated.

The Queen's Seedsmen, 237 and 238, High Holborn, W.C.

ECONOMY in the GARDEN.—CARTERS' SELECT CATALOGUE bearing this Title will be sent Gratis and post-free on application to

The Queen's Seedsmen, and Seedsmen by Special Appointment to H.R.H. the Prince of Wales, 237 and 238, High Holborn, London, W.C.

**Notice.**
SPECIAL OFFER to the TRADE.

WOOD AND INGRAM have just compiled a SPECIAL LIST of NURSERY STOCK, at greatly reduced prices. Free on application.

The Nurseries, Huntingdon, Brampton, and St. Neots.

FOR SALE, 5 Tons RIVERS' ROYAL ASHLEAF. Apply
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CEDRUS DEODARA, handsome, 2 to 3 feet, 9s. per dozen, 60s. per 100; 3 to 4 feet, 15s. per dozen, 100s. per 100.
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POPLARS, Black Italian, standards, 20s. per 100.
PRIVET, Evergreen, 2-yr. cuttings, well rooted, 10s. per 1000.
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SNOWBERRY, 2 to 3 feet, stout, 21s. per 1000.
All in fine condition for removal.

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FRUIT TREES, &c., at special low Prices.

DUTCH MEDLARS Standards, 9s. per dozen.
APPLES, ESPALIERS, 12s. per doz., 90s. per 100.
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SAGE and THYME ROOTS, 8s. per 100.
The above cannot fail to give satisfaction.

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MAGNUM BONUM, £7 per ton.
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All grown from selected stocks, warranted true to name.
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ELMS, suitable to plant for Avenues, Parks, Streets, &c., for immediate effect—
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,, Camperdown Weeping, horizontal habit of growth, one of the handsomest trees grown: fine Standards, with good heads and stems, 8 to 10 feet, 21s. per doz.; 10 to 12 feet, 30s. per doz.; 12 to 15 feet, 42s. per doz.
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,, Wheatley's, a very handsome Elm, of very neat growth and pyramidal habit: 6 to 8 feet, 9s. per doz.; 8 to 10 feet, 12s. per doz.; 10 to 12 feet, 18s. per doz.; 12 to 15 feet, 21s. per doz.
,, small-leaved Wych, 4 to 6 feet, 12s. per 100.
,, large-leaved Wych, or Mountain Elm, 6 to 8 feet, 35s. per 100; 8 to 10 feet, 60s. per 100.
CHESTNUT, Horse, extra fine stout trees, many times transplanted: 8 to 10 feet, 9s. per doz., 60s. per 100; 10 to 12 feet, 12s. per doz., 80s. per 100.
,, scarlet-flowered, 6 to 8 feet, 18s. per doz.; 8 to 10 feet, 24s. per doz.
WILLOW, gold-barked, 4 to 6 feet, 3s. per doz.; 6 to 8 feet, 4s. per doz.; 8 to 10 feet, 1s. each.
,, scarlet-barked, 4 to 6 feet, 4s. per doz.; 6 to 8 feet, 5s. per doz.
,, Scarlet Palm, a magnificent Willow, of most vigorous growth: 4 to 6 feet, 3s. per doz., 20s. per 100; 6 to 8 feet, 4s. per doz., 25s. per 100; 8 to 10 feet, 9s. per doz., 50s. per 100.
,, regalis (the Royal Willow), an extremely handsome and vigorous growing Willow, with silvery, almost white leaves: 4 to 5 feet, 4s. per doz., 25s. per 100; 5 to 6 feet, 5s. per doz., 30s. per 100.
BEECH, Purple, best dark broad-leaved variety: 3 to 4 feet, 12s. per doz.; 4 to 5 feet, 15s. per doz.; 5 to 6 feet, 18s. per doz.
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POPLAR, Black Italian, 6 to 8 feet, 15s. per 100; 8 to 10 feet, 30s. per 100.
,, argentea nova, a variety of equally strong growth with the Black Italian, and an excellent variety to plant near the sea: 5 to 6 feet, 20s. per 100; 6 to 8 feet, 25s. per 100.
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,, canadensis nova, an improved Canadian Poplar, which makes a big tree in a very short time: 5 to 6 feet, 18s. per 100; 6 to 8 feet, 30s. per 100.
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CORNUS MASCULA VARIEGATA, one of the hardiest and best variegated deciduous shrubs, very hardy and easy to grow: Dwarfs, 9s. per doz.; Pyramids, 12s. per doz.
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Of the following we also hold very large and fine stocks, viz., Tamarisks of sorts for seaside planting, Forsythias, Spiræas, Syringas, Lilacs, &c.; also variegated Tree Box and broad-leaved Privet, Berberis dulcis, Nuts and Filberts, Black Currants, Strawberry Plants, Globe Artichokes, Double-blossomed Furze, Virginian Creepers, &c.; and shall be happy to forward particulars and prices on application.

Special terms to Trade for large quantities.
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Strong HOLLY, 9 to 12 inches high, 12s. per 100.
Strong HAWTHORN QUICK, 25s. to 30s. per 1000.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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CRAB APPLES, or APPLES from seed, 1-yr. old, extra, £12 per 10,000; first choice, £10 per 10,000.
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CATALOGUES of Ornamental Trees and Shrubs, Stocks and Plants, Roses, Pæonies, Magnolia Linné, and others, will be sent on demand. FRESH FLOWERS of VIOLET sent every day to all parts of Europe. Orders to
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Quality and Price unequalled.
ENGLISH YEWS, 4 to 5 feet high, 12s. per doz., 80s. per 100; 5 to 6 feet high, 18s. per doz., 125s. per 100.
PORTUGAL LAURELS, 2 to 3 feet high, 25s. per 100, 200s. per 1000; 3 to 3½ feet high, 50s. per 100.
All well rooted and uninjured by frost.
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WHITE THORN or Quick, strong, transplanted. Price on application.
BLACK THORN, or Sloe, transplanted, very fine, 10s. to 12s. 6d. per 1000.
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THE MOST SUPERB ROSES that money can buy.
Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.
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WILLIAM BARRON AND SON'S New Descriptive CATALOGUE of Coniferæ, Hardy Ornamental Trees, and General Nursery Stock, may now be had on application. A personal inspection of their unrivalled Stock solicited. The Nurseries are three minutes' walk from the Borrowash Station on the Midland (Derby and Nottingham) Railway.
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**WILLIAMS' PRIMULA SINENSIS FIMBRIATA ALBA "MAGNIFICA."**

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The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.

**Per Packet, 5s.**

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This is best described as the most brilliant crimson-scarlet Primula yet sent out, with habit as robust as "Alba Magnifica," the foliage very finely cut and deep green. Sold only in sealed packets bearing my trade mark.

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Is a remarkably fine plant of extremely robust habit, bearing flowers of an exceedingly peculiar violet-crimson shade, hence its name, most appropriately given by the Royal Horticultural Society of Chiswick. Sold only in sealed packets bearing my trade mark.

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Strong cuttings of the best large-flowered ANEMONE or POMPON CHRYSANTHEMUMS, 12 varieties, our selection, 1s. 6d.; 50 varieties, 5s. 6d.; 100 varieties, 10s., post-free. Cuttings of JAPANESE varieties, 2s. 6d. per dozen.
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FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
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H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
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FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.
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B. S. WILLIAMS has still on hand a good stock of all the leading kinds, including the Alnwick Seedling, which has proved the best late black Grape in cultivation. Strong Planting and Fruiting Canes.
A LIST of kinds and prices on application.
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BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
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laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
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" Golden Queen, 4, 5, 6 to 10 feet high.
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WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
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CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
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PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.
THUIOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUJA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
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RICHARD SMITH AND CO., Nurserymen, Worcester.

STANDARD ORNAMENTAL TREES.
CHESTNUT, Common, clear stems and fine, 40s. per 100.
" Scarlet, budded, very fine, 6 to 7 feet, clear stems, 50s. per 100.
" extra selected, 60s. per 100.
ELM, English, grafted, splendid stuff, 75s. to 100s. p. 100.
LIMES, prime stuff, stout stems, 50s. to 100s per 100.
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APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
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There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.

We beg to invite Inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

*Descriptive Priced CATALOGUE, free on application.*

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(LIMITED),
KING'S ACRE, HEREFORD.

## SPECIAL CHEAP OFFER
**TO THE TRADE.**

100,000 FIR, Scotch, 1½ to 2, 2 to 2½, and 2½ to 3 feet.
25,000 BIRCH, 2 to 3 and 3 to 4 feet.
50,000 ALDER, 2½ to 3, 3 to 4, and 4 to 5 feet.
100,000 ASH, Mountain, 4 to 5, 5 to 6, and 6 to 8 feet.
50,000 WILLOWS, Osier, 3 to 4 and 4 to 6 feet.
300 ASH, Common, 12 to 14 feet.
8,000 PINE, Corsican, 1½ to 2 feet.
20,000 PRIVET, Evergreen, 2 to 3 and 3 to 4 feet.
25,000 ,, ovalifolia, 1½ to 2 feet.
5,000 IVY, Irish, very strong, 2 to 3 feet.
25,000 YEWS, English, 1½ to 2 and 2 to 2½ feet.
3,000 RHODODENDRON, caucasicum pictum, 1½ to 2 feet.
8,000 ,, Cunningham's White, 1½ to 2 feet.
10,000 ,, choice named varieties, 1½ to 2 feet.
50,000 ,, Seedling Hybrids and Ponticum, 1½ to 2 feet.
5,000 CURRANTS, Black, 6s. per 100.
1,000 ,, Red, 6s. per 100.
2,000 POPLARS, Black Italian, 10 to 12 and 12 to 14 feet.
1,000 SYCAMORES, 10 to 12 and 12 to 14 feet.
2,000 CHESTNUT, Horse, 9 to 10 and 12 to 14 feet.
2,000 LIMES, Handsworth Red-twigged, 9 to 10 feet.
BERBERIS AQUIFOLIA, 12 to 15 and 18 to 24 inches.
CUPRESSUS LAWSONIANA, 6 to 9 feet.

*For Price and particulars apply to*

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The Nurseries,
MILTON, STOKE-ON-TRENT.

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**Cultivators of**
FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
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*Conifers and Hardy Climbers.*

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## A. M. C. JONGKINDT CONINCK
BEGS TO OFFER
**Large Quantities, at Low Prices, of—**

SAXIFRAGA granulata, fl.pl.
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,, filipendula fl.-pl.
,, palmata elegans
TRADESCANTIA virginica (five beautiful varieties).

CONIFERÆ,
Half a foot high.
The best Golden and Silver Variegated sorts.

☞ A WHOLESALE TRADE LIST, including SMALL CONIFERÆ, HARDY PERENNIALS, HARDY ERICAS, HARDY AQUATICS, ALPINE PLANTS, &c., free on application.

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## FOR SALE,
A Large Quantity of
## SPRUCE FIR,
**1 to 2, and 2 to 3 feet.**

*Special Prices on application to*

**CRANSTON'S NURSERY & SEED CO.**
(LIMITED),
KING'S ACRE, near HEREFORD.

RHUBARB, Victoria and Albert. Cask and packing included, 16s. per 100.
T. EVES, Gravesend Nurseries.—Established 1810.

## Paul's Nurseries and Seed Warehouse,
WALTHAM CROSS, HERTS.
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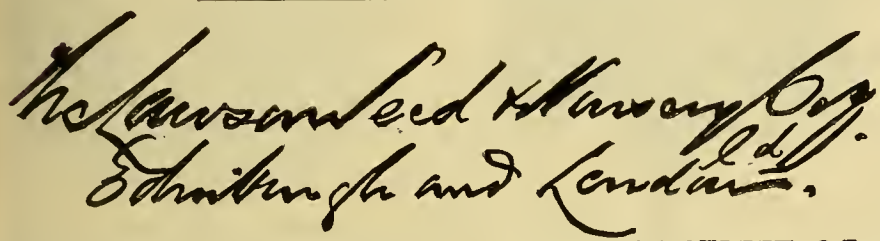


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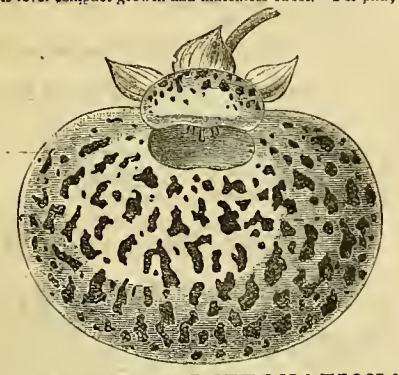

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ROYAL BERKS SEED ESTABLISHMENT, READING.

January 18, 1881.

THE

Gardeners' Chronicle.

*SATURDAY, JANUARY 22, 1881.*

## GOSFIELD HALL.

THE Gosfield Hall estate, near Halstead, Essex, consisted originally of nine manors, held by different families—the Aylewards, the Listows, and others—whose domains, cleared partly of the primæval Oaks, though still buried in Oak woods, bear to this day their owner's names, and are occupied by the farm tenants of the estate. A rather long list of owners of the Hall commences with Robert de Clare, Earl of Gloucester, from whose family it passed to the once dominant Essex family, the Veres, Earls of Oxford, who owned great part of the county during several generations, whose noble residence at Castle Hedingham is now represented by one tower only, and whose last heir died in poverty in a poor cottage, which was pointed out to Horace Walpole, who visited Gosfield and described himself as "Veres mad," so deeply was he interested in a family who had been so great and had suffered such vicissitudes of fortune.

Adam de Gosfield was one of the gentlemen who held the Hall of the Veres, and resided here in their time. Short ownership seems to have been a characteristic of this property, and the names of a few of its proprietors will show the not uncommon brevity of family possession. Whatever the old Gosfield Hall may have been—for there is not a wrinkle on the grass in sign of those old days—it was owned as early as the reign of Edward I. by John Bellowes. The Rolfes followed, and the Hall passed afterwards, by marriage with heiresses, from the Rolfes to the Wentworths, from the Wentworths to a younger son of Lord Ryche, from whom it passed to the Lords Grey. Early in the eighteenth century it was sold to the Millingtons, and by them to John Knight, a man of mark, whose stately monument in the private chapel, used now as the "Hall pew," in the village church, bears an epitaph by his admirer, Pope, beginning—

> "O, fairest pattern to a falling age,
> Whose public virtue knew no party rage;"

and ending—

> "In life with ev'ry social grace adorn'd,
> In death by Friendship, Honour, Virtue mourn'd."

Mrs. Knight had been a widow when he married her; she "mourned" him three years, more or less, and then married her third husband, who survived her. The new alliance was what is called a good match—Mr. Nugent, the final spouse, becoming soon afterwards Viscount Clare and Earl Nugent.

The Hall was now in its zenith, and that excellent gossip, Horace Walpole, came on a visit to his friend Nugent, and described Gosfield in a letter to another of his dozen dear friends—George Montagu.

"I suppose," he writes, "you have heard much of Gosfield, Nugent's seat. It is extremely in fashion." He then describes the noble park of 1600 acres, bounded with a wood of 5 miles round. There is a sad tale to tell about the park, which was reduced by the plough to 300 acres during the Continental war and the high prices for corn. The boundary woods and beltings still remain, and as a financial under-

taking only, the park might now be again extended with advantage. Horace Walpole was quite right in thinking the country too much blocked up. There is, he says, too much wood about the Hall; "it has not an inch of prospect." Walpole liked to criticise a place which others admired. As a frequent visitor at Stowe, which all the world at that time praised, he wrote of rheumatism, and censured the grottos and the outdoor *fêtes*. Fortunately there is a fine sheet of water before the south windows of the Hall, securing a bold sweep of 70 unplanted acres.

There were wood-loving proprietors in that Goth-like century, the seventeenth, who would have filled up the lower surfaces of a level country like Gosfield by planting them, if possible; but they could not plant the water, and the water, with its grove of Oaks on a bold promontory of the opposite bank, and its graceful outlines and marginal clumps of timber, and its myriad diamonds sparkling on the rippling surface on a fine day, forms the most striking ornament of the landscape seen from the south windows.

The lake was enlarged by Lord Nugent, who was an improver in his day; and as he owned the property forty years from 1736, he must have planted the Weymouth Pines and the Silver Firs, which have replaced the Oaks in some of the woods, and are now, at a hundred years old or more, among the finest specimens of their kind. The Silver Fir is the tree of trees at Gosfield, and the noblest specimen rears its head in the wood called Peg Tantrum's, among neighbouring trees of the same kind almost as tall, and full in view of the south windows.

Horace Walpole described the house as "vast, built round a very old court, that never was fine." He then mentioned with gusto the defects of the place, which had been badly modernised in patches. Pictures bad; not one really fine room in the house. But "her dressing-room is very pretty," and furnished to his taste with "loads of easy chairs," &c. The Hall seems to have been a particularly pleasant place to visit at that time, "Nugent and his wife," being easy in their house and "good-humoured to a degree." The party consisted of the family and the Marquis of Tweedale, with his "new Marchioness, who," says Horace Walpole, "is infinitely good-humoured and good company, and sang a thousand French songs mighty prettily." A daily visitor then present was a Mrs. Eliot, sister to Mrs. Nugent, who had built herself a pretty little house in the park, since called Park Cottage, but known previously by the atrocious name of Pimlico.

From Lord Nugent the estate descended to the Duke of Buckingham, and during his ownership it became the residence for a short time of the French king Louis XVIII., previous to his more permanent abode at Hartwell, Bucks. Mr. Bernard was the next owner, and in his time, unhappily, through poverty, the property became very much dilapidated. The age of princely fortune-making had arrived, however, and Mr. Samuel Courtauld, a silk and crape manufacturer in several adjoining towns, bought the estate in 1855, at the age of sixty-one, and still resides at the Hall, which he then renovated and repaired.

The Hall covers more superficial feet of ground than any other house in Essex, and is in that respect superior even to Audley End, the stately residence of Lord Braybroke. Its ground plan has remained unchanged since the erection of the building by the Wentworth family at the close of the feudal period, when houses were still built for security without windows on the ground floor. The Hall was built around an inner court, into which the windows opened, so that the landscape in former days was even more "blocked" than Mr. Walpole described it to have been. A quadrangular house surrounding a square court must needs have four fronts, and of these one only remains in its original state—heavy, ivied, grey, and with the broken remains of a once noble avenue of Elms approaching it—by far the most stately-looking portion of the edifice. Two of the other fronts are not bad, being old as the Nugent period, and well covered up with creepers; the fourth, or lake front, has the comfort of plate-glass windows, and the pleasure of a landscape which the writer has often admired, but never measured. Horace Walpole's "inch" must not be taken literally. There is first a terrace, and, terrible to mention, some terra-cotta vases for the ornament of the largest house in Essex, the property perhaps of the richest man. The terrace itself is a dreadful affair, right for an Italian front, but wrong for an old English house, into whose windows the deer should look, and the grass grow close around—grass, the best carpet in the world to spread round old houses, which only our climate produces in perfection. In those unhappy countries like Italy, where the sun in summer scorches like a furnace, statues may be used in default of grass. Besides, statues in Italy remain clean out-of-doors [oh!], which they do not in England, owing to the small birds; and if polluted marble be objectionable what shall be said of polluted terra-cotta!

Beyond the terrace the park, studded with great Elms, slopes to the lake, and beyond is more park, sloping upwards from the water, and bearing great Oaks and Elms as its native growth, and then come cultivated farms, bounded by woods. This is a very good view for Essex. A tree lover would find a great many noble specimens in the park to admire and measure, especially the big Stone Pines, with the lateral branches, as large nearly as the trunks, thrown out near the ground, and resting on it; the Oaks and the Wych Elms, in whose hollow trunks the tawny owls build, and sit outside and hoot at night. There are some very large Tulip trees on the lawn, at the north front; and if that front, though fenced by pales from the approach road, rendered dark and dreary by the absence of sun, is not prettier, and handsomer, and fitter for an old English house than the Italian front, and if Tulip trees like these are not better ornaments than the terra-cotta things, then, as Falstaff said, "Fillip me with three man beetel."

The kitchen gardens are large and good, walled all round, and well planted with fruit trees; and Mr. James Eley, the gardener, getting old now it may be feared, has pruned and planted with great success, good gardener as he is. *H. E.*

## New Garden Plants.

LASTREA RICHARDSII, *Moore*; NEPHRODIUM RICHARDSII, *Baker, Syn. Fil.* 494.

*Var.* MULTIFIDA, *nov. var.*: apices of fronds and pinnæ multifid-dactyliferous.

The typical form of this Fern is a New Caledonian plant first described by Mr. Baker in the *Synopsis Filicum*, above quoted, as having membranaceous bipinnatifid oblong-lanceolate fronds, 1½ foot in length, with a greyish downy rachis, and numerous ligulate candate pinnæ cut down on both sides into close, ligulate, slightly repand blunt lobes, leaving a narrow wing to the rachis; the veins are simple, free; and the sori medial, situate near the margin.

In the variety now under notice, which is one of the handsomest of all known Ferns, the fronds differ in having their apex and the apices of the pinnæ multifidly cut into numerous narrow pointed spreading finger-like lobes. The plant as now grown by Messrs. Veitch has fronds 3 feet high, including the stipes, which is a foot long, numerously developed from a short decumbent caudex. The stipes is a dark purplish-brown, the lamina of a bright green, oblong lanceolate, not gradually diminishing at the base, but having one or two pairs of small abortive basal pinnæ. The pinnæ are upwards of 4 inches long in the broadest part, and terminate in a densely fingered tuft of about fifty long narrow acute divisions, the apex of the frond dividing into two or more branches consisting of about seventy of these small finger-like segments.

Its bright green colour, its small pinnules and the bold-crested apices with their numerous narrow divisions, give this plant a singularly elegant character, and mark it out as a very ornamental tasselled Fern for the decoration of the hothouse. It has been imported by the Messrs. Veitch & Sons from the South Sea Islands, and has been certificated both at South Kensington and the Regent's Park. *T. Moore.*

OBERONIA RUFILABRIS, *Lindl., Sert. Orch.*, t. 8, A; *Folia Orchidacea*, viii., p. 5, No. 27.

This lovely little gem has lately appeared at Mr. Bull's. Whether it came from Burmah or from Assam I cannot say. It has fascicles of thickish equitant acute leaves, much like those of Oncidium iridifolium, and nodding terminal inflorescences of very small flowers in dense verticils, and with setaceous bracts, surpassing the flowers in length. The small flowers are light camboge-yellow, ultimately becoming light red. The lip and the margins of the column are deep brick-red from the first. The lip is very much like that of Aceras anthropophora, and has a thick hippocrepic callus at the base.

I do not find the sepals and petals so acute as they were described, and think that the cells with rhaphides were rather represented by the excellent Dr. Griffith as warts, which I cannot find. *H. G. Rchb. f.*

MORMODES OCAÑÆ BRACHYLOBUM, *nov. var.*

This is a new variety of the curious Mormodes, very distinct in the short lateral lobes of the lip, which are rather confluent with the odd one. It has the same curious colour that attracted the notice of the Orchidists in the original plant of Messrs. Veitch, who also imported this variety, through the mediation of Mr. W. Kalbreyer. *H. G. Rchb. f.*

MASDEVALLIA ERINACEA, *Rchb. f.*

This little curiosity, discovered by Mr. Benito Roezl, has now appeared alive in Europe, at Mr. W. Bull's. The leaf, not known to me before, is 2 inches long, 0.005 m. broad, keeled under the middle line, much narrowed at the base, obscurely tridentate at the top, linear-spatulate. The small flower has little prickles at the margin of the sepals, and on the middle nerve. It is light ochre, with a dark purple ring over the muricate ovary, and a few scattered spots. The discs of the lateral sepals and the thickened tails of the flower are orange in colour. The small petals are linear, retuse, with a middle tooth at the apex, with a callus or anterior border, ochre-white. The lip has an oblong, ochre-coloured basilar part, and a lanceolate muriculate dark purple anterior part, with orange apex. *H. G. Rchb. f.*

ODONTOGLOSSUM TRIPUDIANS XANTHOGLOSSUM, *nov. var.*

A new variety, with a totally yellow lip (not white), mauve blotches, and the crests only pure white. A nice contrast to the three varieties known as yet. I obtained it from Mr. W. Bull. *H. G. Rchb. f.*

## ON SOME LOBELIAS.

APART from the Lobelias of the perennial herbaceous, or L. cardinalis section, as also different from those numerous forms of L. Erinus now more common in our gardens, there are a few Cape species which deserve especial notice. The brightest gem of the little group to which I allude is the old "Buck's-horn" Lobelia, L. coronopifolia—for a good figure of which see the *Botanical Magazine*, vol. xvii., t. 644. I only saw this plant once, and shall never forget its bold flowers, which are of an emphatic Gentian-like blue. Only the other day a gentleman who had just returned from South Africa lamented to me that he had not brought home seeds of this lovely and desirable old plant. I say old, because Francis Masson, of Cape Heath memory, and one of the collectors at the time for the Royal Gardens, Kew, introduced it to English admirers so long ago as 1787.

Now I am thus far particular as to this species because in the *Gardeners' Chronicle* for Oct. 30, 1880, and on p. 568, that esteemed and reverend lover of "alle faire flours," H. Harpur-Crewe, speaks slightingly of a plant which, as I have before said, I have seen only once in boyish gardening days, but which will ever be remembered with feelings akin to reverence, in that it impressed me at the time as being one of the most pleasing flowers I had ever seen. The vivid blue colour of its large blossoms lives in my memory like a beautiful dream, and as no one of us likes to be disenchanted, when the objects of early memory are concerned, so must I protest as gently as may be, but very earnestly, that the flowers of Lobelia coronopifolia are neither "poor" nor "insignificant." One or two really showy bold blue flowers are borne on a stem about 6 inches in height, and its flower-

stems are not leafy, as is the case with most of its congeners. Hence it presents a distinct and effective appearance when in flower.

I think, however, that the bad character before alluded to is really meant to apply to another species of Lobelia altogether, viz., Lobelia triquetra, which in its young growth is similar to L. coronopifolia, but which in flower is—is—well, to be gentle—very modest indeed. I am led to infer this from the fact that I received some few months ago from a correspondent a small tin box, in which were half-a-dozen well raised sturdy little seedlings of that lovely Isotoma axillaris, and the same number of a similar looking plant, named Lobelia coronopifolia. I was quite ecstatic as I carefully "potted off" the last-named. Ah! I thought, now I shall have no need to turn to Sydenham Edwards' drawing so often (above cited), and to lament that I have not the plant itself, since there, as I thought, it lay in my hand.

FIG. 20.—DWARF LOBELIAS: *a*, CORONOPIFOLIA; *b*, RAMOSA.

When it flowered, however, it was L. triquetra, and I experienced one of those sharp but instructive twinges of disappointment which all gardeners must sooner or later learn to patiently bear.

Some time ago I made a little sketch of Lobelia coronopifolia on wood after the *Botanical Magazine* figure, and when it appeared in "another place" several kind plant lovers wrote to me offering seeds or plants. It is still, so far as I can learn, a desideratum in all English gardens, although travellers tell us quite tantalising accounts of its beauty in its wild state around Port Elizabeth. If ever I can lay hands upon the true plant I shall be most happy to send it to Drayton Beauchamp Rectory, where I am sure it will meet with a kind welcome and soon succeed in the vindication of its character.

Here is another lovely dense but bright blue Lobelia, which came to me as L. ramosa, from that diligent plant-collector at home (in contradistinction to those abroad), Mr. T. Smith, of Newry. It is a most elegant plant, not unlike L. gracilis of *Bot. Mag.*, t. 741, but having larger flowers borne on much longer pedicels. A plant of it produced a succession of flowers for five months on a sunny shelf in a greenhouse here, and visitors generally have been quite delighted with its bold blue blossoms, each poised so elegantly on a wire-like stem. Its blossoms have a knack of curling themselves up towards evening, but open out quite flat and fresh in the sunshine of the next morning.

Had I never seen L. coronopifolia I should have liked this graceful plant even better than I otherwise could do. Nevertheless, it is a plant well worth careful culture, as being in its own quiet way quite an attractive species. To make sure of being understood, perhaps it would be best to give a little sketch (fig. 20) of L. coronopifolia (*a*) and L. ramosa (*b*) side by side. Practically both are annuals, and hardy in our climate, although under greenhouse culture they may become biennial. As a hardy or half-hardy annual the mauve-flowered Isotoma axillaris should henceforth be looked after. Ten or twelve seedlings pricked off into in a 6-inch pot form a nice bushy specimen for late summer or autumn blooming in a cool greenhouse or frame; or planted out on a sheltered sunny border about the beginning of June it grows apace, and flowers freely until the frost comes in October. Another pretty Isotoma with more ample leafage and pure white flowers of larger size is Isotoma longiflora, which flowered with us quite freely during the past summer in a sunny stove. It is interesting on account of its poisonous pollen, and is a naturalised weed in most tropical countries, having, doubtless, escaped from gardens. It blooms for a long time in succession on a shelf near the glass, and seeds profusely. Its snow-white blossoms look very tempting for bouquet work, but should not be used on account of the acrid nature of its pollen as above indicated. *F. W. Burbidge, Trinity College Botanic Gardens, Pembroke Road, Dublin.*

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EARLY SNOWDROPS.—Melville's early flowering variety of Galanthus nivalis was in flower on the rockwork at Chiswick on New Year's Day—a good proof of the justice of its claim to distinction.

## DOUBLE STOCKS.

THE greatest care should be bestowed on the choice of the seed-bearer. It is essential that the plants should be not only healthy but vigorous. The Germans, who have always had the monopoly of the production of these seeds, cultivate Stocks in pots placed on shelves near the glass in well ventilated greenhouses; they give them only enough water to keep them alive, and to prevent the growth of any branches after the first.

This is the result of this mode of culture, according to my experience.

The plant bears few seed-pods; they are small, and contain but few seeds. All the seeds ripen equally, but this method has the inconvenience of being expensive and unnatural, although it produces good results. It might be advantageously superseded by that to which in my little treatise I have given the name of the "French method." The seedlings, selected as I have mentioned, are planted in the open ground after having passed the winter in pots in cool well aired frames. When the weather permits they are planted in a dry soil from about March 15 till April at the foot of a wall exposed to the morning sun. At the time of flowering I pinch off the flowering spikes so as to leave only ten or twelve seed-pods on the central, and four or five on the lateral racemes: all the other branches are carefully cut away. There is no fear of the growth of further branches if they are kept dry during the development of the seeds. The seeds of the perpetual Stock, which is cultivated in Paris under the name Parisian, yield by this mode of culture 60 to 70 per cent. of Stocks with double flowers.

At the time of taking the seeds from the pods this first result is surpassed. I cut off the upper quarter of the spike. By this proceeding, and without having recourse to rogueing, which is only known to a small number of gardeners, I obtain 80 to 85 per cent. o plants with double flowers. I advise persons wishing to cultivate these plants to leave, at the time of pricking out, all the smallest plants; the plants with double flowers having much longer leaves than those with simple flowers, it is easy to preserve all those plants which have the longest leaves: thus a large proportion of plants with simple flowers will be left.

As to the influence of old seeds on doubling, this is what I have noticed:—The plants springing from two and three year old seeds are the dwarfest; the leaves are fewer in number, larger and thicker, and the bloom later; the spikes, thicker and shorter, are made up of flowers of such fulness that they are close and compact, and have the appearance of being more double. The colours are brighter and clearer than those of the plants springing from the seeds of the same year.

I shall sum up these different methods of culture of Stocks by saying that the maturity of the seeds, the concentration of the sap in a certain number of seed-pods, and the judicious choice of plants as seed-bearers, are the most important means of obtaining double varieties of this genus. In fact, if we compare the difference between a hundred seeds taken from the base of the raceme and a hundred other seeds taken from the upper extremity, which I advised to be cut off at the time of flowering, we shall find at the base 70 to 75 per cent. of plants with double flowers, while at the other end there will be only 20 to 25 per cent. We thus have an easy method of eliminating 30 to 35 per cent. of plants with simple flowers. In adding to this first result the suppression of about one-fourth of the upper part of the seed-pod at the time of harvesting the seeds and the plucking up the tallest plants when they are pricked out, without having recourse to rogueing, we shall only find in the plant which lives the winter 12 to 15 per cent. of plants with single flowers.

On a second occasion M. Chaté showed some of the Parisian Stocks, two with double and four with single flowers, and made the following remarks concerning them:—

The characteristics of the single ones are darker green leaves, longer and smoother, the centre is well open and cup-shaped, the habit dwarfer, and the leaves very thickly set.

Those with double flowers, on the contrary, have long, downy leaves; the small ones in the centre are twisted or rolled up, and covered with whitish hairs. These are very distinct characteristics for those whose business it is to rogue the Stocks.

Now here are two specimens of Parisian Stocks

with their seed-pods; the first has been pinched in the way I have mentioned, the other has been left to Nature. In the first, which has been pinched, there are more than 250 or 300 seeds, which will produce 70 to 75 per cent. of Stocks with double flowers; in the second we may reckon that there are from 1200 to 1500 seeds, which will give 75 to 80 per cent. of Stocks with single flowers. Thus we see the advantage of the French plan. From the use of these different methods we may conclude that the duplication is the direct result of excessive health, since the more the sap has been concentrated on a small number of seed-pods and seeds, the more double flowers are obtained. This, however, cannot be established as a general rule. In fact in many plants the contrary takes place. In the China Asters it seems that the small flowers give more double ones than the large, notwithstanding that the latter are the first formed and absorb the greatest amount, and the most nutritious sap. If we consider Pelargoniums, which are also one of my specialities, we shall see that the seeds from whence the double ones spring are always very badly formed, several even do not germinate at all; and nevertheless the first double varieties have been found in Auvergne in a soil where these plants assume colossal dimensions both in their wood and in their leaves.

M. Martial de Chanflourd, in whose garden I found the two types from whence have originated all the present varieties, told me that they sprang from the seeds of a variety which was sold in 1848 under the name of the Emperor Napoleon, having single flowers, red, very large, and arranged in large trusses. The adherence of a petal to a stamen is a sufficient indication that the seeds will produce a plant with double flowers. I think, then, that the production of the first plants with double flowers is due partly to this fact, unusual without doubt, but which nevertheless does occur sometimes either from excess of vigour or by sudden changes and variation of culture or of weather.

Every time that I have had a single flower, in which one or more stamens were adhering to the petals, complete duplication was not long in making its appearance, whether these flowers were fertilised by pollen from a double or a semi-double flower, or whether we cut off the latter so as only to collect seeds from the former. *M. Chatè, in the Report of the International Congress of Botany and Horticulture, Paris*, 1878, *published in* 1880.

## PLANT PORTRAITS.

ASTROCARYUM IRIARTOIDES, Wallis, *Gartenflora*, t. 1022.—A Palm with stem cylindric, spiny, giving off adventitious roots at the base; leaves pinnate, with obtuse cuneate segments.

BERBERIS STENOPHYLLA ×, *Revue de l'Horticulture Belge*, November 1, 1880. See *Gard. Chron.*, p. 213, vol. xiv.

CARPENTERIA CALIFORNICA, *Garden*, October 23, 1880.—A handsome shrub, native of California, not yet introduced. It has lanceolate-acute leaves, and large flowers in appearance like those of a Hypericum. We await further information concerning this striking plant.

DAPHNE BLAGAYANA, Freyer, *Gartenflora*, t. 1020.—Of this hardy species we have spoken on various occasions. See *Gard. Chron.*, p. 245, vol. xiii.

DENDROBIUM THYRSIFLORUM, Hort. Veitch, *Gartenflora*, t. 1021. — Pseudobulbs elongate, racemes many-flowered, pendulous from the top of the pseudobulbs; sepals and petals whitish, lip orange-yellow.

DICTYOCARPUM WALLISII, Wendl., *Gartenflora*, t. 1022.—A Columbian Palm, with slender cylindrical unarmed trunk and pinnately-lobed foliage.

DRACÆNA LATIFOLIA VAR. SCHMIDTIANA, *Gartenflora*, t. 1023.—A species with broad green and white striped leaves, and large terminal much branched panicles of greenish-white flowers.

DRACOCEPHALUM RUPRECHTIANUM, Regel, *Gartenflora*, t. 1018.—A perennial with lanceolate entire or pinnatifid leaves, and whorls of large blue flowers. Native of the mountains of Eastern Turkestan.

ENCEPHALARTOS CYCADIFOLIUS VAR. FRIDERICI GUILIELMI, *Gartenflora*, t. 1025, 1026.—The striking Cycad described in *Gard. Chron.*, p. 810, vol. x.

IRIS BLONDOWI, Ledb., *Gartenflora*, t. 1020.—A rhizomatous species, with sword-shaped leaves and bearded yellow flowers. Mountains near the Chorgos River. A. Regel.

LIEVENA PRINCEPS, Regel, *Gartenflora*, t. 1024. A Bromeliad, with broad, entire, acute, strap-shaped, channelled leaves, and a terminal spike of closely-packed white flowers, subtended with red bracts. Tropical America.

ONCIDIUM PAPILIONIFORME, *Gartenflora*, t. 1017.—A New Grenadan species, intermediate between O. Papilio and O. Kramerianum, and possibly a hybrid between the two.

PEAR, DIRECTOR ALPHAND, *Revue Horticole*, September 16, 1880.—A huge Pear, rivalling in size the Belle Angevine; greenish-yellow, passing into golden-yellow, spotted and flushed with red on the sunny side. Stalk short, eye small, nearly closed; flesh white, firm, very aromatic. February to April. It was raised by Messrs. Croux & Sons, of Sceaux, by whom it will be sent out.

PLUM, THE JEFFERSON, *Bulletin d'Arboriculture*, October, 1880.—Raised about 1830, and dedicated to President Jefferson. Fruit large, oval, golden-yellow, very juicy, sugary, and highly perfumed.

RHEUM NOBILE, *Garden*, October 23.—Figured from the plant which flowered for the first time in the Edinburgh Botanic Garden last year.

ROSE, CAMILLE BERNARDIN, *Journal des Roses*, September, 1880.—This Rose was named at the first special exhibition of Roses, in 1865, at Brie Comte Robert, in honour of the founder of the feast.

SABAL MAGDALENICA, *Gartenflora*, t. 1022.—A Columbian Palm with slender unarmed stem, and palmately-lobed leaves.

UMBILICUS GLABER, Regel, *Gartenflora*, t. 1019.—A species with tufted glabrous spatulate leaves and cymose panicles of yellowish flowers. Eastern Turkestan. A. Regel.

## THE FOOD OF PLANTS.

By W. IVISON MACADAM, F.I.C., F.C.S., &c., LECTURER ON CHEMISTRY AND ANALYTICAL CHEMIST, EDINBURGH.

IN the paper I read before this Association at its meeting in October, 1879, I directed attention to the agricultural and market gardening section of the food of plants. You will remember, however, that at the close of that paper it was stated that there were many other standing points from which the subject might be considered, and amongst those the horticultural department has the next claim to our attention. I have, therefore, during the last fourteen months given a considerable part of the time at my disposal to the consideration of the various points to which chemistry may be applied in the province of horticulture.

In these days of rivalry it is not enough for a man to be able to grow plants as well as his neighbour; but he must do his utmost to outstrip his fellow-worker. This rivalry has caused not only a very marked improvement in the older, and by some still admired varieties of hothouse and bedding-out plants, but it has in many cases caused the extermination, or very nearly so, of the floral decorations of our grandfathers, we may almost say of our fathers. It is not within the province of this paper to discuss whether the result of this war of extermination gives a full return for the loss of the many old and honoured plants, but there are many who remember the old days of gardening with sorrow for the old favourites.

Another result of this rivalry has been the introduction of very many classes of plants which were quite unknown to past generations, or if known then only as being in the possession of some one of wealth or influence. This latter result of rivalry, although it gladdens our hearts with a continual succession of variety causes at the same time much more difficulty in taking up the subject for scientific working. Hitherto the rule of the hothouse has been one of personal experience—there can be nothing better than practical work—and it has only been to the few and privileged to learn by the experience of the stars of the profession.

Horticulture is now assuming such importance and the practice of growing flowers for the market so common, that a more systematic and thorough method must shortly be adopted. To aid the worker in this direction is my endeavour and my intention in proceeding in the exploration of, so far as I know, perfectly unknown and untrodden paths. In carrying out this work I propose to follow no new method of procedure, but will go in the lines of my former paper. First, then, let us consider what the various plants are composed of, taking into consideration the Pelargonium, Fuchsia, Primula, Heliotrope, Begonia, Cyclamen, Lobelia, and Dracæna. The table A gives the average results of many analyses.

From this table it will be seen that the amounts of water and solid dry residue, and also the amounts of the organic vegetable matter and the saline or mineral matter, differ greatly in the various classes of plants. The water is found to range from 95.98 per cent. in the Begonia down as low as 43.55 per cent. in Lobelia, whilst the organic vegetable matter runs from 47.94 per cent. in Lobelia to 3.41 per cent. in Begonia. The saline or mineral matter also varies greatly, being as high as 8.51 per cent. in Lobelia and as low as 0.61 per cent. in Begonia.

Not only do we find that these amounts vary in the different classes of plants, but the varieties of each class also differ considerably in the proportions of water, organic and saline matters they contain. This

(A.)—AVERAGE COMPOSITION OF GREENHOUSE PLANTS.

| | Pelargonium. | Fuchsia. | Primula. | Heliotrope. | Begonia. | Cyclamen. | Lobelia. | Dracæna. |
|---|---|---|---|---|---|---|---|---|
| Water .. .. .. .. .. | 79 00 | 79.63 | 90.10 | 69 19 | 95.98 | 84.94 | 43.55 | 72 24 |
| * Organic Vegetable Matter .. | 18.93 | 18 35 | 8.21 | 27.18 | 3 41 | 13.38 | 47.94 | 24.93 |
| * Saline matter .. .. .. | 2.07 | 2.01 | 1 69 | 3.63 | 0.61 | 1.68 | 8.51 | 2.83 |
| | 100.00 | 100 00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Water .. .. .. .. | 79 00 | 79.63 | 90.10 | 69.19 | 95 98 | 84.94 | 43.55 | 72.24 |
| *Solid dry residue .. .. .. | 21 00 | 20 37 | 9.90 | 30.81 | 4.02 | 15.06 | 56.45 | 27.76 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100 00 | 100.00 | 100.00 | 100.00 |

(B.)—VARIETIES OF PELARGONIUM.—AVERAGE COMPOSITION.

| | Madame Vaucher. | J. and W. Shearer. | Brassidas. | Sweet-scented. | Saintly. | J. C. Musters. | Nillson. | Lucius. | Fireball. |
|---|---|---|---|---|---|---|---|---|---|
| Water .. .. .. | 80.74 | 76.99 | 77.65 | 74.99 | 77.69 | 79 21 | 80.45 | 82.72 | 81.50 |
| * Organic vegetable matter .. .. | 17.25 | 19 78 | 20.47 | 22.71 | 19.73 | 18.15 | 17.54 | 15.90 | 17.30 |
| * Saline matter .. .. | 2.01 | 3.23 | 1.88 | 2 30 | 2.58 | 2.64 | 2.01 | 1.38 | 1.20 |
| | 100.00 | 100.00 | 100.00 | 100 00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| *Dry residue .. .. | 19.26 | 23.01 | 22.35 | 25 01 | 22.31 | 20 79 | 19 55 | 17.28 | 18.50 |

| | Golden Superb. | Sir Edward Landseer. | Florence Durand. | Globosa major. | Miss Wakefield | Rose of Allandale. | Edmond. | Laura Walters. | Average of Seventeen Varieties. |
|---|---|---|---|---|---|---|---|---|---|
| Water .. .. .. | 78 43 | 77.42 | 79.90 | 79 74 | 85.24 | 81.65 | 79.57 | 79.61 | 79.00 |
| * Organic vegetable matter .. .. | 19 68 | 20.87 | 17 45 | 18 61 | 13.23 | 16 09 | 18.20 | 18.41 | 18.93 |
| * Saline matter .. | 1 89 | 1.71 | 2.65 | 1.65 | 1.53 | 2.26 | 2.23 | 1.98 | 2.07 |
| | 100.00 | 100.00 | 100 00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100 00 |
| *Dry residue .. .. | 21.57 | 22.58 | 20.10 | 20.26 | 14.76 | 18.35 | 20 43 | 20 39 | 21.00 |

point has been somewhat fully worked out, and the results are given in the following tables :—(see B, p. 106).

These results show that the variety containing most water is the Miss Wakefield, with 85.24 per cent.; whilst the lowest proportion of this ingredient is found in the sweet-scented Pelargonium, and is 74.99 per cent. The organic vegetable matter is lowest in the Miss Wakefield, 13.23 per cent.; and largest in sweet-scented, 22.71; whilst the saline matter runs from 3.23 in J. and W. Shearer to 1.20 per cent. in Fireball.

FUCHSIA.

*Average Composition of*

| | Arabella. | Harry Williams. | Rhoderick Dhu. | Average of Three Varieties. |
|---|---|---|---|---|
| Water .. .. | 79.84 | 78.51 | 80.54 | 79 63 |
| Organic vegetable matter .. | 17.82 | 19 40 | 17 85 | 18 36 |
| Saline matter .. | 2.34 | 2.09 | 1.61 | 2.01 |
| | 100.00 | 100.00 | 100.00 | 100 00 |
| Dry residue .. | 20.16 | 21.49 | 19.46 | 20.37 |

In the above results the extremes are not so great as in the case of the Pelargonium, and the average results of the analyses agree very closely with the average found in the Pelargonium.

PRIMULA.

*Average Composition.*

| | Sinensis rubra. | Sinensis alba. | Average of Two Varieties. |
|---|---|---|---|
| Water .. .. .. | 90 63 | 89.57 | 90 10 |
| Organic vegetable matter .. .. | 8.04 | 8.39 | 8 21 |
| Saline matter .. .. | 1 33 | 2.04 | 1 69 |
| | 100.00 | 100.00 | 100.00 |
| Dry residue .. .. | 9 37 | 10 43 | 9 90 |

From these results it is seen that in this class of plants there is very great difference in the proportions in which the ingredients are present: the average amount of water 90.10 per cent., or 11.10 per cent. higher than in Pelargonium, and 10.37 per cent. higher than the average in Fuchsia. The other constituents also show a wide change in proportions, for whilst the average in Pelargonium was 18.93 per cent. of organic matter, it is only 8.21 per cent. in Primula; and the saline matter is down from an average of 2.07 per cent. in Pelargonium, to 1.69 per cent. in Primula.

*Average Composition of*

| | Heliotrope Lizzie Holland. | Begonia semperflorens. | Cyclamen persicum. | Lobelia speciosa. |
|---|---|---|---|---|
| Water .. .. | 69.19 | 95 98 | 84.94 | 43.55 |
| Organic vegetable matter .. | 27.18 | 3 41 | 13 38 | 47.94 |
| Saline matter .. | 3.63 | 0.61 | 1 68 | 8.51 |
| | 100 00 | 100.00 | 100.00 | 100.00 |
| Dry residue .. | 30.81 | 4.02 | 15.06 | 56.45 |

DRACÆNA.

*Average Composition.*

| | Dennisoni. | Gracilis. | Average. |
|---|---|---|---|
| Water .. .. .. .. | 75 60 | 68.89 | 72.24 |
| Organic vegetable matter .. | 21 55 | 28.31 | 24.93 |
| Saline matter .. .. | 2.85 | 2.80 | 2 83 |
| | 100.00 | 100.00 | 100.00 |
| Dry residue .. .. .. | 24 40 | 31.11 | 27 76 |

The great difference in the amount of water present in these two varieties of Dracæna is curious, as the general appearance of the plants would not lead up to such a result. The saline matter is almost the same, and the difference between the varieties entirely depends upon the amounts of water and organic vegetable matter present.

Besides considering the special varieties named in the foregoing tables, it is interesting to notice the great variation in the amount of water, organic and saline matters stored up in the various parts of the plant. I have made a series of analyses to show this point, and the results are contained in the tables given below :—

PELARGONIUM.

*Average Percentage Composition of the Stem.*

| Variety. | Water. | Organic Vegetable Matter. | Saline Matter. | Dry Residue. |
|---|---|---|---|---|
| Madame Vaucher .. .. | 80 78 | 16.59 | 2 63 | 19.22 |
| J. and W. Shearer .. .. .. | 72.86 | 23.80 | 3.34 | 27.14 |
| Brassidas .. .. .. .. | 65.43 | 31 90 | 2 67 | 34.57 |
| Sweet-scented .. .. .. | 68.41 | 28.47 | 3.12 | 31.59 |
| Saintly .. .. .. .. | 73.94 | 23.09 | 2.97 | 26.06 |
| J. C. Musters .. .. .. | 82.20 | 15.12 | 2.68 | 18.80 |
| Nillson .. .. .. .. | 78 48 | 19.65 | 1.87 | 21.52 |
| Lucius .. .. .. .. | 77.76 | 20.86 | 1.41 | 22.27 |
| Fireball .. .. .. .. | 83 43 | 15.16 | 1.41 | 16 57 |
| Golden Superb .. .. .. | 70.10 | 26 76 | 3.14 | 29.90 |
| Sir Edward Landseer .. .. | 77.61 | 20 43 | 1.96 | 22.39 |
| Florence Durand .. .. .. | 85 51 | 12.71 | 1.98 | 14 69 |
| Globosa major .. .. .. | 84.30 | 13.25 | 2.45 | 15.70 |
| Miss Wakefield .. .. .. | 89 76 | 8 78 | 1 46 | 10 24 |
| Rose of Allandale .. .. .. | 84 50 | 13 81 | 1.69 | 15.50 |
| Edmond .. .. .. .. | 88.46 | 10.18 | 1.36 | 11.54 |
| Laura Walters .. .. .. | 76.00 | 21.33 | 2.77 | 24.10 |
| Average .. .. | 79.32 | 18.33 | 2 35 | 20.68 |

The variation shown by the above table is greater than has been previously noticed—running in the water from 89.76 per cent. in Miss Wakefield to 65.43 per cent. in Brassidas, whilst the organic vegetable matter varies to an even greater extent, the highest being in Brassidas, 31.90 per cent., and the lowest in Miss Wakefield, 8.78 per cent. The saline matter is largest in J. and W. Shearer, 3.34 per cent., and lowest in Edmond, with 1.36 per cent.

*Average Percentage Composition of the Stems of Plants.*

| | Water. | Organic Vegetable Matter. | Saline Matter. | Dry Residue. |
|---|---|---|---|---|
| *Fuchsia—* | | | | |
| Arabella .. .. .. .. | 76.04 | 22.80 | 1.16 | 23.95 |
| Harry Williams .. .. .. | 73 54 | 25.08 | 1.38 | 26.46 |
| Rhoderick Dhu .. .. .. | 73 80 | 24 87 | 1.33 | 26.20 |
| Average .. .. | 74.46 | 24.25 | 1.29 | 25 54 |
| *Heliotrope—* | | | | |
| Lizzie Holland .. .. .. | 60.62 | 36.02 | 3.36 | 39.38 |
| *Begonia—* | | | | |
| semperflorens .. .. .. | 96.09 | 3.09 | 0.82 | 3 91 |
| *Cyclamen—* | | | | |
| persicum (corm stem) .. .. | 77 89 | 20.88 | 1.23 | 22.11 |
| *Lobelia—* | | | | |
| speciosa (with leaf) .. .. | 57.23 | 36.41 | 6.36 | 42.77 |
| *Dracæna—* | | | | |
| Dennisoni .. .. .. | 75 69 | 22.84 | 1.47 | 24.31 |
| gracilis .. .. .. .. | 76.44 | 21.89 | 1.67 | 23.56 |

*Average Percentage Composition of the Leaves of Plants.*

| | Water. | Organic Vegetable Matter. | Saline Matter. | Dry Residue. |
|---|---|---|---|---|
| *Pelargonium—* | | | | |
| Madame Vaucher .. .. | 83 68 | 15 20 | 1.72 | 16.92 |
| J. and W. Shearer .. .. | 86 73 | 11.44 | 1.83 | 13 27 |
| Brassidas .. .. .. .. | 84.39 | 14.23 | 1.38 | 15.61 |
| Sweet-scented .. .. .. | 81.74 | 16.13 | 2.13 | 18.26 |
| Saintly .. .. .. .. | 83 18 | 15.20 | 1.62 | 16 82 |
| J. C. Musters .. .. .. | 79 74 | 19.60 | 2.66 | 22 26 |
| Nillson .. .. .. .. | 85 18 | 13 07 | 1.75 | 14.82 |
| Lucius .. .. .. .. | 85 99 | 12 39 | 1.62 | 14.01 |
| Fireball .. .. .. .. | 83 32 | 15.77 | 0 91 | 16.68 |
| Golden Superb .. .. .. | 83 94 | 14 71 | 1.35 | 16 06 |
| Sir Edward Landseer .. .. | 80.26 | 18.16 | 1 58 | 19.74 |
| Florence Durand .. .. | 78.81 | 19.04 | 2.15 | 21.19 |
| Globosa major .. .. .. | 82.11 | 16.59 | 1.30 | 17.89 |
| Miss Wakefield .. .. .. | 86.25 | 12.23 | 1.52 | 13 75 |
| Rose of Allandale .. .. | 86.42 | 11.34 | 2 24 | 13 58 |
| Edmond .. .. .. .. | 79.10 | 18 87 | 2.03 | 20.90 |
| Laura Walters .. .. .. | 85 38 | 13.30 | 1.32 | 14.62 |
| Average .. .. | 83.27 | 15.02 | 1 71 | 16 73 |
| *Fuchsia* (with petiole)— | | | | |
| Arabella .. .. .. .. | 83.07 | 14 50 | 2.43 | 16.93 |
| Harry Williams .. .. .. | 76.81 | 20.06 | 3.13 | 23.19 |
| Rhoderick Dhu .. .. .. | 81.77 | 15 85 | 2.38 | 18 23 |
| Average .. .. | 80.55 | 16 80 | 2.65 | 19.45 |
| *Primula—* | | | | |
| sinensis rubra .. .. .. | 88.02 | 10.10 | 1.88 | 11.98 |
| sinensis alba .. .. .. | 88.54 | 8.87 | 2.59 | 11.46 |
| *Heliotrope—* | | | | |
| Lizzie Holland .. .. .. | 76.54 | 18.69 | 4.77 | 23 46 |
| *Begonia—* | | | | |
| semperflorens (with petiole) .. | 96.02 | 3 34 | 0.64 | 3.98 |
| *Cyclamen—* | | | | |
| persicum .. .. .. .. | 88.18 | 10.46 | 1.36 | 11.82 |
| *Dracæna—* | | | | |
| Dennisoni.. .. .. .. | 76.56 | 20.39 | 3 05 | 23 44 |
| gracilis .. .. .. .. | 64 42 | 32.31 | 3 27 | 35.58 |

*Average Percentage Composition of the Leaf-stalk (Petiole).*

| | Water. | Organic Vegetable Matter. | Saline Matter. | Dry Residue. |
|---|---|---|---|---|
| *Pelargonium—* | | | | |
| Madame Vaucher .. .. | 84.48 | 13 80 | 1 72 | 15.52 |
| J. and W. Shearer .. .. | 82.77 | 13.45 | 3 78 | 17 23 |
| Brassidas .. .. .. .. | 88.26 | 10.20 | 1.54 | 11 74 |
| Sweet-scented .. .. .. | 83.53 | 14 73 | 1.34 | 16.07 |
| Saintly .. .. .. .. | 87.59 | 10 55 | 1.80 | 12.41 |
| J. C. Musters .. .. .. | 85.39 | 11.93 | 2.68 | 14 61 |
| Nillson .. .. .. .. | 84.79 | 13 85 | 1 36 | 15 21 |
| Lucius .. .. .. .. | 87 92 | 10.83 | 1.25 | 12.08 |
| Fireball .. .. .. .. | 86.05 | 12.19 | 0.80 | 13 05 |
| Golden Superb .. .. .. | 86 59 | 11.87 | 1.54 | 13.41 |
| Sir Edward Landseer .. .. | 83.86 | 15.52 | 0 62 | 16.14 |
| Florence Durand .. .. | 86 27 | 12.04 | 1 69 | 14.73 |
| Globosa major .. .. .. | 85.11 | 13.75 | 1.14 | 14.89 |
| Miss Wakefield .. .. .. | 90.80 | 8.07 | 1.13 | 9.20 |
| Rose of Allandale .. .. | 87.02 | 11.15 | 1.83 | 12.98 |
| Edmond .. .. .. .. | 87 04 | 11.34 | 1 62 | 12.96 |
| Laura Walters .. .. .. | 83.79 | 14 44 | 1.77 | 16.21 |
| Average .. .. | 86.03 | 12.33 | 1.64 | 13 97 |
| *Primula—* | | | | |
| sinensis rubra .. .. .. | 95.18 | 3.58 | 1.24 | 4.82 |
| sinensis alba .. .. .. | 92.07 | 6.55 | 1.38 | 7.93 |
| *Cyclamen—* | | | | |
| persicum .. .. .. .. | 90.06 | 7 73 | 2.21 | 9.94 |

*Average Percentage Composition of the Root.*

| | Water. | Organic Vegetable Matter. | Saline Matter. | Dry Residue. |
|---|---|---|---|---|
| *Pelargonium—* | | | | |
| Madame Vaucher .. .. | 68.19 | 28.85 | 2.96 | 31.81 |
| J. and W. Shearer .. .. | 65.62 | 30.41 | 3 97 | 34.38 |
| Brassidas .. .. .. .. | 67.58 | 29 88 | 2.54 | 32 42 |
| Sweet-scented .. .. .. | 65.88 | 31.49 | 2.63 | 34.12 |
| Saintly .. .. .. .. | 66.06 | 31.06 | 2 88 | 33 94 |
| J. C. Musters .. .. .. | 69 53 | 27.92 | 2 55 | 30 47 |
| Nillson .. .. .. .. | 70.53 | 25 96 | 3.51 | 29 47 |
| Lucius .. .. .. .. | 79 23 | 19.52 | 1.25 | 20 77 |
| Fireball .. .. .. .. | 68.32 | 29 29 | 2 39 | 31.68 |
| Golden Superb .. .. .. | 65 22 | 31.96 | 2.82 | 34.78 |
| Sir Edward Landseer .. .. | 60.12 | 36.66 | 3 22 | 39 88 |
| Florence Durand .. .. | 62 26 | 31 19 | 6 55 | 37.74 |
| Globosa major .. .. .. | 61.89 | 35 36 | 2.75 | 38 11 |
| Miss Wakefield .. .. .. | 74 37 | 23.61 | 2 02 | 25 63 |
| Rose of Allandale .. .. | 68.78 | 27.94 | 3 28 | 31.32 |
| Edmond .. .. .. .. | 63 78 | 32.31 | 3.91 | 36.22 |
| Laura Walters .. .. .. | 68 87 | 28.21 | 2 92 | 31.13 |
| Average .. .. | 67 42 | 29.52 | 3 06 | 32.58 |
| *Fuchsia—* | | | | |
| Arabella .. .. .. .. | 68.23 | 26.60 | 5.17 | 31 77 |
| Harry Williams .. .. .. | 74 45 | 22 54 | 3 01 | 25.55 |
| Rhoderick Dhu .. .. .. | 76 99 | 21 00 | 2 01 | 23 01 |
| Average .. .. | 73.22 | 23 42 | 3.36 | 26.78 |
| *Heliotrope—* | | | | |
| Lizzie Holland .. .. . | 66.83 | 30.26 | 2.91 | 33.17 |
| *Cyclamen—* | | | | |
| persicum .. .. .. .. | 84.16 | 13.83 | 2 01 | 15 84 |
| *Lobelia—* | | | | |
| speciosa .. .. .. .. | 29.88 | 59 47 | 10.65 | 70.12 |
| *Dracæna—* | | | | |
| Dennisoni . .. .. | 74.56 | 21.42 | 4.02 | 25 44 |
| gracilis .. .. .. .. | 65.83 | 30.70 | 3.47 | 34.17 |

*Average Percentage Composition of the Flower.*

| | Water. | Organic Vegetable Matter. | Saline Matter. | Dry Residue. |
|---|---|---|---|---|
| *Pelargonium—* | | | | |
| Madame Vaucher .. .. | 87.18 | 11 81 | 1.01 | 12.82 |
| Brassidas .. .. .. .. | 82.62 | 16 10 | 1.28 | 17 38 |
| Nillson .. .. .. .. | 86 31 | 12.13 | 1.56 | 13.69 |
| Fireball .. .. .. .. | 8 .49 | 14 08 | 0.43 | 14 51 |
| Golden Superb .. .. .. | 86 33 | 13.05 | 0 62 | 13.67 |
| Sir Edward Landseer .. .. | 8 .27 | 13.57 | 1.16 | 14 73 |
| Florence Durand .. .. | 86.85 | 12.24 | 0 91 | 13 15 |
| Globosa major .. .. .. | 85.29 | 14.06 | 0 65 | 14 71 |
| Laura Walters .. .. .. | 84.04 | 14 82 | 1 14 | 15.96 |
| Average .. .. | 85.48 | 13.55 | 0.97 | 14.52 |
| *Fuchsia—* | | | | |
| Arabella .. .. .. .. | 92.03 | 7.35 | 0.62 | 7.97 |
| Harry Williams .. .. .. | 89 26 | 9.89 | 0.85 | 10.74 |
| Rhoderick Dhu .. .. .. | 89.62 | 9 70 | 0.68 | 10.38 |
| Average .. .. | 90.30 | 8 98 | 0 72 | 9 70 |
| *Primula—* | | | | |
| sinensis rubra .. .. .. | 88 69 | 10.45 | 0 86 | 11.31 |
| sinensis alba .. .. .. | 88 12 | 9 73 | 1.15 | 12.08 |
| *Heliotrope* (flower-head)— | | | | |
| Lizzie Holland .. .. .. | 72.80 | 23.72 | 3.48 | 27.20 |
| *Begonia* (flower-head)— | | | | |
| semperflorens .. .. .. | 95.83 | 3 80 | 0 37 | 4.17 |
| *Cyclamen—* | | | | |
| persicum . .. .. .. | 84.35 | 14.03 | 1.62 | 15.65 |

These results show that the part of the plant which contains the highest proportion of water is the leaf

with its petiole or leaf-stalk, that the flower stands next in order, whilst the stem follows close after. The root contains the least moisture and the largest amount of organic and saline matters. Take, as an example of this, the variety of Pelargonium called J. and W. Shearer, in the leaf of which you find 86.73 per cent. of water, the stalk of the leaf having 82.77 per cent., whilst the stem has 72.86 per cent., and the root only 65.62 per cent. of water. On the other hand the organic matter is found to be 30.41 per cent. in the root, 23.80 per cent. in the stem, 13.45 per cent. in the petiole, and 11.44 per cent. in the leaf. The less the percentage of water the higher the amount of saline matter, as is shown in the root of the same variety, where 3.97 per cent. is found, the leaf having only 1.83 per cent. In the flower the amount of water is large, ranging from 95.83 per cent. in Begonia, and 92.03 per cent. in Fuchsia Arabella, to 82.62 per cent. in Pelargonium Brassidas. In Heliotrope the amount of water is only 72.80 per cent., but this seems exceptionally low for flowers. The saline matter in the flower is usually very low, being only 0.37 per cent. in Begonia, and 0.43 per cent. in Pelargonium Fireball, but rises in Heliotrope to 3.48 per cent. *Paper read before the Scottish Horticultural Association.*

(*To be continued.*)

## HYBRID RHODODENDRONS.

I RECEIVED Focke's work (*Die Pflanzen-Mischlinge*) a few days before your article on it appeared. I quite agree that it is a very important contribution to the literature relating to hybridising, and contains evidence of much labour and care, although, of course, it has its errors and omissions.

I naturally turned first to what I may call my own department, viz., "Rhododendron." There I found a great deal very accurately stated, and it is in no spirit of disrespect that I point out two errors or bad guesses which I think deserve notice, because they relate to plants commonly grown here and on the Continent, and, I may say, general favourites with many of us—I allude to Princess Alice × and Countess of Haddington ×.

With regard to the former Focke writes:—"R. formosum, Wall. ♀, × Edgeworthii, Hook. f. ♂, mit schönen weissen Blumen ist R. Sesterianum, Veitch. Princess Alice (Veitch & Sons) ist ähnlich."

Now, I have always understood and believed that the true pedigree of Princess Alice is R. ciliatum ♀, × Edgworthii ♂. The following extract from a paper read by Mr. Anderson-Henry in 1867, as President of the Botanical Society of Edinburgh (I think reprinted by you at the time), [see p. 379, 1867] will, I am sure, interes many of your readers:—"When the lovely and fragrant R. Edgworthii first bloomed in this country, all were eager to see its beauty and perfume transfused into dwarfer and hardier forms. Some tried the cross by making Edgworthii the female or seed-bearer, others by making it the male. I tried in both ways; but for my own part all those efforts failed when I attempted the cross on the Edgworthii. But while it would not be brought to bear hybrid seed, I had no great difficulty in effecting a cross from its pollen on R. ciliatum, another of Dr. Hooker's beautiful Sikkim species, having all the desirable requisites of hardihood, dwarf habit, and free-flowering tendency; and, singularly enough, just as I had obtained and sent off blooms of this brood to lay before the committee of the Horticultural Society of London, Messrs. Veitch, of Chelsea, anticipated me in having a plant of this identical cross first exhibited before that committee, which is now well known and generally cultivated under the name of Rhododendron Princess Alice."

As to Countess of Haddington × Focke writes:—"R. formosum, Wall. ♀, × Dalhousiæ, Hook. f. ♂, hat blass-roth (R. formosum) angehauchte Blüthen die so gross sind wie bei R. Dalhousiæ, *Bot. Mag.*, 5322. *Countess of Haddington hortul. scheint dasselbe zu sein.*"

Here again is an error, the female parent of Countess of Haddington being R. ciliatum, and not R. formosum. Thus one of your contemporaries wrote many years ago:—"Among new plants by far the most striking was the lovely seedling R. Countess of Haddington, exhibited by Mr. Lees, of Tynningham Gardens. This is a real gem, being a cross between R. ciliatum and Dalhousiæ, showing the stiff compact habit of the former, with vastly superior foliage, and the sweetness and beauty of the latter." I quote this passage as the first to hand, but the pedigree has been often given correctly, and I think the plant speaks for itself. *J. H. Mangles, Valewood, Haslemere.*

## SAXIFRAGA LANTOSCANA.*

THIS is a handsome perennial Saxifrage, with tufted linear-spatulate leaves, convex on the upper surface, and with many-flowered panicles of creamy-white flowers (see fig. 21). At first the panicle is erect, and the flowers equally distributed on all sides; but as the plant grows the weight increases, the main flower-stem becomes bent downwards, and the smaller stalks all bend upwards, so as to expose the flowers to the light. Some readers, seeing the use that we have made of this illustration, may think that for our own convenience the artist had purposely twisted the flower-stem; it is not so, however, the herbarium specimens from the Col de Tenda show the same flexure. The plant is very closely allied to S. lingulata, and is considered by some to be a mere variety of that species. M. Boissier, however, points out that there is a difference in the colour of the foliage of the two plants, and that while there is a furrow on the upper side of the leaf in S. lingulata, there is a convexity in S. lantoscana. The plant derives its name from the valley of Lantosca, in the Maritime Alps, where it was first found. It is like S. pyramidalis, the plant lately called in gardens—why, we do not know—S. nepalensis, but has much narrower leaves.

## HORÆ HORTULANÆ.

### No. I.—On the Culture of Certain Irises.

IT is the waywardness of the English winter which spoils the work of the gardener, and makes wrecks of some of our choicest flowers. Doubtless we could make a brighter show were our yearly tale of sunshine greater than it is. Doubtless we are at times, as in the two memorable winters that have just passed away, exposed to cold greater than many of our treasures can bear. But where the want of sunshine or the cutting stroke of an intense frost have slain their thousands, tens of thousands have fallen victims to the fitfulness of a climate which sends smiling sunshine and balmy breezes one day, and on the morrow a biting dry dull north-east wind; which mixes up bright days of bitter frost with dismal days of dripping rain; which indeed, just now, seems to be trying to make up a winter out of fragments of all the seasons shuffled together. How can plants gathered from more equable climes be expected to thrive and put forth their beauty in such a land as this? There is a most delightfully sarcastic term in use amongst us, "hardy perennial." Almost every one now-a-days who cultivates a garden is anxious to grow hardy perennials, and horticultural literature at the present moment abounds in praise of these, and scorn of the once omnipotent Pelargonium and Calceolaria. But how do these hardy perennials fare? If there be at Mr. Ware's nursery or that of Messrs Backhouse, or of any other of the horticultural firms famous for their hardy perennials, any young man with a taste for statistics, I can suggest to him a most useful task. With each consignment of hardy perennials let him send a blank schedule to be filled up and returned by the purchaser twelvemonths afterwards, stating how many are alive at that date. Unless I am greatly mistaken, the death-rate will be found no slight one, even after the compiler has struck out of the list as unfair data all mention of those lilliputian fragments which, hastily thrust into small 60's, do duty as "well-established plants in pots." And I would venture to assert that by far the greater part of these die, not so much by reason of the clumsiness and ignorance of the recipient—though these doubtless have much to answer for: not so much by reason of uncongenial soil, or of too little or too much manure: not so much by reason of severe, long-continued frost, as by reason of the fickleness of our winter climate, and especially by reason of the winter rains. Plants, it is true, are long-suffering; they often blossom though they have borne "the slings and arrows of outrageous fortune" in the shape of an amateur's trowel or a jobbing gardener's spade; they do their best to be gay, and wear their apparel bravely, while they are feeling all too surely that they are in the wrong place with wrong surroundings; many even of those doomed to perish put forth as they fade away a weakly flower—a smile on a dying face. In spite of all obstacles, any one with no more than ordinary care may gather round him in his garden a world of floral beauty. But some treasures need more than ordinary care; they can only be got to open themselves to an English gaze in an English climate by special and more or less artificial treatment in imitation of their natural conditions.

I might give many illustrations of the truth of what I have just said. Let me, however, first of all, take the following instance. There is a group of Irises, of very markedly distinct characters, which are of such unusual beauty that were they easily grown they would be found in every garden. As it is, very many even of those who have built large gardens and laid in many flowers have never seen them; or rather, those who have seen these plants flowering in England as they ought to flower are very few indeed. I mean the so-called Onocyclus group, of which I. susiana and I. iberica are the most familiar examples. There are three or four others already known, and probably still others waiting to be known. I. susiana is a very old inhabitant of our gardens; it was admired by Clusius nearly three centuries ago, and Parkinson, in his *Paradisus*, in speaking of it says, "Which, for his excellent beautie and raritie, deserveth the first place." I. iberica is of more recent introduction. I know no hardy plants which make a greater impression on those who see them for the first time in full flower. The soft dark lustre of the falls, the delicate tint and exquisite veining of the standards, the bold and proud curves of each as they severally stand erect or gracefully fold down in jealous guard of pollen and stigma, give these flowers a fascinating beauty. There is, it is true, especially about I. susiana, something of the *beauté de diable;* they are perhaps plants to admire, I had almost said to worship, rather than to love. Coming into flower as they do in that dreadful May of ours, when the dying winter has his last struggle with the coming summer, and often for the time seems victorious, there is a certain strangeness and, as it were, unfitness about them. Their wide-spread petals, with deep rich hues, here abruptly changing, there gradually mingling, bespeak a still and cloudless sky, with floods of brightest sunshine; they are all unmeet for the dull, distempered days which we call spring. Nevertheless, I venture to think that, could they be grown with ease, every one who really cares for flowers would have them in his garden, in spite of the pain of seeing them torn by sharp east winds, and draggled with rain or hail.

Many have tried to grow them and failed. To say nothing of those who buy a small root and lose it within six weeks, is it not a common experience that the plant, however carefully tended, dwindles for a few years at most, throwing up a handful of leaves, often sickly and yellow, never showing flower, and eventually vanishing? Nor is the reason far to seek if we call to mind the conditions under which they flourish as wild plants in their native home. They come to us from Asia Minor, the Caucasus, and Persia, where they are described as growing on sunny hills. During winter they are for the most part covered, I imagine, with a thick mantle of snow. Guarded thus at once from the hand of frost, and the untimely stimulus of a winter sun, they sleep in peace, doing hardly more than slowly extending their rootlets, and lazily elaborating their buds; perhaps not even doing this. By-and-bye comes the genial warmth of spring: the snows melt, and the earth is bared. Stirred by the rapidly increasing vigour of the sun's rays, buds and roots shoot forth from the hitherto almost dormant rhizome. The soil is saturated with moisture from the melted snows, aided possibly by rains of spring. The plants have all they need: warmth, sunlight, water and if a scanty yet a rich soil; and they grow apace. But while the sunlight gains daily in force the supply of water rapidly begins to fail, and from the tuft of yet short leaves there swiftly springs up the scape, holding aloft to insect view the glorious standard of the flower. On each of the three great pendent petals which we call "falls," is Nature's signal, a patch of intensest most lustrous purple-black, seen afar off by sharp-sighted bee or other winged creature. Guided by this the busy proboscis, seeking nectar beneath the overhanging stigma, does the work of fertilisation, and seed succeeds to flower. Then comes the change. Every day a blazing sun in a cloudless sky: not a drop of rain. Save for the scanty dew at night the earth knows no moisture;

* S. LANTOSCANA, Boissier et Reuter, *Diagnoses Plant.*, ser. 2, No. 2 (1856).
S. LINGULATA, Bellardi.
*Var.* LANTOSCANA, Engler, *Monogr. Saxifraga* (1872), p. 237.
S. FLORULENTA, Schott, *non* Moretti.

the supply of spring is soon evaporated, or carried down the hilly slopes to the plains below. Day by day the soil becomes more and more dry. The chlorophyll-holding cells of the leaves are stayed in their work for lack of fluid; the crude sap ceases to rise. "To thy roots, oh, protoplasm!" is the cry; and all the goodness, which in the brief spring the ever busy leaves have gathered and built up from sunlight, soil, and air, travels down to the fleshy rhizome, which is more than half a bulb. Soon all the goodness has thus descended, nothing is left aboveground but the worthless shrivelled skeleton of the leaves; all the plant is now beneath the soil. The thick swollen rhizome, enriched with the pastl abours of these withered leaves, in its turn labours, arranging the material which flows down to it into future leaf-buds and future bloom-buds. But even that labour soon ceases, and save for a few rootlets lazily thrust out, more for the purpose of anchoring the rhizome than of seeking food, the whole plant is quiet; and as rainless day follows rainless day, sleeps on unawakened by the stimulus of wet. At last the summer ends: ends, not in broken rains alternating with mild and watery sunshine, but in bitter cold and heavy snow. Thus the heat-begotten sleep of summer is carried on unbroken into the cold-begotten sleep of winter, and the plant slumbers securely beneath its thick white coverlet, without fear of awaking before its time.

Bearing these things in mind it is easy to understand why these Irises refuse to flower freely in this land of ours. We purchase a stout heavy rhizome, and plant it in autumn or early winter. Checked by its transplantation, perhaps, too, by some timely frost, its buds do not begin to shoot till the succeeding early spring. With genial weather and soft refreshing rains it flourishes and shows goodly tufts of leaves, perhaps even a flower or two, and all seems to be well. As summer advances it begins to flag and enters upon its æstival sleep, trying to do its best with the scanty sunshine doled out to it. But alas! its sleep is soon broken, for the heavens are opened and down come the autumnal floods of rain. Sometimes even before its old leaves have withered, long before the root has consolidated its strength, premature buds break forth: buds which are hastily gathered forerunners of leaves, mere leaf-buds which have had no time to work out the twisted marvel of a blossom. All through the long winter these weakly buds are worried by the changeful weather, now tempted into active life by days of generous warmth, now buffeted by cutting winds, chilling rains or biting snowless frosts. Many buds and tufts succumb at once, and a deadly rot, starting from their decomposing remains, spreads through the root. Those which survive go through in the succeeding summer the same experience as in the last, with still less strength to withstand their trials; and this year the leaf-tufts are fewer while of flowers there are none at all. Sooner or later, in two or three years or more, the noble plant confesses itself beaten, and its shrunken rotted rhizome becomes a mere speck of manure for some coarser, homelier herb.

What means can we take to mend this sorrowful tale? Sunshine we cannot give, but we can ward off the baneful autumn rains. We may grow them in pots, and give them water when we like, and as we like. But no wise man, certainly no wise busy man, will grow in a pot what can be grown out-of-doors. Besides, these Irises, like many other plants, do not like pots. They will "do" in pots, but they much prefer not being in them.

We may follow a practice, largely adopted I believe on the Continent: we may take up the rhizomes every year as soon as the leaves have begun to wither, keep them dry, and plant them again in late autumn, early winter, or even later; but this is a plan which can only be accepted in absence of a better one. If you take up one of these Irises at any time you will find it bearing strong active rootlets. There may be an interval of rest between the withering of these old leaves and roots and the putting forth of the new roots, but, if so, it is a very brief one. I have examined plants in which the shedding of the leaves had advanced but a very little way, and always found new stout short rootlets being thrust out. And every one with a gardener's instinct knows that he is doing harm when he digs up such a rhizome garnished with new roots, and dries it on the shelf. In the mysterious labours of plant life, as in other things, it is the first step which is costly; small as they are, the growth of such rootlets involves a putting forth of no little power; and if you make that a waste of strength you do the plant a harm which may just turn the scale against its flowering next year. My own view is that even true bulbs, yes, even those, such as the Tulip, in which there is a comparatively long interval between the withering of the old leaves and the shooting of the new rootlets, are all the worse for being out of the ground. It is good doubtless to ripen them and keep them from too early sprouting, but it is best to do this if possible while leaving them in the soil. Much more so is this the case with the fleshy rhizomes of these Irises, rhizomes which are never quite dormant like bulbs, but are, as it were, halfway between a bulb and an ordinary root.

For the method of dealing with these plants, which I believe to be the true one, I am indebted to Mr. Max Leichtlin, of Baden Baden, to whose energy and talent horticulturists and botanists owe so much. It may briefly be described as follows:—

FIG. 21.—SAXIFRAGA LANTOSCANA. (SEE P. 108.)

Plant the rhizomes in rich light soil thoroughly well drained, in a spot sheltered as much as can be from winds, but open to the sun from dawn to sunset. If possible let them not miss one single ray of the summer sun. While they are growing in spring let them not suffer for want of water: it will do them no harm then. As soon as they have done flowering place over them, at the height of 2 feet or so from the ground, a glass roof without sides, sloping towards the south, or, if you like to take the trouble, pitched at such an angle* that the glass shall intercept as few solar rays as possible. Being open on all the sides, the structure will admit abundance of air; being low down and at a proper angle, it will admit light and heat, and the plants will not be drawn up; all it will do is to keep off the late summer and autumnal rains, and therefore it should be made to extend some distance in all directions beyond the area of the plants. Under such a soothing shelter they will enter into a summer sleep as in their native homes, and the rhizomes will grow fat and strong, ready to break out into fairest bloom-buds in the coming spring.

Mr. Max Leichtlin recommends that the roof should be taken off in October, and that is probably the best time at Baden; but I am inclined to think that in this muggy land of ours, which far surpasses Germany in the waywardness of its weather, it might profitably be kept on much later; at least, I mean next year to keep it on till Christmas, or even later, unless the plants should begin to start before.

Such a plan is very simple; it costs very little, and gives no trouble, and may be also used for other plants of like habits. The only inconvenience is that the frame is somewhat a disfigurement in a garden, and the Irises must be grown in a formal manner by themselves, not arranged in a natural way with other flowers.

One word as to soil. A light porous somewhat sandy loam is, I believe, the best basis for them; but I very much doubt the advisability of keeping it poor. The best blooms I ever had was in soil as rich as I could make it. But though rich, it must not be gross; these Irises have apparently somewhat feeble stomachs, and their food must be well digested by Mother Earth, turned by subterranean ferments into black crumbly humus if they are to flourish at their best. Otherwise

* Determined by the locality.

with proper care I am inclined to think they may be grown in soils the basis of which may be anything you like from a stiff clay to the lightest sand. But I am free to confess that I find myself becoming a heretic as to soils. My man Joseph, who receives on Saturday night a goodly wage for having spent the week in unremitting endeavours to kill my favourite plants, has an unlimited belief in the efficacy of soils. Whenever a plant dies outright or fails to do as it ought, it is, according to him, the soil which is to blame. Whenever in some hidden corner of the garden, safe from his hoe and his rake, I have with constant care reared a successful flower, the praise is not to me, but to the soil which suits the plant. When I began gardening I had some such views myself, but I have gradually come to think that, given different handling for different soils, most plants (not all, for some have obstinate chemical fancies) may be grown as well, or nearly as well, in one as in another. But of this perhaps more at some future time. *Dictes.*

## Florists' Flowers.

THE YELLOW GROUND PICOTEE.—While Carnations and Picotees are being so much sought for, and are obtaining a rapidly increasing circle of admirers, it would be well to draw into the circle the yellow-ground Picotee. This section has been cultivated for very many years, and one or two cultivators were successful in obtaining very good varieties, but some of the best of them had poor constitutions, and have been lost to cultivation. When the National Carnation and Picotee Society offered prizes in London the yellow-ground Picotee was included in the schedule, but such a mongrel lot of blooms were exhibited that the prizes were not continued another year. Since that time quite a new strain of flowers has been introduced by Mr. Charles Turner, of Slough. Up to the year 1877 a miffy variety, Ascot Yellow, and the well known Prince of Orange, were the only really good edged flowers, but in that year Mr. Turner raised a batch of 250 seedlings from Prince of Orange, all of them having the robust habit of the parent, and many of them being much superior to it in the quality of the flowers. There are more than a score of flowers well worthy of cultivation which have been selected from that group of plants and have now been sent out. They are well adapted either for culture in pots or in the open air, but to have them in bloom for exhibition purposes they must be grown in pots, else they will not be in flower in time. Those who have had some difficulty in growing the florists' varieties should try these yellow grounds, as they are much more amenable to ordinary cultivation. A few of the very best varieties are Alice, clear yellow-edged, and marked with scarlet; Eleanor, yellow, very large full flower with good petals; Flavius, pale yellow ground with crimson edge and bars; Lady Aitchison, heavily edged with red, full flower and distinct variety; Lightning, pale yellow ground, marked and edged with crimson; Ne Plus Ultra, good clear yellow petals, of good form, edged and marked crimson; Princess Beatrice, one of the best of the set, yellow ground with good well marked petals edged with bright red; Princess Marguerite, an extra fine variety, of a good yellow, with a narrow edge of red. *J. Douglas.*

PERPETUAL FLOWERING CARNATIONS.—Year by year the number of growers of these beautiful sweet-scented winter flowering plants seem to increase, and those who do grow them can seldom get enough. It is also very satisfactory to know that they are easily raised from seeds. Some time ago it was recorded that Mr. Charles Turner, of Slough, sowed some seeds in January, and flowered the plants in the autumn following. The variety from which the seeds were saved was the rather recently introduced variety, A. Alegatière. The habit of this variety is all that can be desired when dwarf bushy plants are in request, and its bright scarlet flowers are very showy. It is not likely that any light-coloured flowers would be raised from this variety without crossing them, but it would be well to do this; it would not be easy to say what would be the result of crossing with dwarf white or flesh-coloured flowers. Although these dwarf forms are well adapted for some purposes, the height of many varieties is not objectionable. Of these may be named King of the Belgians, a fine rich rose; La Belle, white; Miss Jolliffe, pale pink; Rose Perfection, Scarlet Defiance, and one or two others. There seems to be a craving for dwarf plants of everything, but in many cases this does not improve them, and sometimes it is the other way. The moderately tall forms work well in amongst other plants, and are at all times effective. At present the flowers do not open well in a greenhouse, and should have a rather dry atmosphere, with a temperature of 50° or 55°. As soon as the small side-growths are ready the cuttings should be put in where they can have a little bottom-heat. Early rooted plants make the best winter-flowering examples for next season. Some may be put in as late as March and April to succeed them. If the old plants are saved, and planted out in suitable positions in the spring, they will produce a succession of fine flowers during the summer and autumn. They do very well trained to low walls, and wherever or whenever produced they are always useful to be used for cutting to fill vases or work into bouquets, while the fringed petals of some, and the irregular outline of others, are admired by those who cannot see much beauty in the symmetrical outline of the show varieties. They are also more hardy than the show varieties, and in many respects are more useful. *Jas. Douglas.*

## Notices of Books.

**Die Krankheiten der Pflanzen, &c.** Von Dr. B. Frank. Breslau: Edward Trewendt. (Williams & Norgate.)

This is the first portion of a general treatise on the diseases of plants. After a general chapter on the characteristics of living and of dead cells the author proceeds to discuss in the first instance the injuries done to plants by mechanical causes, wounds, insects, and the mode in which such injuries are repaired. Then follow chapters on the ill effects of exposure to or privation of light, excessive or defective temperature, unsuitable or injurious soil, malformations of various kinds, drought or excess of moisture, exposure to poisonous gases, lightning and parasitic fungi. We shall take another opportunity of alluding to this important publication. So far as we have observed the important series of papers on "Vegetable Pathology," contributed to these columns by Rev. M. J. Berkeley, have been entirely overlooked by Dr. Frank.

**Untersuchungen aus dem Forstbotanischen Institut zu Munchen.** Herausgeben von Dr. Robert Hartig. Berlin: Sprengel.

This volume contains the record of a series of observations on various diseases of forest trees occasioned by fungi, insects, and other causes. The first subject mentioned is the death of the roots of seedling Oaks from the attacks of a fungus—Rossellinia quercina. The history of the disease is given, as well as that of the parasite to which it is due. A similar plan is followed in the case of Phytophthora fagi, a parasite infesting seedling Beeches, and closely allied to the mould which causes the Potato disease. Cercospora acerina, which affects Maples, is treated in a similar way. The Larch disease is discussed, and the relation to it of the fungus Peziza Willkommii. A fungus affecting the Firs in some parts of Germany—Nectria cucurbitula—a fungus similar to that which forms the red tubercles on decaying wood, is next described, and then follows an article on the effect of frost on trees. Lastly come essays on the insects affecting the Beech—Lachnus exsiccator and Chermes fagi. The papers are illustrated with beautiful lithographic illustrations from the pencil of the author, and the whole work gives an indication of the way in which one branch of scientific forestry is studied in Germany. We should be glad to see similar indications in this country.

—— *Forest Flora of Cochin China.*—M. S. Pierre, the director of the Botanic Garden at Saigon, has begun the publication, under the auspices of the French Minister of Marine, of a work on the forest trees of Cochin China. The part before us consists of a series of large folio lithographic plates of various species of Magnoliaceæ, Dilleniaceæ, &c., accompanied by descriptive letterpress. The leaves of these are for the most part shown of natural size, and as in many cases they are literally gigantic, a good deal of labour has been thrown away, and space occupied, which might more profitably have been occupied by illustrating other species from this comparatively little known country. We trust that M. Pierre, whose critical knowledge of the plants of Cochin China is unrivalled, will also publish, for the benefit of botanists in general, a small handbook of the flora.

—— Part xvii. of *European Ferns* (Cassell & Co.) is a very good sample of the book, the figures in the plates being of the natural size, and therefore not misleading like the pictorial sketches of reduced size. The plate represents Asplenium lanceolatum, and A. Adiantum-nigrum, with enlarged fructification of each; and the eight pages of text are occupied by portions of the account of Asplenium viride and A. Trichomanes respectively.

## Garden Operations.

### *FLOWER GARDEN.*

With the thermometer registering 8°, or 24° of frost, as I write, what wonder that one should feel a certain amount of diffidence in even mentioning flower gardening whilst such weather lasts; happily, though, a gardener's thoughts and labour must necessarily be prospective, and therefore to a certain extent he can afford to be independent of the present, and more particularly so if he at all times plans his work with due regard to existent circumstances. Such methodical workers will not, even now, be at a loss to find full employ for all hands either indoors or out. As regards the latter, hard frost is the best of all weather in which to complete all soil and manure wheeling and carting; also to cut down and clear away dead or condemned trees and shrubs, to lop trees, and cut out dead boughs from the same. The snowstorm which occurred on October 28 last, whilst yet the trees were in full leaf, has caused us to have a busy time of it just now in removing these and sawing off the unsightly snags, and withal enjoying the work, because whilst the trees are being made again presentable we are adding to our stock of firewood. There are in most gardens hedges, screens, and belts of shrubs that require annual clipping or trimming up, and these of every variety may be done in hard weather, the clippings and clearings of ditches being collected and burnt, the ashes from which are invaluable as a manure and for surface sprinklings to kitchen garden crops, whilst in the seedling state, to keep off slugs. The ground about shrubs and trees, and also Roses, that have been recently transplanted, should be kept thickly coated with litter or bracken; such an operation may look unimportant, but it frequently makes all the difference between the well or ill doing of the plants. The fact is, that all success is built up of what are generally termed trifles, but which with greater propriety might be termed the essentials of success. As soon as conditions are favourable all trenching and other preparation of ground for planting should be completed before the busy spring season renders the performance of such labours anything but an agreeable task, because the many jobs that that season brings makes it desirable not to have any additional jobs on hand.

With regard to the indoors department there is certainly no lack of work. Fuchsias may now be brought out into full daylight, cut back, and repotted, and be placed in warmth. Cannas.—Divide, pot, and grow on gently. Dahlias.—Start in warmth any varieties that it is desired to propagate; the others should still remain in winter quarters. Herbaceous Lobelias may be divided and started into growth. Old plants of Dracæna lineata, or any other of the hardy Australian varieties, as also of Ficus elastica that have got "leggy," should be headed down and cut up into eyes: these placed in brisk bottom-heat will make nice little plants for summer bedding. In my last note I ventured the remark that "preference should be given to the more lasting varieties of plants, even at the risk of sacrificing some amount of flower," and now endorse that remark and supplement it by adding that amongst these will be found Abutilons of several varieties, Lantanas, several varieties, Veronica Hendersoni variegata, and Fuchsias. None of these produce abundant blooms when planted out, but all withstand heavy rain and several degrees of frost without injury. Amongst the most lasting foliage bedders that are suitable for association with flowering plants the following are some of the best:—Grevillea robusta, Dracæna australis, Acacia lophantha, Chamæpeuce diacantha, Centaurea candidissima, Coprosma Baueriana variegata, and Phormium tenax. It is yet too early to propagate the softer section of tender bedding plants, such as Coleus, Iresines, and Alternantheras; but the stock plants ought to be overhauled, and, if required, be potted off, afterwards placing them in strong heat with a view to take cuttings from them a few weeks hence. Pelargoniums should still be kept cool, and on the dry side as to moisture, except any that are to

produce cuttings for spring propagation; these should be put in heat at once, and fully supplied with water. *W. Wildsmith, Heckfield, Hants.*

## KITCHEN GARDEN.

Since my last paper was written there has been a somewhat sudden and unexpected change in the weather, which has locked up the land in the firm grip of "Jack Frost," and consequently brought digging and similar gardening operations to a standstill. However, assuming that the wheeling of manure on the ground requiring it has been completed, there are various other kinds of work that can and should be attended to during such weather, namely, the turning over the vegetable refuse and other manure-heaps, upon the nature of which so much depends the quantity and quality of our garden produce; the making and tying up in small bundles of labels from 8 to 15 inches long for seed-beds and ranks of Peas, &c., also the sharpening and tying up in bundles of Pea and Bean sticks. By attending to such items of work as these during such weather as we are now having much time will be saved later on, when it is more precious than it is now. Should the weather continue frosty, it will be advisable to put some more dry litter between the rows and around the plants of Globe Artichokes, and see that Beetroot and Carrots laid-in in borders have sufficient covering of dry Fern or litter to keep them from being frost-bound in the soil. Parsnips, Spinach, and Parsley for immediate use will likewise require additional and similar protection. As soon as the weather permits of its being done Jerusalem Artichokes should be taken up and housed and a fresh plantation made in a good open space (for which they well repay) in rows 2 feet apart, and 1 foot in the row. As to Cabbages, plant out on a warm border some of the largest of the autumn-raised plants. Cauliflowers, like Peas, cannot be had fit for table too early in the season, therefore the first favourable opportunity should be taken to plant out some of the largest plants of the Early London and Walcheren varieties in a favourable situation, in drills 3 inches deep and 2 feet apart, and the same distance from plant to plant, in well prepared ground; some Spruce boughs should then be stuck firmly in the ground at the north side of each plant, which will shield them somewhat from severe frost and cutting winds. As soon as weather permits a small sowing of Early Shorthorn Carrot should be made in a south border. Before drawing the drills the ground should be dusted over with some new dry soot, which will be the means of keeping the roots free from the attacks of wireworm. A small sowing should also be made in the same situation of Snowball and Nonsuch Turnips, and White Naples Onions.

FORCING DEPARTMENT.—A good supply of warm dung and leaves (about three parts of the latter and one of the former) should be kept in readiness for making the linings of hotbeds on which Potatos, Carrots, &c., are growing, as a means of maintaining a gentle heat therein, also with which to make up fresh beds for similar purposes where necessary. Another batch of Potato sets (in quantity according to the extent of bed or pits to be planted) should be put in 60-pots in leaf-mould, and placed in an early vinery or Peach-house to start them into growth, and when they have made shoots a couple of inches long they should be turned out of the pots and planted on the beds previously prepared for them, the soil having been put on the beds to become warm a few days before planting the Potatos. Where Seakale is not forced in pots, another batch of crowns should be covered with pots or boxes, and then with about 3 feet thick of fermenting leaves from the leaf-coop. No time should now be lost in making a sowing on a hot-bed of Early London Cauliflower, Brussels Sprouts —Imported and Rosebery are two good varieties —Wheeler's Imperial and Red Dutch Cabbages. Another small sowing of Cos and Cabbage Lettuce should also be made, and a couple of pans of Celery of the most approved varieties for early use should be sown, and so soon as the plants appear through the soil they should be placed near the glass and in a less warm temperature, where they could have a little air to prevent their becoming drawn and making a weakly growth. Keep a good supply of good soil in the potting-shed out of the reach of frost, wherein to raise French Beans, and subsequently to top-dress them.

MUSHROOMS.—Collect horse-droppings free from litter, and keep them spread out thinly in a dry shed for a few days, with which to make succession-beds, which should be formed as soon as the necessary quantity of droppings for that purpose have been collected and beaten as firmly together as possible; a dipping thermometer or "test-stick" should be inserted in the bed; and when the heat has declined to 75° it may be spawned, inserting pieces about half the size of a hen's egg under the surface of the beds about 6 inches apart, and then covering with half an inch of fresh droppings pressed firmly down: after which the surface of the bed should be covered thinly with finely sifted light loam of the same temperature as the bed, and beaten firmly together with a spade. A rather moist atmosphere, with a temperature of from 60° to 65°, until the Mushrooms appear, when 55° to 60° will be high enough, should be maintained in the house. *H. W. Ward, Longford Castle.*

## FRUIT HOUSES.

THE ORCHARD-HOUSE.—The sudden change from comparatively mild weather to severe frost has been very trying to those who have been attempting to force their trees. If the blossoms are now open it will require very careful management indeed to get the fruit to set well. Even if all conditions necessary to the welfare of the trees are observed, with a temperature very near the zero point, it is not easy to keep up the temperature and atmospheric conditions. If the pots are near the hot-water pipes it will be quite necessary to watch them in case they get too dry. The soil in borders inside is also likely to become too dry when the pipes are often in use near it, and I have known gardeners who never watered their trees from the time that the leaves fell in the autumn until the spring; this is, or, at least, may be a blunder, as the soil should never at any time be dust dry, for he trees get a check, and even although the blossom-buds may swell considerably, many will drop off before they open, and more after they are expanded. We have now removed into the late house all the pot trees (Peaches and Netarines) that were out-of-doors up to the second week in January. The trees could not be injured in the least, as they did not get much rain after they were placed out-of-doors, and they were all safely housed before the severe frost which set in on the 13th. The Peach will stand a very low temperature when the trees are in good health and the wood well ripened, but this is too seldom the case, and most of us know to our cost that the young wood may be killed; or if the trees do not suffer to such an extent as this, they may be injured so much that the buds will drop from this cause. The other trees have all been left out in the cold; the pots are well covered over with cocoa-nut fibre refuse—one of the best materials in the world to plunge pots in either to be out of the reach of frost or to keep them cool in the summer. There may not have been time up till now to see to some of the minor details of the work, but no time should be lost in thoroughly cleansing the house and the trees, washing the pots, &c. Look over the Strawberry plants on the shelves, remove all dead and decayed leaves, and examine the soil well, so that none of them may suffer from want of water. The pots are so thoroughly packed with roots that the balls are quite firm, and if these become loosened from the sides, even at this season of the year, from over-dryness, it is very difficult indeed to saturate them again. The early varieties are removed at this time to the forcing-house, which gives the late sorts more room to develope their leaves. *J. Douglas, Loxford.*

### ORANGE TREES IN POTS.

The present may also be a favourable opportunity to have the trees thoroughly cleaned, and if they are much infested with scale or mealy-bug it must be done in no half-hearted manner. Brown scale is not easily killed, and bug is quite as obstinate. The best way is to start on a tree, and thoroughly wash every leaf and branch with strong soft-soapy water; every tree should be treated in like manner; the woodwork should be washed, with the glass; and the walls must be washed with hot lime-water, adding half-a-pound of flowers of sulphur to each pailful. The trees must be narrowly watched afterwards, and on the first appearance of any of their insect enemies, these must be destroyed at once. Young trees may now be propagated by grafting, if any forcing-house is available. The Lemon stock is better than the Orange. Instruction as to how the operation should be performed have been given in a previous number. The ripening fruits must still be treated to a temperature of 60° to 65°. *J. Douglas.*

### MELONS.

Having already offered a few general observations upon the conditions which are essential to success in the early forcing of Melons, I will now proceed with the practical details of seed sowing and other operations more intimately affecting a successful start. Assuming in the first place that there is a steady bottom-heat provided either by means of hot-water pipes or fermenting materials, one or two early varieties only should be sown for the first crop except in cases where special fruits are required for exhibition. It only requires a little management to secure a nice succession of fruits from even one variety, but this matter will be best treated upon in a later chapter. If the seeds employed for early sowing are not home-saved it will be advisable to examine their quality and to select only plump seeds—such, for example, as are large in their respective kinds and firm to the feel. It may also be stated that "unwashed" seeds, which are the best, are easily recognised from their oily feel and transparent appearance. Procure a suitable number of clean pots, from 3 to 4 inches in diameter, drain each pot by placing a piece of fibrous turf over the drainage-hole, and fill it about two parts full with rich fibrous loam only, into which the young roots when formed will permeate and form a network round the exterior of the ball which will admit of its being transplanted without the plant sustaining a check. Two or three seeds of varieties that are not scarce may be put into each pot, and covered thinly with the finest part of the compost, being pressed moderately firm to give the seeds a grip in the soil, which should be used sufficiently damp to require no watering until they germinate. The pots should then be plunged into a brisk bottom-heat of 85°, and if mice are troublesome the seeds should be protected either by covering the pots with two or three loose squares of glass, or, what is better, by putting an inverted pot of the same size over each pot containing the seeds until danger is past. When the seeds germinate only one plant should be left in each pot, and this should be earthed up, when it attains sufficient strength, with soil of the same quality as that used at the time of sowing, by filling up the space in the pots left for the purpose. Anything like violent irregular heat, or obstruction of light, has a tendency to induce enfeebled growth, and a gentle circulation of air is essential to the well-being of the young plants. *W. Hinds, Canford.*

### PEACHES AND NECTARINES.

The severe weather we have had during the past fortnight has not been at all favourable for Peaches in bloom in the early house. The night temperature given in last Calendar will be quite high enough for the present; on bright sunny days it may be allowed to run up to 70° or 75°, with a steady circulation of air. Discontinue syringing except stems, pathways, and borders, until they are fairly set. Fertilise them every day with a camel-hair pencil, or a hare's or rabbit's tail, which I prefer. I have for some years made a practice of thinning the blooms, by pulling off all on the under side of the shoots, thinning double and treble blooms, in all cases leaving the strongest and best placed. This may appear doubtful practice, but I have always found good results from it, in their setting and swelling off better than when they are thinned after the fruit is set. If the houses can be kept clear of Strawberries or other plants subject to greenfly, so much the better; if not, special care must be taken to keep them clean by fumigating before the trees come in bloom, or by moving the plants to other houses for fumigating, as the strong tobacco-smoke will injure the tender bloom of the Peach. Give the trees in the second house the same treatment (as regards syringing, &c.) as given to the first previous to their coming into bloom. The same temperature as given at closing will be ample for the present, unless we get a favourable change in the weather, when it may be raised 4° or 5°. Get on with the pruning and training, &c., in later houses. Any that can be thrown open and exposed to the frosty weather and syringed all over early in the morning and evening, so that the trees are coated with ice, will be cleared of everything in the shape of insect life. This is an old but good preventive against brown-scale, one of the Peach tree's greatest pests. Any trees so treated I do not dress, and, as a rule, they keep cleaner through the season than those that are dressed with Gishurst Compound or any of the other numerous insecticides. *J. Wallis, Keele Hall Gardens.*

### CUCUMBERS.

The opening words of my first calendar for the year on Cucumbers have been strangely fulfilled during the past week, although the difficulties then referred to were not exactly in substance what has taken place. The greatest obstacle in the way of Cucumber management at present is the intense severity of the weather, which necessitates hard firing, unless where there is an abundance of heating surface, in which case the required temperature can be kept up without creating a dry, unhealthy atmosphere. Where the same heating apparatus warms a large number of houses upon different levels it is not always practicable to command the highest temperature where it is most required without injuriously affecting other departments, and also wasting fuel. In such cases it is always better to assist in keeping up a proper temperature by external coverings which prevent the escape of heat by radiation, and is a gain of at least five degrees. A mean of 60° is a safe figure for Cucumbers in hard weather; when a change takes place, however, the night temperature should be gradually raised to 70°, and with a circulation of fresh air and regular daily syringings, the condition of the plants will soon improve. The treatment recommended for young Melon plants being exactly what is required for Cucumbers that are being raised from seed, it is only necessary to add that where it is intended to grow the latter chiefly by the aid of fermenting materials a good stock of warm dung and leaves should always be kept in readiness to meet any emergency that may arise from change of weather or other circumstances. *W. Hinds.*

*SATURDAY, JANUARY* 22, 1881.

JUST as we were congratulating ourselves that on the whole the winter of 1880-81 was an improvement upon its predecessors comes the most terrible storm which has occurred—at least over an equal extent of country—within the knowledge of this generation. Such a storm of wind and snow as assailed us on Tuesday last gives us an idea of what the *tourmentes* must be, and when we hear of a train from London to Oxford—a distance of less than 60 miles—starting on the Tuesday at two in the afternoon and not reaching its destination till six on the following evening, and of other mishaps even worse, some idea may be formed of the delays, inconveniences, and in too many instances miseries, that have resulted from so unwonted a visitation. Leaving to the daily and weekly journals the task of chronicling these disasters, we may consider how it may affect us in particular.

Like the rest of the nation, we shall suffer from difficulties of transit, water-famine, and other minor miseries, but we have our special trials in stoppage of outdoor work, in an extended coal bill and ceaseless toil and anxiety as to our pipes and boilers, and as to the welfare of the inhabitants of our stoves.

Still the British gardener under fairly propitious circumstances is quite able to cope with such difficulties as these, and in most instances the emergency means simply a good deal more labour and anxiety, and a considerably greater expenditure of money. Out-of-doors it is questionable whether the disastrous effects of the frost and the wind will equal those of the preceding winter. The attack has come when plants in the main are better prepared for it than they would be later on. With some exceptions they were comparatively at rest. We are obliged to speak of exceptions, as the lists given in our columns of plants in flower in the open air on New Year's Day were unusually full, and we have before us leaves of the common Honeysuckle an inch or more in length, which a day or two since were mantling a hedgerow in Hertfordsdire with a pleasant flush of green. Still, allowing for these exceptions, the great mass of outdoor plants were what we call at rest—not really so, but at any rate relatively so, and in a much better condition to withstand frost than if they had been in a more active condition. The amount of injury will doubtless be less than that from our treacherous spring frosts, which nip the budding shoot just as its activity is becoming greatest.

When frost attacks plants to such an extent that ice is formed in their tissues, it has been observed that the ice does not occur within the bags or cells of which the plant is made up, but outside or between them. The reason of this is probably because the contents of the cell are thicker and denser, and do not freeze so readily as do the thinner more watery juices in the spaces between the cells. In this manner the essential part of the cell—so far as its life actions are concerned—the thick protoplasm, is less liable to injury. Moreover, as a consequence of the low temperature, the watery part of the cell-contents exudes from the interior through the cell-walls and there freezes. The expansion which takes place when water freezes, therefore, does not, at least in slight cases, take place within the cell, where it would do mischief by bursting the cell walls, but outside them, where there is more room to expand and less risk of tearing the tissues. A housekeeper could bear the presence of water outside her basins and jugs, even if they were plunged in water, with much greater equanimity than if the freezing fluid were within them. When the frost is more severe the tissues do become torn, cracks and fissures occur, the protoplasm is killed, branches fall, leaves wither or rot, and death ensues. But where the injury is less, and especially where the thick protoplasm is uninjured, when the thaw comes the ice outside the cells becomes melted, and the water, by the power of diffusion, passes once more through the cell wall into its cavity, there to mix again with the more dense protoplasm. It is clear, then, that the danger to plants from frost is proportionate to the water they contain. If they are in an unripe, sappy condition the danger is far greater than if they are comparatively dry and at rest. Tubers and seeds, for instance, are specially adapted to resist cold; and how well they do so was shown in the case of Wheat which germinated at home after having remained throughout the winter in the Arctic regions. In the present case, too, the presence of a coating of snow, acting as a nonductor, may do much to mitigate the severity of the effects. In due course we shall hear of the effects of this last onslaught. As yet it is too early to make any satisfactory estimate.

—— PINUS GRENVILLEÆ. — It is not without hesitation that we refer the splendid cone furnished us by Messrs. SANDER, of St. Albans, to the Pinus Grenvilleæ of GORDON.* The specimen in question was found on the sides of the volcanic mountain of Colima by M. ROEZL, and although the species would probably be too tender for outdoor culture in most parts of England, it might succeed in the Channel Islands and more especially in some of our Australian and South African colonies, or in some of the hilly districts of India. HARTWEG, who was the original discoverer of the species on the Cerro de San Juan near Tepic, states that it attains there a height of 60 to 80 feet. The leaves are in fives, 12 to 14 inches long, with resin canals in the tissue of the leaf midway between the epidermis and the well marked bundle-sheath; and the general appearance of the pendulous solitary cones, which measure 15 inches in length, is given in the illustration (fig. 22), drawn by Mr. WORTHINGTON SMITH to a reduced scale, so that a detailed description is not requisite—the less so as the tree is described by GORDON, and by other authors who adopt his descriptions. By PARLATORE and others this form (as well as many others) is considered as a variety of P. Montezumæ, and from the evidence at command in the Museum at Kew, and at the British Museum, we deem it most probable that this view is the correct one, and that P. Grenvilleæ is merely an extreme form of the species last named. Nevertheless, on account of its striking features it may be well in gardens to treat it as a separate species under GORDON's original name.

—— THE FROST.—"It's of no use to lock the stable door after the horse is stolen" is generally regarded as a well-worn adage. But old truths, especially when conveyed in metaphor, are too often just those most worthy of repetition, for the very same circumstances that existed hundreds of years since might perhaps be found now, proving that a truth was always exact and always worth quoting. Jack Frost is the thief against whose depredations it is desirable to warn unprepared readers. He is a burglar of the boldest and most successful type; even locked and bolted doors are by him often defied; and when he does get in he invariably leaves behind him very tangible proofs of his visit. It is not in his case that the actual locking or bolting of a door will suffice, for the proverb must not be read too literally. It may even be that the mere having the door shut is more important than that it should be locked; but what is most important, and what is enforced, is rather the moral that the visits of the thief should always be provided against. Those who have tender plants in greenhouses are well advised to give Jack literally a warm reception. Unlike most boys he has a great horror of hot water, and delights to dabble in cold, and if not cold enough for his taste he soon makes it cold to his liking, and far too cold for all others. Jack has also a horror of fire, and will not come near it. Fire, indeed, is the best policeman, and in this case is an infallible one. We hope all our readers have been prepared for Jack's late visit—one quite unexpected, and yet, having regard to the season and long nights, altogether probable.

—— ONIONS. — "We generally sow 60 lb. of Onion seed to the acre for picklers," said a grower, the other day; "but this year we shall have to sow only 50 lb. Can't afford more, the seed is too dear." It is dear, and if the same grower can sell all the seed he has saved for own sowing at 8*s.* per pound, it follows that in the article of seed alone he must submit practically to an outlay of £20. When to this amount is also added as much for manure, soot, and labour, it will be found that, added several pounds more for rent and rates, &c., it needs considerable courage to go in for many acres of picklers. If the seed should be only of moderate growing quality, as is not improbable after such a bad seed season, then the proportion will be reduced one-third from the customary quantity, and a thin plant will follow. Then the hope of the grower lies in a hot dry summer to produce small hard bulbs. Cleaning a thin crop is, of course, more easy and less expensive; but the labour for this purpose, especially during a moist spring, becomes a formidable item; it can only be done by expert hands, using the tiny hand-hoe so well known in the metropolitan market gardens. For the production of a crop of good market bulbs, about 8 lb. per acre is sown; but the seed must be of good quality. As large growers usually save their own seed they manage to ensure that desideratum. No doubt a big lot of bulbs to produce seed this year will be planted, for stocks will be largely cleared out, and with them, no doubt, a good deal of dubious quality, if of respectable appearance. In such case there must be a large call for Onion seed next winter, and no doubt a ready sale will result: but this is not all; it is possible that some attempts may be made to pass off seed of an inferior variety for one of better repute. Last season we heard of more than one case where White Lisbon Onion seed was supplied in place of White Spanish—the price of White Lisbon, which does not keep, being last year about 9*d.* per pound, while the White Spanish was then worth 4*s.* 6*d.* wholesale. To many market growers present prices, when allied to the largely advanced cost of Peas, come with severe pressure, and less breadths than usual must be sown. We want a good seed season to put things square again.

—— SOUTHERN AURICULA SHOW.—The schedules of the National Auricula Society, Southern section, recently issued, are laid much on the old lines. The classes for fifty, twelve, six, four, and two remain as before, the premier prize for the best twelve being understood to be the blue ribbon of the day. For single specimens there are no less than seven prizes, in each of the several types of show Auriculas, and six prizes in the two types (now separated) of golden and white-centred Alpine Auriculas, as well as in the Polyanthus class. Extra prizes are also offered for Fancy Auriculas, a term which is extended to include the very pretty and novel laced varieties, and also those with double flowers. The class for twelve hardy Primulas, not being Auriculas, Polyanthuses, or common double and single Primroses—which is the meaning to be attached to the expression "hardy Primulas other than those admitted to the preceding classes"—will, we hope, bring out a better competition than last year, which would add very much to the interest of the show, which is to take place at South Kensington on Tuesday, April 19. Schedules may be had of the honorary secretaries, Mr. DODWELL and Mr. DOUGLAS.

—— "SOW THICK!"—This is the necessary advice that the wholesale seedsmen request the trade to give to their customers. The harvest of certain articles was a small one in 1880, and with small crops will often come a want of germinating power in the seeds, which is invariably an outcome of the cause, or causes, which led to the scarcity. Beets, Carrots, Endives, Lettuces, Onions, and Radishes, need to be sown thickly; and the patience of the gardener must be exercised while he waits for a fair growth. Seeds that are harvested through bad weather germinate slowly and irregularly, and more than ordinary care and patience is requisite. The wholesale seedsmen carefully test the percentage of growth of all articles that come into their warehouses before being sent to their customers, and a second trial is often given. It

* *Pinus Grenvilleæ*, Gordon, *Journ. Hort. Soc. Lond.* ii. (1847), p. 77; *Pinetum*, ed. 2, p. 323; Carrière, *Traite Général*, ed. 2 (1867), p. 428; *Pinus Montezumæ* β, *macrophylla*, Parlatore, in DC. *Prod.* xvi., sectio post (1868), p. 399.

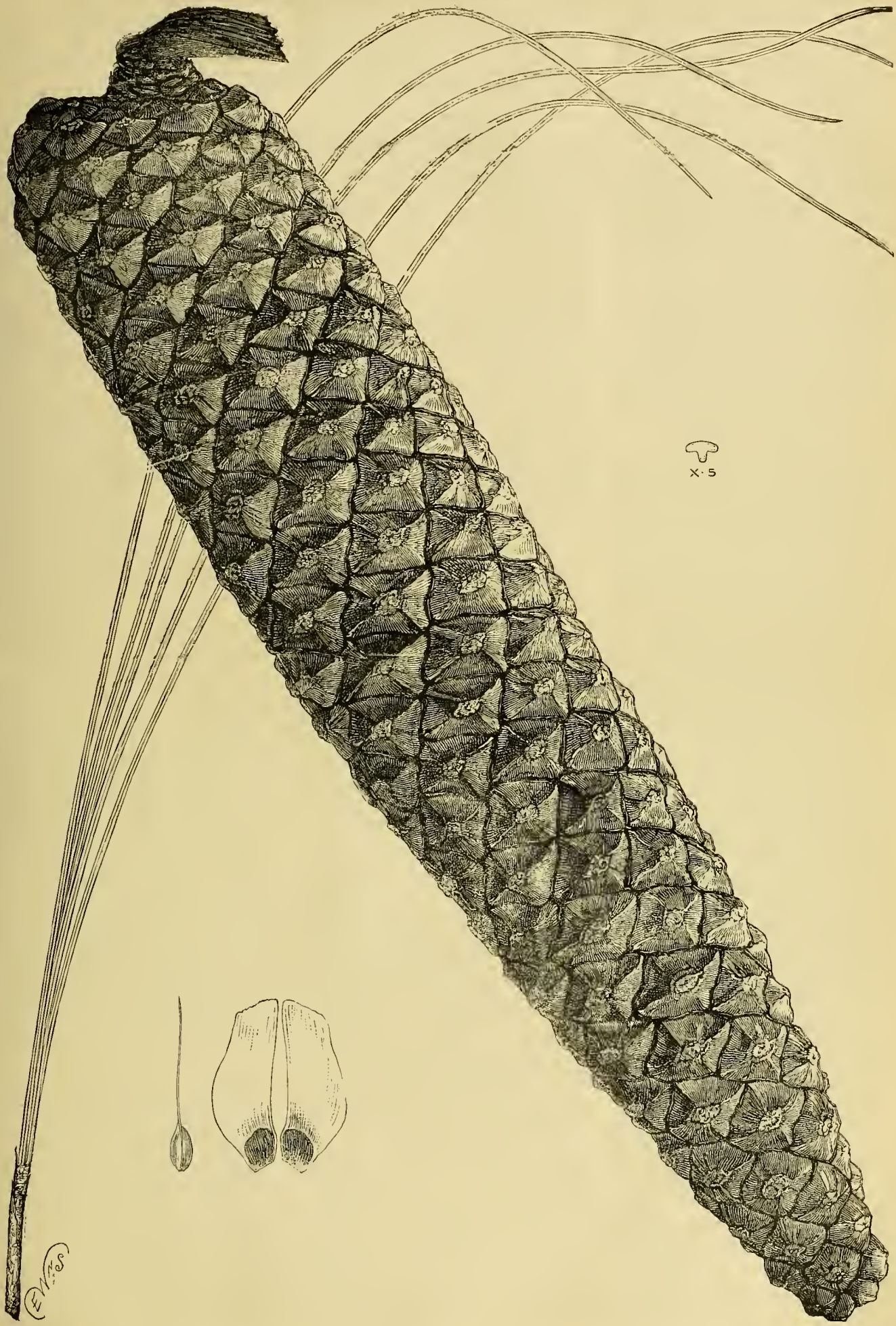


FIG. 22.—PINUS GRENVILLEÆ. CONE REDUCED ONE-SEVENTH; LEAVES AND SEEDS NAT. SIZE. (SEE P. 112.)

is the appearance of the samples, and the growths below the average, that have called forth the advice given above. Let us hope that the series of bad harvests came to an end with 1880, and that the present year will be more favourable than that just closed. If this be so, the grower, dealer, and consumer will have much reason to rejoice in concert.

—— EAST ANGLIAN ROSE SOCIETY.—We are informed that at a meeting of gentlemen interested in the culture of the Rose, held at Ipswich last week, it was resolved :—"That a Society be formed of Rose growers (amateur and professional) in the counties of Norfolk, Suffolk, and Essex, to be called the East Anglian Rose Society." "That the object of this Society be to improve and encourage the culture and love of the Rose in the three counties named." "That a meeting be held each year in some principal town in one of the above-named counties, when prizes will be contended for by members ; also an all England open class at each show." "That the subscription for honorary exhibiting members be 1 guinea ; for exhibiting members, 10*s.* 6*d.* ; for non-exhibitors, 5*s.* Tickets of admission will be given in proportion to the subscription." "That the Rev. PAGE ROBERTS, Scole Rectory, Diss ; the Rev. HUGH A. BERNERS, Harkstead Rectory, Ipswich ; and Mr. B. R. CANT, Colchester, be appointed hon. secretaries *pro tem.*" It is proposed that the first show be held in connection with the summer exhibition of the Ipswich and East of England Horticultural Society.

—— SCOTTISH SEED AND NURSERY TRADE ASSOCIATION.—The annual meeting of this Association took place on January 12, in the Windsor Hotel, Edinburgh—Mr. DOWNIE, President, in the chair. From the annual report, which was read by Mr. DAVID HUNTER, Secretary, it appeared that the membership numbered forty-two, while there was a balance of £57 14*s.* to the credit of the Association. At the last yearly meeting the committee had been empowered to offer a prize of £5 for the best essay on the means of discovering the various forms of adulteration and admixture in Clover seeds. The prize, which was to be competed for by seedsmen and nurserymen's assistants, had been offered, but no essay had been sent in for competition. An association similar to this had now been established in London, and communications had been addressed to it with a view to co-operation in carrying out the objects of the Association. No case had during the past year been submitted to the Association for arbitration, but the usefulness of the Association had been illustrated in cases of insolvency. In moving the adoption of the report Mr. SYME referred to the ways in which the usefulness of the Association might be increased in connection with cases of insolvency, and this subject, as also that of the regulation of the system of credit to customers, was discussed in the conversation which ensued. Mr. R. T. MACKINTOSH was elected President for the ensuing year, and Mr. JAMES HUNTER, Glasgow, Vice-President ; Mr. DAVID HUNTER being re-appointed Secretary and Treasurer. A new set of rules was submitted to the meeting, and approved. The members and a number of friends afterwards dined together, under the presidency of Mr. R. T. MACKINTOSH, Mr. JAMES HUNTER officiating as croupier.

—— THE TURNIP DISEASE IN SCOTLAND.—At the annual dinner of the Scottish Seed and Nursery Trade Association, held in Edinburgh on January 12, Mr. R. T. MACKINTOSH, who presided, referred to the disease which was threatening the Turnip, and which, he said, was likely to prove a severer scourge than the Potato disease. He had taken the trouble to make experiments, and to inquire into the cause of that disease, and had proved to his own satisfaction that it was not the seed that was to blame, but the same cause that had affected the Potato thirty years ago. It was not the seed at all, but some fungus or parasite that had affected the bulb. [See *Gardeners' Chronicle*, 1880, vol. xiv., p. 393.] At the present moment the chemists of Scotland were busy analysing the diseased bulbs, and this was the conclusion to which they had come. He thought this was a matter which should be taken up by the Association, as it was of the very highest importance. They would find that this Turnip disease which was now threatening the country would be quite as serious as the Potato disease had been. Several Turnips, in various stages of the disease referred to, were passed round the table for the inspection of the members. Mr. ROUGHEAD suggested that something should be done by the Highland and Agricultural Society in the way of introducing new seeds and plants, and, while disagreeing to some extent with the Chairman's remarks in reference to the fungus in Turnip disease, thought the Highland Society might direct their attention to discovering what the nature of that disease really was.

—— TINNÆA ÆTHIOPICA. — In the T-range at Kew this Central African labiate is now in flower. Seeds from which the parents of the Kew plants originated were sent to this country in 1865 by the exploring party of the ill-fated lady (Mdlle. TINNE) in whose honour the genus is named. The shortly-stalked maroon-purple blossoms exhale a delightful odour of Violets. The habit of the plant is good, the branches bear stopping well, and are clothed with small ovate or acute quite entire leaves.

—— INFLUENCE OF THE INTENSITY OF LIGHT ON THE DECOMPOSITION OF CARBONIC ACID IN PLANTS.—The last number of the *Annales des Sciences Naturelles* to hand contains a translation of an article on this subject, which originally appeared in a Russian publication. We extract the summary : —1. For a whole series of plants there is a maximum intensity of light favourable to the decomposition of carbonic acid ; and if this maximum is exceeded the plant never decomposes more carbonic acid, though in some cases the energy of decomposition is diminished under an excess of light. 2. A jet of gas equal to fifty candles is able, if the dark rays be carefully absorbed, to cause an extraordinary decomposition of carbonic acid, the quantity of oxygen liberated being in relation to that obtained under the influence of the sun as three to one ; this indicates the existence of a favourable maximum intensity of light. 3. The existence of a maximum is probably intimately connected with the changes of position and size of the grains of chlorophyll. 4. This maximum is of the utmost importance in studying the influence of the coloured rays on the decomposition of carbonic acid, and it also partly explains the contradictory opinions entertained by different writers.

—— ASTELIA CUNNINGHAMI. — Although, as is stated in the *Botanical Magazine*, this sedge-like plant is not one boasting of brilliance of flower, it yet forms a conspicuous and beautiful object on account of the long bright silvery hairs with which its foliage, as well as its inflorescence, is clothed. In its native country, New Zealand, this species is usually found forming enormous masses on the branches of gigantic forest trees. As a cool conservatory plant of the easiest cultivation it is worth growing for the beauty of its foliage. It is now to be seen in flower in the Winter Garden at Kew.

—— PALMS FROM SEED.—While some growers of Palms in this country prefer to import young plants from the seed-beds in order to save any risk of failure on the part of the seeds, others prefer to import seeds and sow for themselves, finding them to germinate well on the whole. The varieties raised from seed in this country are mainly Cocos Weddelliana, C. flexuosa, C. reclinata, C. senegalensis, Arenga Wightii, Areca Baueri, Latania borbonica, Chamærops humilis, Corypha australis, Seaforthia elegans, Geonoma gracilis, and Thrinax argentea. At the Melbourne nursery of the General Horticultural Company, Anerley, Mr. F. BAUSE is very successful in raising Palms from imported seeds, sowing them in moderately strong soil, in pans or square boxes, and covering the seeds thinly with soil. They require a warm position to germinate well—if possible a good brisk bottom heat, the soil to be constantly kept in a moist state. Some of the varieties germinate in six weeks; others are much longer in becoming active ; but most kinds should be up in three months. As soon as large enough they need to be potted singly into thumb-pots, and as soon as one good leaf is developed the pots should be plunged in a little bottom-heat, and the young plants grown on in a warm moist atmosphere, and shifts into larger pots given as required. When repotted, a moderately light sandy compost is required, and the pots surfaced with sand only. When larger, a light soil, such as leaf-mould, peat, and loam, will do, and attention must be paid to watering. The young plants should never suffer for want of it, at the same time it is harmful to give them too much at one time. During the summer time the plants should be grown in a strong heat, with a free circulation of air ; and attention paid to watering and syringing overhead, which should be done twice a day in the summer months. The plants need to be kept perfectly clean, and be shaded during the hottest part of the year, but placed close to the glass, so that all the light possible may fall upon them. In this way large numbers of plants are raised from seed and grown on into good size within a year or fifteen months.

—— SCIADOCALYX LUCIANA. — This very desirable Gesnerad is now in bloom in the T-range at Kew. It is a cross obtained between Tydæa pardina and Sciadocalyx digitaliflora by LUCIEN LINDEN, after whom it was named by ANDRÉ, who figured and described it in the *Illustration Horticole*. It is an erect growing herb, with stem, leaf-stalks, &c., clothed with spreading red hairs. The corolla-tube is covered externally with bright crimson-scarlet hairs, the rosy-purple and whitish limb being regularly spotted with deep claret-coloured dots. S. Warscewiczii differs from S. Luciana in its corolla-lobes being bright yellow dotted with red or brown. It was distributed throughout Europe from the Botanic Gardens at Zurich, to which place it was sent from the mountains of Santa Marta, in New Grenada, by the collector whose name it bears.

—— THE CONSUMPTION OF CAOUTCHOUC, OR INDIARUBBER.—From the report of Messrs. HECHT, LEVIS & KAHN, on the trade in indiarubber during the year just passed, we gather some idea of the importance of this commodity from a commercial point of view. It seems that larger supplies of most kinds of rubber came into the markets than in the previous year, and there was a largely increased consumption, especially in the United States of America. High prices ruled throughout the year, fine Para realising as high a price in April last as 3*s.* 9*d.* per pound. The total exports from Para to all parts are estimated at 8500 tons, being an increase of 660 tons against 1879. The imports into London and Liverpool were 3768 tons against 4651 tons in 1879, showing a falling off of 883 tons. The United States have therefore absorbed 1400 tons more than in the past year.

—— DECIDUOUS TREES. — One of the most curious things to be seen amongst deciduous trees during the leafless months is the appearance here and there of Turkey Oaks, Hornbeam, and certain Beeches upon which some of the foliage hangs with singular tenacity—dead, brown, and useless, to all appearance, and yet adhering to the trees as though serving some useful purpose. A very interesting subject for the attention of the plant physiologist does this peculiarity present, and not least is it a feature worthy the attention of planters who may desire to retain in landscapes or wooded scenery some elements of colour that offer under the wintry skies a strong and not unpleasing contrast to the heavy greens of Scotch and other Firs. If we note branches broken perhaps from off our truly deciduous Oaks in the leafy months, we find that although leaves and wood may die, the leaves adhere even in death with singular force. At the first glance it might appear that on the Turkey Oaks a similar cause was operating ; this, however, is not so, as the wood is lively enough. What, however, is noticeable is, that whilst the leaves are shed cleanly by the robust yearling wood, it is only the weakly shoots from the older wood that retain the ripened leafage.

—— ROSES.—Our rosarians have no doubt smiled on reading the wail raised by the art poet, Mr. WILLIAM MORRIS, over the decadence of the Rose. A gentleman who sees art only in the works of past generations, and is in sad trouble if any of the productions of his old masters are in danger of coming to grief, can hardly be expected to have much sympathy with the doings of florists who take up the flowers of past ages, simple and pretty withal, and in the progress of time, and by the subtle forces of hybridisation, convert them into the most gorgeous, the most beautiful of all flowers, and make them regal and queenly. Because this has been done, the Dog-rose, the Sweet Brier, the Persian Yellow, and the once-famous loose-petalled Cabbage Rose, once gathered fickle and fragile, are perchance disappearing. Mr. MORRIS warns us that our descendants will reproach us for it. If we may judge of the sentiments and temper of our descendants by our own,

we may anticipate—if anything so injudicious as anticipating the opinions of unborn generations can be imagined—that they will rather rejoice in the bounteous wealth of glorious Roses handed down to them—flowers of all shades and all hues, rich in perfume, glorious in their abundance, and full of endurance. Rather will they not blame us for not progressing fast enough—for continuing to use rule-of-thumb methods instead of availing ourselves of the teachings of science and of art? So far, however, from anticipating the reproaches of our long-removed children's children, may we not rather dread that at some of our great Rose gatherings the shadows of our forefathers may, Banquo-like, come from their graves to gaze upon the great floral banquet, and there give utterance to their ghostly laments that their days were not blessed with such floral beauties, but that they had nothing less meagre to banquet upon than the Rose of Dog and Sweet Brier, and the Cabbage. The one incident seems quite as probable as the other; but then are we not now all going florally, æsthetically, gardenesquely art mad?

—— CEYLON PRODUCTS.—Reports from Ceylon state that the export of copperah (the dried kernel of the Cocoa-nut) to Marseilles has received a great stimulus of late. In consequence of the very generally extended adoption of mineral oils for illuminating purposes, the demand for cocoa-nut oil, and the prices ruling in the European markets, have been of late years very considerably reduced; but it has now become largely used in the manufacture of soaps, especially on the Continent, and for this purpose the nut in its dried state is more suitable than oil. This demand is therefore likely to again resuscitate the trade, and the expense of expressing and preparing the oil will be saved to the colonists. With reference to Tea cultivation, it is stated to be making marked progress, one planter alone having gathered 40,000 lb. during the year off 120 acres of land, the whole of the plants being under five years old, and grown at an elevation of over 5000 feet.

—— RAPHIOLEPIS SALICIFOLIA.—In the conservatory as well as in the winter garden at Kew are bushes of this pretty evergreen shrub, with its erect, lax-flowered panicles of white blossoms. It is a plant of the most modest requirements as regards culture, and, as it blooms freely at a dull season of the year, it deserves to be more generally known.

—— FOREST PRODUCE OF KASTAMUNI, TURKEY.—In an official report on the trade and commerce of Kastamuni, in Turkey, it is stated that the district is one of the richest in extensive and excellent forests. The principal forests are on the mountains round Sinope and all along the northern range, also round Duztche Boli and on the slopes of the Ulgaz range. The best forests generally occur on the northern slopes of the mountains, where the damp sea breezes and protection from the heat of the sun in summer cause them to thrive, and make them less liable to conflagration. On the higher slopes Pitch Pine and Firs grow, while on the lower ground Beech, Oak, Chestnut, Plane, and Hazel, besides other trees, grow in profusion. In the more cultivated portions Walnut trees are very common, and grow to a large size. The loupes, or Walnut burrs, are very valuable, and are sought by individuals who gain their livelihood by this means. Boxwood is found about Barton and Heræclea, and is exported. There are no forest regulations; wood-cutting is carried on everywhere, and much damage is done by the promiscuous felling and by the extensive fires, which burn sometimes for weeks together, destroying magnificent forests. Nominally there is a tax on wood-cutting, but it is rarely imposed, and the forests only bring in about £7000 annually to the Government. Recently an inspector has been appointed for the forests of the vilayet, with sub-inspectors at Boli, Dneboli, and Sinope. It is hoped by this means greatly to increase the revenues derived from this source.

—— THE MAHWA TREE.—The Mahwa tree (Bassia latifolia) is such an important Indian tree that it is satisfactory to find there is no chance of it becoming scarce. We gather this information from an official letter from the Chief Commissioner of the Central Provinces to the Government of India, in which he says that, as a general rule, the Mahwa tree is not destroyed by the people. It is too valuable for its produce to be cut down and sold as timber; ordinarily the trees cut down are those that have ceased to bear fruit. The diminution in Mahwa trees over considerable areas results from the enormous extension of cultivation there has been during the past fifteen or twenty years. They have disappeared in common with other forest trees. Of the Mahwa trees, however, many are left, and these are seen now in the midst of cultivation. Being valuable, they have been spared when other trees have been cut down. But no seedlings grow up in the cultivation, and there are therefore no young trees. With the view of ensuring the preservation of the tree in village areas, the Mahwa has been included amongst trees which proprietors prohibit from being cut down without proper authority. It will be remembered that the fleshy flowers (not fruit) of this species constitute an important article of food.

—— ORCHIDS IN FLOWER.—Now that the scene is so severe and wintry out-of-doors, the ground covered with snow and the thermometer lately registering 20° to 25° of frost, it is quite charming to look into the Orchid-houses—they are so gay, and the contrast so great. Annexed is a list of those in flower on January 19 in Mr. WILLIAM BULL'S nursery:—

Ada aurantiaca
Angræcum sesquipedale
Ansellia africana
Calanthe Masuca
,, Veitchii
Cattleya Trianæ
,, ,, splendens
,, ,, Vesta
Cœlogyne cristata
Cypripedium barbatum
,, ,, superbum
,, Boxallii
,, Bullerianum
,, Dominii
,, Harrisianum
,, hirsutissimum
,, insigne Maulei
,, Lowii
,, purpuratum (the true species from Hong Kong)
,, Sedeni
,, Stonei
,, venustum pardinum
,, villosum
Dendrobium crassinode
,, fimbriatum oculatum
,, heterocarpum
,, luteolum
,, nobile
,, speciosum
,, Wardianum
Lælia albida
,, ,, bella
,, ,, gemma (very fine)
,, anceps
Lycaste lanipes
,, Skinneri
Masdevallia abbreviata
,, ignea (upwards of 150 flowers and buds)
,, Lindeni
,, melanopus
,, polysticta
,, ,, brevior
,, tovarensis
,, xanthodactylon
Maxillaria grandiflora
Mesospinidium vulcanicum
Odontoglossum baphicanthum
,, bictoniense
,, blandum
,, cariniferum
,, Chestertoni
,, cirrhosum
,, ,, Klabochorum
,, cordatum
,, crispum (Alexandræ), upwards of 100 spikes in flower and bud
,, crystallinum
,, gloriosum
,, Hallii leucoglossum
,, maculatum
,, odoratum
,, ,, pictum
,, pardinum
,, phalænopsis
,, pulchellum
,, ,, majus
,, Roezlii
,, ,, album
,, Rossii majus
,, tripudians
,, ,, xanthoglossum
,, Uroskinneri
Oncidium Cavendishianum
,, cheirophorum
,, cucullatum
,, fuscatum
,, incurvum
,, Kramerianum
,, ornithorrhynchum album
,, reflexum
,, roseum
,, serratum
,, unguiculatum
,, Weltoni
Restrepia antennifera
Saccolabium giganteum
Sophronites grandiflora
Vanda suavis
,, tricolor insignis
Zygopetalum Mackayi majus

—— CEDRUS DEODARA.—The specimens of this handsome Conifer growing in suburban gardens present a very different appearance now to what they did in March last, when the severe winter (or shall we say a succession of severe winters?) had denuded them of their leaves. Healthy specimens of the previous autumn looked as if they would die, and many feared this result would be experienced. Spring and summer have in most cases clothed the plants with a thick foliage of leaves, and the trees appear scarcely to show a single trace of the ordeal through which they passed. In many forecourt gardens the Deodar was planted years ago, when coniferous plants became the fashion. They have been allowed to grow unchecked, darkening the house, and, by reason of the close proximity to the house, becoming huge misshapen trees. The pruner's knife is needed, but should be used by some one with caution and judgment. Some years ago the late Mr. JAMES MACNAB, of Edinburgh, declared it as a remarkable fact that those trees which stood best the severe winter of 1860-61 were those cuttings and seedlings which had been freely pruned at some stage. "The growths of these were numerous and short, and resisted bending with the heavy snow, which was found to be so fatal to those trees where pruning had not been resorted to." The Deodar will stand a great deal of rough treatment from frost and injudicious thinning-out. Trees that years ago were severely injured by the winter of 1860, even to the degree of the loss of main branches, have by careful management regained somewhat of their old proportions, without, however, becoming the shapely specimens they were before old Winter tumbled from his northern abode with such unusual strength, and worked so much and such sad mischief in the realm over which for a brief period he holds such despotic sway. A mild but seasonable winter in 1881 would have been welcomed by all gardeners, as the losses during 1878-79 and 1879-80 were of a character to lead them to long for a time of truce, that the shattered forces may be re-organised for conflicts yet to come.

—— CALCEOLARIA FUCHSIÆFOLIA (DEFLEXA).—Messrs. RODGER M'CLELLAND & Co., of Newry, send us specimens of this remarkable plant, to show its value at this dull season. The yellow flowers are of moderate size, the two lips of nearly equal size, the leaves are like those of a Fuchsia in shape, dark-green above, silvery-white beneath.

—— NATIONAL ROSE SOCIETY.—We understand that at the meeting of the General Committee, held at the Horticultural Club on Tuesday, January 11 (the Rev. J. B. M. CAMM in the chair), the Executive Committee was elected, to whom will be entrusted the drawing up of a catalogue of Roses—to be confined for the present to exhibition Roses, giving their descriptions, raisers' names, dates of introduction, &c.

—— TITHE COMMUTATION—SEPTENNIAL AVERAGES.—As the result of the corn averages for the seven years to Christmas, 1880, published in a recent issue of the *London Gazette*—viz., Wheat, 6*s.* 0½*d.* per imperial bushel; Barley, 4*s.* 8¾*d.* per imperial bushel; and Oats, 3*s.* 2½*d.* per imperial bushel—I beg to state that each £100 of tithe rent-charge will for the year 1881 amount to £107 2*s.* 10½*d.*, or about 2¾ per cent. less than last year. The following shows the worth of £100 tithe rent-charge for the last seven years:—For the year 1875, £112 15*s.* 6¾*d.*; 1876, £110 14*s.* 11*d.*; 1877, £109 16*s.* 11½*d.*; 1878, £112 7*s.* 5¼*d.*; 1879, £111 15*s.* 1½*d.*; 1880, £109 17*s.* 9½*d.*; 1881, £107 2*s.* 10½*d.* The average value of £100 tithe rent-charge for the forty-five years elapsed since the passing of the Tithe Commutation Act is £103 3*s.* 10¾*d.* *Montague Marriott, Editor of "Willich's Tithe Commutation Tables."*

—— CARNATION AND PICOTEE (SOUTHERN) SHOW.—The schedule for this show, which is fixed for Tuesday, July 19, is now printed. There are five or six prizes offered in each of the classes, so that there is room for everybody. The classes are substantially the same as last year, but as an addition we note one for twelve yellow-ground Picotees, six of which are to be dissimilar. This will give an opportunity for the free display of the grand novelties in this way which Mr. TURNER was successful in raising a year or two since, and several of which have won high honours as seedlings. An additional prize is also offered for the collection of twelve plants in pots, which should excite a wider competition. These, with the extra prizes for meritorious seedlings, should prove an attractive programme to growers of these charming and gratefully scented flowers. The show is to be held in the Royal Horticultural Society's garden.

—— THE WEATHER.—General remarks on the weather during the week ending Jan. 17, issued by the Meteorological Office, London:—The weather during this period was rather dull generally, with some snow, hail, or sleet in all parts of the kingdom, but the amounts recorded (except in the extreme North) were not very large. The temperature was greatly below the mean in all districts, the deficit ranging from 11° in "England, S.W.," to 17° in the "Midland Counties" and "Scotland, W." The weather was least cold in "England, S.W.," where the average temperature was 32°, and coldest in the "Midland Counties," where the average for the week was as low as 22°. The lowest reading of the sheltered thermometer was 2° below zero, and occurred at Markree Castle on the 16th, while at Blackpool, Silloth, and Durham zero was reached. In most other places the minima were under 10°, and even at Plymouth a reading as low as 17° was registered. Temperature on the ground and snow was of course much lower, minus 2° being recorded on the grass at Nottingham and on the snow in London. The rainfall was about equal to the mean in "Scotland, E." and "England, N.E.," but below it in all other districts. Bright sunshine was rather deficient, the percentage ranging from 17° in the "Midland Counties" to 38° in "England, S.W." The wind was at first moderate generally from between N.W. and N., but by the 14th an easterly breeze appeared at all excepting the most northern stations. On the 15th, however, the northerly wind again prevailed, but on the 16th calms or light westerly breezes were experienced, and at the close of the period a strong and increasing south-easterly to easterly wind was setting in on the south-western and southern coasts, accompanied by heavy falls of snow.

## THE SEVERE WEATHER.

BUCCLEUCH NURSERIES, HAWICK, N.B. — I registered degrees of frost as under during the last few days:—January 15, 31°; 16, 34°; 17, 36°; 18, 30°. *John Forbes.*

CHISWICK.—In the Royal Horticultural Society's garden, 27° of frost was registered on the 17th inst.—an intensity of cold which had not been experienced there for a lengthened period. *J. B.*

CLAPHAM.—We have had a week of very sharp frost, commencing on January 12 with 20°. On the 13th we had 23°; on the 14th, 27°; on the 15th, 24°; on the 16th, 26°; on the 17th, 28°; and on the 18th, 8°. As I write snow is falling fast and a gale blowing from the south-east. *T. B., Jan.* 18.

GILLINGHAM HALL, NORFOLK.—The weather here has been winter in every respect since Wednesday last. There were 12° of frost that morning; on Thursday morning 15°, and 3 inches of snow; on Friday, 19°, with 2 more inches of snow; Saturday, 22°; Sunday, 21°; and on Monday it fell to 28°. Towards sunset the wind changed to east, and a terrific gale sprang up, which is now ranging with great severity. I use Negretti & Zambra's self-registering thermometer, and I think none are better, having used them many years. The instrument from which the above is recorded is placed in the kitchen garden, facing the north-east, and 4 feet from the ground. *J. Batters, Jan.* 18.

GRIMSTON PARK, TADCASTER.—We are having a spell of very severe weather hereabouts just now. On the evening of Friday last, the 14th inst., a reliable thermometer registered 4°, or 28° of frost. Since then we have had 20° and 18° of frost respectively each night, and now as I write (8 P.M., Monday) the thermometer stands at 8°, or 24° of frost. It will, I fear, very much damage the young growths of Laurels, Laurustinus, and Aucubas that were cut to the ground by the severe frost of December 7, 1879. Most of them have made good growths during the past summer, but were imperfectly ripened. Fortunately, we have a fair covering of snow on the ground, that may protect the stools somewhat. *H. J. Clayton, Jan.* 18.

HARDWICK HOUSE, BURY ST. EDMUNDS.—We have had a very sharp spell of winter, the thermometer ranging from 20° to 30° of frost during the past week. Yesterday the clear frost of several days past gave place to piercing east winds and drifting snow, which lasted throughout the night. The result is a snowstorm nearly 1 foot deep—but drifted and driven into huge masses in various places; so that East Anglia presents the rare appearance—so common in Scotland—of blocked rails and roads. Many of the fields are almost clear, while hedges, lanes, and roads are drifted full. The wind was unusually squally, and it is feared that many shipping disasters must have taken place. The wind was so far favourable to vegetation, inasmuch as it cleared most of the trees and shrubs of snow, and so prevented their limbs being broken; it however was so strong and searching as to entirely clear all the trees of every weak and dead limb or twig—hence, before the snow covered them over, almost the whole surface was covered with a thick layer of dead and weakly branchlets. Here and there, too, strong boughs were torn off Cedars and other trees and dashed to the ground, and one fine Cedar of Lebanon was actually riven into a sheer wreck by the mere force of the wind—a very unusual occurrence in this neighbourhood. The wind has considerably abated to-day. As an illustration of the greater injury inflicted by cold in rapid motion than even colder air at rest, it may be stated that yesterday with its 7° of frost has punished Roses and all other plants more than the 25° of the preceding days. In writing thus I am of course also aware how this gentle motion of the air favours vegetable life, as proved by the immunity of plants from destruction in elevated positions, while the same plants are killed in valleys owing to the greater coldness aggravated by the greater stillness of the air. Still, cold air in rapid motion holds as it were the plants between its teeth until every modicum of heat is driven out of them and they are wrecked and killed by the cold, as I fear a good many were yesterday. *D. T. Fish, Jan.* 19.

HARROW-ON-THE-HILL.—One is almost inclined to think the writer of the remarks under the heading "Looking Ahead" (see p. 50) had actually been permitted to take a peep into the future, the weather of the past week having fully justified the timely warnings there given; and any who may have been allured by the pleasant anticipation of the past into a state of self-complacency that spring had really come, must acknowledge the caution there set forth to be of double importance, more especially if they have prepared themselves for such a sudden outburst of winter that commenced here on the night of the 11th with a heavy fall of snow, after which frost set in in real earnest. On the morning of the 13th 18° was registered, on the 14th there was 17°, and on the morning of the 15th the thermometer fell to 7°, or 25°; on the 16th, 20°, and this morning 19° were registered. It may be interesting to notice the difference in the temperature at this place, situate on the hill, and that taken in a low-lying place about 2 miles distant, where the maximum amount of frost was 30° on the morning of the 15th, and the minimum was 22° on the 14th, thus showing a contrast of 5°. I am informed the thermometer fell to 1° below zero, or 33° of frost, in this neighbourhood at a place about 5 miles from here; this is indeed a rude awakening from all past pleasant foretastes of spring. *E. Morgan, The Butts, Harrow-on-the-Hill, Jan.* 17.

KELSO.—Since sending you the note on the severe weather we experienced here in October and November, we have had an unusual period of frost, surpassing anything that has occurred in this neighbourhood for a great number of years. The following is a report of the frost registered from December 2, 1880, to January 18, 1881:—December 2, 1½°; 3, 4½°; 4, 1°; 14, 4°; 15, 7°; 16, 3°; 17, 18°; 18, 15°; 19, 6°; 20, 9°; 21, 5°; 22, 8°; 23, 1°; 25, 9°; 26, 11°; 27, 8°; 28, 11°; 29, 2°; 30, 1°; 31, 10½°. January 4, 1°; 5, 7°; 6, 4°; 7, 15°; 8, 12°; 9, 18½°; 10, 19°; 11, 11°; 12, 22°; 13, 7°; 14, 20°; 15, 29°; 16, 37°; 17, 45°; 18, 43°. It will be seen by the foregoing that the mercury has been three times below zero. *P. Ireland, The Nurseries, Kelso, N.B., Jan.* 18.

MEADOWBANK NURSERIES, UDDINGSTON.—It may be interesting generally to record the state of the weather for the past few days, owing to its severity. The wave of cold settling amongst us has steadily increased from the time snow fell in the middle and lower wards of Lanarkshire on Wednesday last up to this date. I find the thermometer here, placed 2 feet above the ground, and tested for accuracy at the beginning of winter, recording the following minimum temperatures:—

| | Below the Freezing Point. |
|---|---|
| Wednesday morning .. .. .. | 17 degrees. |
| Thursday " .. .. .. | 23 " |
| Friday " .. .. .. | 27 " |
| Saturday " .. .. .. | 26 " |
| Sunday " .. .. .. | 35½ " |
| Monday " .. .. .. | 33½ " |

*James Anderson, in the "Scotsman."*

TWEED VINEYARD, CLOVENFORDS.—The frost is intense here at present. Yesterday (Sunday) morning the thermometer placed in the open, 4 feet from the earth, stood at zero. This morning it marked 10° below zero, or 42° of frost, on three accurate thermometers—exactly the same temperature as we had on December 4, 1879. I observe in a notice of the temperature of London yesterday it is given as 22° of frost, yet I have a letter from a friend in London, well able to observe the temperature, and his report is that they had 30°. At Bothwell Castle, on the Clyde, they had 31° on Saturday morning. Many of the reports as to the degree of frost in various localities are totally unreliable. The thermometers are hung against the walls, and in sheltered situations, and give no true index of the cold. *W. Thomson, in the "Scotsman."*

WANLIP HALL, LEICESTER.—We have had a very severe spell of frost in this neighbourhood. On January 15 we had 4° below zero, and the next day the thermometer stood at zero. On the 17th 28° of frost was registered, and on the 18th 16°. To-day the wind is blowing from the east bitterly, with 2° of frost. *John Kitley, Jan.* 18.

WYNNSTAY, RHUABON.—I beg to enclose a record of the low temperatures registered here from January 6 to 19 inst. To-night there is every indication of the frost and storm continuing—a rising barometer, 29°.3; a falling thermometer, 18° F.; with a steady 18 miles north-east wind; clouds low and heavy. January 6, 7° of frost; 7, 17°; 8, 17°; 9, 14°; 10, 16°; 11, 7° (½ inch snow fell); 12, 20° (2½ inches snow fell); 13, 17°; 14, 27°; 15, 25° (3 inches snow fell); 16, 35°; 17, 31°; 18, 20°; 19, 11° (2½ inches snow). Eight and a-half inches of snow has fallen during the fourteen days' intense frost, being of a dry powdery consistence; and during the last few days a high wind prevailed, blocking up passages. Ice 7½ inches thick. On the 16th the mercury fell to 3° below zero, a degree of cold which has not been recorded here during fifteen years. Vegetation of all sorts appears miserably pinched; bursting and stoppage of pipes of all sorts is the order of the day. *P. Middleton.*

YORK.—The frost here during the past four or five days has been unusually severe. From midnight on the 13th to midnight on the 17th the mean temperature for the whole period (day and night) did not reach +9° Fahr., and the mercury on the night of the 14th indicated 5½° below zero. The mercury fell on the following night to 1° below zero. Yesterday the mean temperature for twenty-four hours was +7°.

| | Maximum. | Minimum. |
|---|---|---|
| January 13 .. .. .. .. | .... | +10° |
| " 14 .. .. .. .. | +18° | −5½° |
| " 15 .. .. .. .. | +16° | −1° |
| " 16 (bright sunshine) .. | +23° | +3° |
| " 17 (dense fog) .. .. | +12° | +2° |

Four thermometers were used, 50 to 150 yards apart, all at 4 to 5 feet above the ground (three of them Negretti & Zambra's, one a first-class instrument of T. Cooke & Son's). The variation in these at greatest cold was less than 3°. *James Backhouse, West Bank, York, Jan.* 18.

## SALVIA RUTILANS.

ONE of the Salvias which Mr. Cannell has lately shown at South Kensington, and which was only known to him as the "Pine-apple scented"—the leaves having an odour resembling the fragrance of that choice exotic fruit—appears to be the species figured by M. Carrière (*Revue Horticole*, 1873, p. 251, with tab.) under the name of Salvia rutilans. It has been suggested that it might be the Salvia Camertoni, figured by M. Regel in *Gartenflora*, 1855, t. 121 (125 on tab.), which is also a slender-growing, twiggy species, with long scarlet flowers, but on comparison of the two plates with specimens from Swanley it is found to correspond most nearly with the plant figured by Carrière (see fig. 23).

It is a very elegant Salvia, of branched habit, furnished with moderate-sized, oval-lanciform leaves, which are sometimes rounded at the base, and sometimes attenuated, but always attached by a longish petiole. The flowers come on numerous short branchlets, the whorls being few-flowered, the corollas about 1 inch long, with a slender tube, the upper lip slightly longer than the lower, which is bluntly three-lobed; the colour is a bright crimson-scarlet, and from the profusion of the blossoms the plant is of a very ornamental character.

In the species before us we notice one peculiarity which we do not find represented in any of the figures referred to, namely, that the internodes of the shortly-hairy stems are swollen, after the fashion of those of Galeopsis Tetrahit. *T. Moore.*

## Home Correspondence.

**Double Petunias.**—In your last number you figure the double Petunia, and Mr. Douglas speaks somewhat slightingly of the single variety. Of the beauty of the former there can be no doubt, and it has been a matter of surprise to me that it is so little cultivated. At Bangalore we grew them in pots in good soil, exactly such as you describe, and staged them up on to a fan-shaped support, as we used to do with Carnations many years ago. With judicious pinching, liberal feeding, and careful training, they kept in continuous bloom for several months, and so long as they were protected from the wind they seemed to revel in the sun; but to grow them at their best it was the practice to shelter them, where possible, from the effects of the late afternoon sun, which between 3 and 4 P.M. is at the greatest power. As to the single Petunias, they were grown with great success in masses, with a few small thorny branches placed among them to shape the plot, and give them the support they needed. In this way, with a little care and attention, they were prevented from straggling, and with good varieties well grouped a most effective display of good colour was maintained without much trouble or cost, and with this further advantage, that just at or before sundown they give off a delicate perfume, which, after a hot dusty day, called up pleasant memories of the old country. *J. P.*

**Green *v.* Light-coloured Peas and Beans.**—Is not your correspondent on this subject, at p. 86, a little inconsistent?—seeing that first of all he summarily condemns light-coloured Peas and Beans in these words:—"The light-coloured are generally mealy, and wanting in flavour," and immediately he goes on to say that "some of them are of delicious flavour." I would advise him to revise this by striking out the word "generally," and, after that, to further revise the whole paragraph by saying that comparing all wrinkled Peas, green or white, both are "much of a muchness" as regards flavour, and that all the difference there is exists in the imagination only. Moreover, all are green when cooked; as to the tinge being light or dark, a hungry man would be "green" indeed that was inclined to quarrel with the Peas on that score; such, at least, is the opinion of *W. W.*

**Nymphæa odorata.**—Is the common white Water Lily of New England the same as our Nymphæa alba? [No; it is N. odorata]. I heard from an American gentleman (Mr. H. C. Cunningham, Lonsdale, Rhode Island) that in the extreme north of the United States of America a pink variety of it was found occasionally. Amongst the places he named the island pond in the townships of Berry and Hampstead, Rockingham Co., New Hampshire. Be it the same as ours or not, is it not curious that with the immense range of both (or the same) species, its pink variety occurs only near its northern limit in both continents? With us in Sweden it would be very interesting to compare the two varieties. Was the existence of the American one known before? *Jean Van Volxem.* [Professor Asa Gray informs us that Nymphæa odorata occurs not rarely in the North United States, as far south as New Jersey, with pinkish-tinged flowers. Rarely a plant is found with bright pink flowers. "Long ago," continues the Professor, "we had it in the Botanic Garden, Cambridge, for several years. There is a man living on Cape Cod, Massachusetts, who has a fine form of it in a pond on his farm, and he makes a good thing by selling the cut flowers in Boston. He sells roots of it at a good price; but it is said that when his plants flower the pink colour does not show always. I have heard of a few other localities. Your correspondent might apply to a Boston florist, who would know if the thing is in the market." *Asa Gray.*]

FIG. 23.—SALVIA RUTILANS. (SEE P. 116.)

**Weeks' Heating and Ventilation.**—I beg you will allow me a little space to assure Messrs. J. Weeks & Co. that when I take up my pen to make a public statement I am thoroughly and practically acquainted with my subject, and quite "in earnest" in my statements. I therefore confirm all my remarks in my former letter, and would add that my firm (Fletcher, Lowndes & Co., Limited), having for years past constructed and adjusted the apparatus in question, under my personal supervision, I leave the public to judge whether Messrs. Weeks' description, who plead ignorance of its very existence, or mine, is to be relied upon. *F. W. Fletcher*, 13A, *Great George Street, Westminster.*

**Peas in Pots.**—I can affirm to the letter all that Mr. Hinds states (p. 85) respecting the good qualities of William I. for pot culture. In the gardens here it has quite superseded all other varieties for early work, and for the time being is decidedly first favourite. On referring back to last year's diary I find that our first batch was sown on January 14, and the first dish gathered April 8; thus giving a period of twelve weeks from the time of sowing to cooking. To explain away the difference between Mr. Hinds and myself as to the time given for its coming into use, I may as well state that ours are grown in a second early vinery, and are kept as near the glass as possible. *J. H.*

**Hardiness of Agapanthus umbellatus.**—Reading Mr. Hinds' remarks on the hardiness of this useful plant reminded me of some plants I once had under my care, and which were in large tubs. They were usually taken into a large conservatory for the winter, but not getting much bloom from them after they left their winter quarters we decided to keep them cooler. They were left out till November, and then housed in a shed with little light and no heat. In January they were frozen hard, but having had no water while there they did not suffer, and were kept quite dry till March. They produced a splendid lot of bloom through the following season. They were put out in May with a top-dressing of rotten manure, and had an occasional watering with liquid manure, which greatly assisted them. *G. Wythes, Thirlestaine Hall Gardens, Cheltenham.*

**Potatos Turning Black.**—Could any of your readers explain how it is that some sorts of Potatos sent from Scotland to the London market turn black when cooked, while others boil perfectly white? These grown on loamy or sandy soil seem to turn black quickest, those grown on clay soil generally boil white. Has the length of the journey anything to do with it, or is it the chemical composition of the different Potatos? *A.*

**Lonicera fragrantissima.**—Honeysuckles are general favourites; but, with one or two exceptions, the whole of them flower during the summer, and, therefore, to have one to come in at this dead season, as does the one above named, affords a treat in the way of scent, for although the blooms are only small, they exhale a most delicious perfume. Blended, as I have them before me now, with Violets, the two combined perfume the whole room with their sweet odour; besides which, they are most effective together, the pale blue of the one, and the creamy-white of the other, showing up in most pleasing contrast. Being mounted on small twiggy shoots—as the blossoms of the Lonicera are—they are just the thing for working in bouquets, and I should think, when better known, they will be largely grown for the purpose. The principal plant we have is trained up a pier, the two sides of which it covers facing the sun, thus giving it a favourable aspect, where it ripens its wood and flowers profusely. Just now it is crowded with buds in different stages, so that if the weather keeps mild we shall be able to pick from it for a long time to come. Not only is this Honeysuckle valuable outdoors in such positions, but it is equally or even more so for pots, as one or two stood in a greenhouse or conservatory always make the air pleasant with their fragrance, which is of the sweetest and most agreeable kind. When used for this last-named purpose they should be kept under glass in spring till they have completed their growth, and then plunged in some open, sunny spot to get the shoots ripened. These in the young, soft state, taken off with a heel, root freely in heat, and the mature wood put in during the autumn will also strike if placed in sandy soil under a handlight, so as to afford shelter, and keep the bark plump. *J. S.* [This and Lonicera Standishii were figured in our columns, 1878, vol. ix., p. 106. EDS.]

**Eucharis amazonica.**—I was surprised at the remarks of Mr. Ellis, at p. 20. In going round Summer Hill with Mr. Waterworth, the late gardener, in the month of November, 1878, I was struck to see such a fine display of Eucharis; one pot that I took note of had fourteen fine spikes of bloom; there were also several fine pots in different stages of growth. I think if it takes Mr. Ellis from March, 1879, to December, 1880, to bloom them, it would take more plants to keep up a continual supply than is usually found in most places. We never give Eucharis liquid manure until they begin to show their flowering spikes. *J. Fern, Whalley Range, Manchester, Jan.* 11.

**The Christmas Rose.**—Although the soil here is very poor, the Christmas Rose does extremely well. The natural soil is largely impregnated with chalk; in fact, where the vegetation is scanty, it is neither more nor less than chalk. Our herbaceous borders

are formed chiefly of decomposed leaves mixed up with the mother soil; here the Christmas Rose takes its chance amongst other herbaceous plants, and although it does not make luxuriant foliage, it flowers very freely, and the flowers are large and well developed. Each plant was covered with a hand-glass the second week in November, and well ventilated; this not only keeps them free from blemish, caused principally from the rain dashing the soil against their easily-damaged sepals, but elongates the foot-stalk considerably, which enhances the value of the flower for decoration. The day before Christmas I cut a large quantity of flowers, each plant yielding from nine to twelve blossoms pure almost as snow, with foot-stalks from 6 to 9 inches long; these were used chiefly for church decoration, and were very much admired. Although we have several varieties, we find Helleborus niger major by far the finest and best in every respect. *P. Conway, The Gardens, Muntham Court, Worthing, Sussex.*

—— I notice that my remarks relating to Christmas Roses and the common white Lily are called in question by an editorial note, but I think I shall be borne out in the statements I made both as regards plants of them succeeding almost anywhere and everywhere, and as being two of the best and most reliable things in a garden. That the Christmas Rose does not require the mild climate of Cornwall is evidenced by what Mr. Saul says of those he has at Stourton, in Yorkshire, where they grow strong enough to hide a rabbit under the foliage; and as this is so profuse it is not at all surprising to hear of the crop of flowers he gets, for herein lies the secret, and those who would have blooms in quantity must grow the leaves first. This, according to Mr. Colebrooke's account, is where he fails, and it is just likely that the atmosphere of the part of London to which he refers is too impure to keep the leaves clean and healthy, so as to bring about their perfect development, and if this is not done flowers will be looked for in vain. Mr. Colebrooke only mentions plants that were planted in the autumn of 1879 and 1880, and it is very evident, therefore, that if those obtained at the latter date had not fine crowns when he got them they could not by any possibility produce blooms now, as they are always formed during the summer in the same way as they are in most other perennials. There can, I think, be no question but that the best time to divide and plant Christmas Roses is in spring, just as they are beginning to start, for then the wounded parts heal quickly and fresh rootlets are made. In regard to the white Lily hardly a garden used to be without it, and the word "common" as applied to it shows how plentiful it was, but for all that its commonness did not render it the less beautiful, and I am still of opinion that it is in this respect one of the most chaste and elegant plants in existence. *J. S.* [Our editorial query was inserted because we thought from personal experience, as well as hearsay, that our correspondent's remarks, though generally true, were not universally applicable. EDS.]

**The Late Mr. Skirving, of Liverpool, and the Araucaria imbricata.**—About 1834, while in the employment of the late Mr. Skirving, we received some twenty plants of the Araucaria imbricata, a plant which, although introduced from Chili as early as 1796, with the exception of two old stunted plants in tubs grown in the Horticultural Gardens at Chiswick, was entirely unknown to us. The history of the plants mentioned above, as stated to me by Mr. Skirving, was this:—While on his journey in Staffordshire, among other places of call was the fine old Elizabethan residence of Lord Talbot, at Ingestre, and in walking round the gardens with the then gardener, Mr. Taylor, he noticed a few curious looking plants thrown under a hedge, and on inquiring what they were and where they were from, Mr. Taylor told him he did not know anything about them further than that they were raised from seed sent to Lord Talbot, that he had grown them in the greenhouse, and as they had not flowered he had thrown them away. As Mr. Skirving had been reading an account of the Araucaria, and these agreeing with the description, he told Mr. Taylor that he believed they were Araucarias, and that he would take £20 off his account if he would part with them to him. However, the value put upon them by Mr. Skirving was a block in the way, and Taylor remarked that if he had not mentioned the money he might have had them and welcome, but now he must mention the case to Lord Talbot. On the following morning Mr. Skirving had an interview with his lordship—a fine, tall, blunt old aristocrat of the real old English type, and either grand or great-grandfather of the present Lord Shrewsbury, who jocularly but kindly informed Mr. Skirving that, if they were worth £20 to him they would be worth £20 to himself. However, Mr. Skirving got the plants, and on arriving at the nursery they were repotted, the price fixed at £5 each: they met with a ready sale, and the price was raised to £10, the last pair being sold to the celebrated Mrs. Lawrence for £50, and while being packed a clergyman arrived from Ireland and offered £50 for one. I believe four plants were retained by Lord Talbot, and these were planted in the pleasure grounds. If they are still living, and have done well, they must be fine trees, but I have not visited the place for forty years. It would be interesting to know something more than we do about the early history of this fine tree, and any one having old and fine specimens would confer a favour by stating the year in which they were planted, their size, &c. *John Shaw, Bowdon.*

**Plants in Flower on New Year's Day.**—In a cottage garden at Cretingham, belonging to Miss Nancy Grinling, I was agreeably surprised to find Violets that could be gathered by the bunch, Pansies by the score, Stocks in full glory, and in the hedge-rows by the garden an abundance of Primroses on New Year's day. Laurustinus and Jasminum nudiflorum were also beautifully in flower. In the cottage window were some well-grown and beautifully-berried Solanums, raised from seed last season; and some excellent Cinerarias, such, indeed, as I never expected to see under the same conditions, namely, window gardening. Miss Grinling informed me that the Cinerarias were raised by division from old plants raised from seed, and they have never been under glass. They are first-rate examples of cultivation, and would make many a so-called gardener blush. *A. O.*

**Rollisson's Unique Pelargonium.**—I was glad to see a notice of this some short time back, as, like many other old things of sterling merit, it appears fast dropping out of sight, which is much to be regretted, for unquestionably it is one of the most useful plants grown, as it may be had in bloom nearly the whole year through, while for baskets suspended from the roofs of conservatories it is quite unrivalled, forming, as it does, when so used, one of the most brilliant ornaments it is possible to have in such structures, especially if associated with the white Ivy-leaf, with which it commingles in a very natural manner, and shows up in most pleasing contrast. If wanted for autumn and winter flowering, the plants should be grown outdoors in some sheltered sunny situation, where they can be plunged to ward off the solar heat from the pots, when, if taken under cover in October, and subjected to a warm, dry temperature of about 50°, they will continue to yield plenty of blossom. For filling baskets old plants are the best, as, having long trailing stems, they may be pegged or tied over the sides, and an effect produced at once, besides which they flower more freely than young ones. Since the above-named variety was sent out several others have been raised, but none, so far as I have seen and tried, that can compare with it in any way; and as it has so many good qualities, it will most likely be a long time before it is beaten. *J. S.*

**The Orchids at Oakley, Fallowfield.**—When paying a visit to this most interesting Orchid-growing establishment the other day, I was particularly struck with the fine display of Calanthe Veitchii and C. vestita. C. Veitchii appears to hold the post of honour with Mr. Swan, and a finer lot than he has it has not been my good fortune to see before. The spikes might be counted by the score; nay, I might venture to say by the hundred. In the same house, and hung up to the roof, was a remarkably fine plant of Dendrobium chrysanthum, bearing seven spikes of its beautiful yellow and red flowers. Next to this plant hung the well-known example of Dendrobium crassinode, which, if I mistake not, has been mentioned in the *Gardeners' Chronicle* several times before, and would be a sight worth going a long way to see when in flower. I also noticed a nice healthy plant of Angræcum sesquipedale bearing two spikes with six flowers, three on each spike. All the plants in this, the East Indian-house, are looking very well, and appear to be getting the treatment that suits them. In the Cattleya-house I noticed an old friend in Cattleya maxima nicely in flower. In the Odontoglossum-house there were scores of flower-spikes coming up, which bids fair for a grand display of flower in this department in about two or three months time. Mr. Swan is to be complimented upon the admirable manner in which everything is carried on in this establishment. *W. Sherwin, Charlwood House, Huyton.*

**Hautbois Strawberry as an Autumn and Winter-fruiting Variety.**—Last August the idea struck me of subjecting this much-esteemed variety to pot-culture; concurrently with this idea the question also arose in my mind had I ever heard or read of the Hautbois being so cultivated? No, I had not; but what did that matter? I did not see any reason why it should not do as well and be had in season as long as any other of the numerous kinds grown in pots, which would, in my own case, be a desideratum—the Hautbois being a special favourite with my employer. I therefore, late though it was in the season for such work, had a batch of rootless runners layered on August 9 in 5-inch pots, which were then treated in every respect as the other plants had been in the same stage of growth, and about the middle of September they were detatched from the parent-plants and stood in a favourable position on a brick wall in front of some of the forcing houses, when they had weak liquid manure three times a week—this was increased in strength as the pots got better filled with roots—and the runners kept well pinched back. To my agreeable surprise they commenced throwing up their flower-spikes on Sept. 20, when, it is almost needless to say, they received special attention from that date until they had set, swelled and ripened their fruit, which they did during the latter part of last month, when we picked a couple of nice little dishes of fruit, the berries being somewhat small, as might be expected, in consequence of the plants not having elaborated sufficient sap to sustain them in fully developing the berries. However, I am well pleased with the result, and thoroughly satisfied that the Hautbois (some of which we have swelling their fruit now) may be converted into a good autumn and winter-bearing variety. *H. W. W.*

**Wanted—A Gardener.**—In a concourse of frozen-out gardeners, with the subject of their hardships as the topic of conversation, we had presented to our notice by one of the number an advertisement for a man as gardener, first-class working, and to act at the same time in the capacity of manager; yet, strange to say, although all wanted a situation, not one would presume to apply, all deciding with one accord that, to meet the stipulations of the advertiser, a man would have to be specially moulded. Without exception all present were considered well qualified and competent gardeners—men for the most part who had been tried and had vindicated their ability; still not one of them could feel himself justified in making application. Indeed I should think that but few men could conscientiously apply, inasmuch as, on perusing the advertisement, I found that the catalogue of meritorious attainments stipulated for rendered it necessary for an intending applicant to be a perfect Crichton. I cannot but think the advertiser must have ransacked the dictionary for sufficiently appropriate words to convey to the reader the full extent of the moral, practical, physical, and general excellence of qualications required; and I have no doubt the result of his doing so will have cast a blight over the intentions of some of the most worthy aspirants. I make this assertion, as not one out of over a dozen in whose company I was would accept the appointment under the rigid conditions and requirements specified. This is not to be wondered at, especially as such a puny recompense is offered as commensurate with not only the manual labour but the mental faculty required; moreover, the applicant must be neither lame of a leg nor blind of an eye, and, in short, be possessed of no impediment. It is truly appalling to discover in these deteriorating times that though wages decrease a more dexterous application of the faculties with which man is gifted should be by some demanded; it is a great solace to gardeners' minds, however, that such should only be the case with the inconsiderate minority. I can imagine a married man in good health, with a long undeniable character for honesty, morality, sobriety, energy, general ability, a good writer and book-keeper, a salesman of obliging manners, securing an appointment as advertised—how he would have barely entered upon his duties ere the stunning discovery of his own folly would come upon him, simply because the minds of men gifted with these high-class moral, social, and practical accomplishments have become by education and moral training too refined and lofty to feel themselves otherwise than degraded when placed with responsible duties to perform, and such a meagre recompense for their performance, or to be a manager when the managership exists only in name. *Thomas Reid, Chester.*

**The Value of Sawdust Manure.**—I am glad to see that Mr. Westland has put the question as to the value of sawdust manure. The same thought had occurred to me more than twelve months ago in regard to its usefulness or otherwise for horticultural purposes. My experience here, amidst so much market garden farming, had previously fully established its reputation as a highly fertilising medium for fields and field-grown crops. As, however, from some cause not yet explained, this material did not appear to be so popular as it should be, and knowing its value from personal observations made during my frequent visits to farmers around, I determined upon having a waggonload and to test it for myself, as I am so frequently asked questions in regard to a manure readily obtainable for the use of amateurs. The load which I got came direct from the London General Omnibus Company's yard. It was quite fresh, and was very hot from fermentation. I had it shot in a convenient place for a day or two, and then began to test it. It would take up too much of your space for me to give in detail what I consider to be the complete success of my trial of this material with all kinds of crops, not excepting grass sward, vegetables, fruits, &c., especially Raspberries, the canes upon which are now half as large again as they were previous

to its use. I will but give one fact in regard to it, which I think speaks loudly in its praise. At the time I commenced to test it I had living in the greenhouse two dozen each of Hyacinths, Narcissi and Tulips, which had not yet been planted, though it was getting late in the season for so doing. To test this material, I had a large box filled entirely with the material, and without even the addition of soil of any kind. The bulbs were then pressed firmly into it. First a row of dwarf Tulips, then a row of Tournesols, another of Hyacinths, and at the back two of Polyanthus Narcissi. These made a wonderful start. The roots seemed to run rapidly into the sawdust, and fine breaks were made. When the leaves with flower-spikes were some 4 inches long I had an intention to pot them off into very small pots for our Whitsuntide church decoration. Imagine my surprise when I found the roots so matted together that I could not separate the bulbs in any other way than by cutting them out in squares about the size of the bulbs. I tried to pull some up, but the stalks, flowers, and all, parted from the bulbs rather than loose their hold on this free, open material. The half which I left to bloom undisturbed in the box garden gave exceptionally fine spikes, &c. No greater proof is wanting that this manure is perfectly innocuous, and most valuable. I think it has received a most undeserved bad name from the fact that "sawdust manure" was at one time only to be had at the Zoological Gardens. Doubtless this mixture was too powerful for direct application to any vegetable growth. Those who now use it say little for or against it, because, as it is got very cheaply, it is to their interest to do so. It is in great demand in the neighbourhood of Manchester. *William Earley.*

Tacsonia Van Volxemii and exoniensis.—Having grown both these for many years, I can fully endorse all that "H. W. W." says in their favour, as, excepting Lapagerias rosea and alba, they are the finest and most desirable conservatory climbers in existence. While admitting that T. Van Volxemii is the most brilliant of the two, T. exoniensis rivals that variety in freedom of flowering, as take it the year through, it never ceases, but continues growing and blooming. In habit and general appearance it partakes of the character of the old T. mollissima, from which no doubt it was raised, but although it has the same, or similar looking foliage to that of the species named, it shows unmistakably, by the form of its flowers, that T. Van Volxemii was one of its parents. The blending of the good qualities of both has therefore produced a natural result and enriched our stock of plants, which of that class are sadly too limited, as there are few except them and Passifloras that are at all adapted to drape the roofs of conservatories. Cobœa scandens variegata, however, is a very rare thing, the foliage being well marked with a rich creamy-white, which shows up in pleasing contrast with the green leaves of others. Grown as we have it here, with strings of Lapageria rosea depending among it from the rafters, it produces a pleasing effect, the one helping to show up the other to the greatest advantage by the contrast afforded. *J. S.* [Tacsonia exoniensis × was raised between T. mollissima, male, and T. van Volxemii, female. EDS.]

Beet, Veitch's Improved Black.—"When you are acquainted with a good thing make it known to others," were the words spoken to the writer some years ago by a very good gardener of the "old school." It is with a desire to act on that advice that I now call the attention of your readers to the above-named Beet. For flavour and colour it is, in my opinion, unequalled; the roots grow to a good size and are of a handsome shape, which at once renders it invaluable either for exhibition or culinary purposes. I will not indulge in any comment as to its superiority over any other variety we have grown here; suffice it to say, that until I have seen a better we shall grow no other. *J. H.*

## Natural History.

THE GOLDFINCH.—In an excellent article on this bird in last week's number of the *Gardeners' Chronicle* I find an allusion is made to the word cheveril as used among bird-fanciers. The writer states that it may be derived from Cheviot, as the birds frequent the hills of this name, or from the old English verb "chevelen," to chatter. As a bird-fancier may I be allowed to correct the statement somewhat? It is only a peculiarly marked goldfinch that is called a "cheveril," and not the whole family. In a "cheveril" there is no red under the beak, but a white patch; thus the circle of red which generally surrounds the beak is broken. Birds so marked are scarce, but all resemble each other, and are prized for mule breeding with a canary, and it is these alone that are called "cheverils." A bird-dealer may have a stock of goldfinches, but ask him for a "cheveril" and no doubt the answer will be he has not one. Whilst looking over some old books to see if I could find the origin of the word, I found in Bailly, 1728, a name for the goldfinch hitherto unknown to me—that of "chelandry." His authority is Chaucer. I mention this as it might prove interesting; but nowhere can I find the origin of the word "cheveril."

"Y." writes of the goldfinch migrating to Spain. At Malaga I found the goldfinch differed from the English type, in some instances having more yellow, and mostly the cheeks and throat were much whiter. A great many were brought to England in the ship I returned in, on account of their superior beauty. *Harrison Weir.*

## Reports of Societies.

Edinburgh Botanical: *January* 13.—Professor Isaac Bayley Balfour in the chair. The President, on taking the chair for the first time, thanked the Society for the honour it had conferred upon him, and referred to the loss the Society had sustained in the death, since its last meeting, of his predecessor in office, the late Mr. William Gorrie. On the motion of Professor Dickson it was agreed to send a letter of sympathy, signed by the President, to Mr. Gorrie's sister.

Sir R. Christison read a paper, in continuation of former communications, on the "Growth of Wood in 1880." In a former paper, he said, he endeavoured to show that in the unfavourable season of 1879 the growth of wood of all kinds of trees was materially less than in the comparatively favourable season of 1878. He had now to state results of measurements of the same trees for the recent favourable season of 1880. The previous autumn was unfavourable for the ripening of young wood, and the trees, in an unprepared condition, were exposed during a great part of December, 1879, to an asperity of climate unprecedented in this latitude. This might have led one to expect a falling off in the growth of wood, and it appeared, from the comparison of measurements, that, with very few exceptions, the growth of wood last year was even more below the average of favourable years than that of the bad year 1879. Thus, in fifteen leaf-shedding trees of various species, exclusive of the Oak, the average growth of trunk girth in three successive years was — 1878, 8-10ths; 1879, 45-100ths; 1880, 3-10ths and-a-half. In four specimens of the Oak tribe the growth was—1878, 8-10ths; 1879, 77-100ths; 1880, 54-100ths. In twenty specimens of the evergreen Pinaceæ the growth was—1878, 8-10ths; 1879, 7-10ths; 1880, 7-10ths and a half. After giving details in regard to particular trees, Sir Robert stated, as general deductions from his observations, that leaf-shedding trees, exclusive of the Oak, suffered most; that the evergreen Pinaceæ suffered least; and that there was some power of resistance on the part of the Oak tribe which was remarkable, the power of resistance of the Hungary Oak being particularly deserving of attention. In another communication on the "Extent of the Season of Growth," Sir Robert stated, as the result of observations on five leaf-shedding and five evergreen trees, that in the case of the former, even in a fine year, the growth of wood was confined very nearly, if not entirely, to the months of June, July, and August; while in the case of the latter growth commenced a month sooner, terminating, however, about the same time.

Mr. Alex. Buchan referred to the proposed extension of Sir Robert Christison's enquiries over the whole of Scotland, on a scheme under the co-operation of the Scottish Meteorological and Highland Agricultural Society, and under Sir Robert's superintendence. Interesting results might likely be obtained from the diverse simultaneous observations made on either side of the dividing mountain range running through the centre of Scotland, which appeared to cause fine dry weather on the west coast when the Edinburgh side of the island was under the domain of rain and easterly hoars.

Sir R. Christison hoped that such an extended series of observations would lead indirectly to a better acquaintance on the part of foresters with the scientific conditions of growth—a subject at present too much under rule-of-thumb practice.

In his report on temperatures at the Botanic Garden, Mr. Sadler stated that during December there was frost on eighteen mornings, and altogether 106° of frost were registered during the month. Since January commenced there had been frost on ten days out of thirteen, the hardest mornings being the 9th, with 12° of frost; the 10th, with 12°; and the 12th, with 18°. That (Thursday) morning 8° were registered. As the rockery had been covered with snow for several days no plants in flower were exhibited.

Mr. John Campbell, Ledaig, near Oban, sent the following flowers in bloom from his garden:—Veronica speciosa, Myrtus communis, Erica herbacea, Aster argophyllus, Cytisus odoratus (?), Jasminum nudiflorum, Helleborus niger, Tritoma Uvaria.

Mr. Sadler exhibited Polyspora axillaris (Gordonia), at present growing in the Orchid-house of the Royal Botanic Garden. Professor Dickson exhibited two new (to Britain) specimens of fungi—the first, Hydrangium carnium, recently found in a Eucalyptus tub in the Royal Botanic Garden; the other, Hymenogaster Klotschii, had been found some years ago in a little tub in the Glasgow Botanic Gardens.

Dr. M. C. Cooke, who congratulated himself on at last being present at a meeting of the Society, confirmed the remarks as to the specimens being new to Britain; the Hydrangium carnium had been first found in Germany; many others of the hypogeal fungi showed a partiality for the neighbourhood of special trees.

Mr. P. Neill Fraser, the Treasurer, brought before the Society a price-list of collections of natural history from the West Indies made under the superintendence of Baron Eggers, which included dried and living plants, fruits, and seeds, as well as Microlepidoptera and Coleoptera, land and fresh-water shells. Mr. Fraser expressed willingness to correspond on the subject.

Scottish Horticultural Association. — The ordinary monthly meeting of this Association was held in the Hall, 5, St. Andrew Square, Edinburgh, on Tuesday, Jan. 4, the President, Mr. M. Dunn, Dalkeith Park Gardens, in the chair. Mr. W. Priest, Newbattle Abbey Gardens, read a paper on "Calanthe Culture." He said his reason for bringing forward a paper on this subject was that the deciduous Calanthes were not so extensively and universally grown as they deserve to be, seeing that they bloom so freely at a time of the year when flowers are most valuable. It was very beautiful to see spikes of these lovely Orchids in midwinter. They continue to bloom for three months, from November to February, and they are invaluable as cut flowers, seeing that they last three weeks in water, and sometimes longer if cut before all the flowers are expanded. They are very easily cultivated, not being more d fficult to grow than Crotons and Dracænas. The compost most suitable for growing them is a turfy loam and peat in equal parts (even leaf-mould will do if peat be scarce), a good sprinkling of sand and charcoal broken up fine, and a little dried cow-dung should be added and well mixed together. The pots should be clean, and well and carefully crocked with from 2 to 3 inches of clean potsherds or charcoal, placing a layer of moss or rough peat over them, and filling up the pots with the compost, pressing it moderately firm. In potting place the base of the bulbs just sufficiently below the surface to keep them from falling out of the pots; it is a good plan to leave about an inch of the old roots attached to the bulbs, which will help to keep them steady. When they begin to take hold of the compost watering should be performed very carefully. As they delight in a moist temperature when growing use just enough shading to prevent the foliage from being scorched, and give a little weak guano-water occasionally, which will help to give the foliage a dark green colour as well as strengthen the bulbs. The sorts exhibited were Calanthe Veitchii, C. vestita rubro-oculata, and C. luteo-oculata. The others grown are Calanthe vestita igneo-oculata, C. vestita nivalis, C. vestita Turneri — all of which are very beautiful.

Mr. Geo. McKinlay, Tulloch Castle Gardens, sent a paper to the meeting on the growth of "Summer and Winter Salads." He said that a supply of salads throughout the summer and winter is indispensable in the establishments of the greater number of the nobility and gentry, and that much forethought and care are necessary to keep up the supply throughout the year. If sowings are not frequently made, and at regular intervals, the supply will very soon get exhausted. The frequent sowings must, as far as possible, be made to succeed each other with regularity, and even then experienced cultivators have considerable difficulty in getting successions to maturity when required, as the weather has great influence in bringing on or retarding most of the undermentioned, especially in the North of Scotland, where cold winds and cloudy skies are so prevalent. He next treated of the various modes of cultivation, so as to secure a supply of salads throughout the year. The first subject described was the Beet; and this was followed by cultural hints regarding Celeriac, Celery, Chicory Chives, Corn Salad, Cress, Chervil, Cucumber, Dandelion, Endive, Lettuce, Mustard, Nasturtium, Onion-Radish, and Watercress. He concluded by remarking that, if the instructions laid down were followed, a supply of salads could be kept up all the year round.

Mr. Robertson Munro, Abercorn Nursery, showed a number of hardy flowers which he gathered in the open air that day; they were Arabis procurrens, Saxifraga Burseriana, S. Rocheliana, Helleborus niger grandiflorus, H. olympicus, Primula vulgaris, single and double varieties; Primula nivalis, P. denticulata, Chrysanthemums, Daisies, Pansies, Jasminum nudiflorum, and Hepaticas. Mr. George Machray, Kelly Garden, Wemyss Bay, exhibited Snowdrops which he had gathered on New Year's Day, also the Hazel in flower-bud.

Dundee Horticultural Association: *Jan.* 7.—The ordinary monthly meeting of this Association was held in the Imperial Hotel, Dundee, the President in the chair. There was a large attendance of the members. Mr. W. Stewart, Cedarlea, read a paper entitled "Recollections of a Tour in the United States of America and Canada," which was both instructing and amusing. Mr. T. H. Miln, Linlathen Gardens, read an able and highly interesting paper on "Hardy Border Flowers." This subject, he said, might embrace annuals, biennials, herbaceous perennials and alpines; but it was chiefly herbaceous perennials and alpines that he meant to speak of. He then pointed out the difficulty of deciding what was actually a hardy herbaceous plant; in common usage the name herbaceous embraced a great variety of plants, which, strictly speaking, did not properly belong to that class. Many plants, too, were truly perennial under skilful culture, which under indifferent or unnatural cultivation were merely annual or biennial. Many of our hardy mountaineers will not live in our borders if we overlook their natural requirements, whereas with some forethought and attention they will live and thrive for years. A plant whose native soil is bog-peat or rocky

grit cannot be expected to thrive in a stiff tenacious soil without some other preparation for its reception beyond making a hole of sufficient size to hold its roots, and then covering them even with care. Yet this kind of cultivation, or something closely akin to it, is by far too common. In any ordinary good garden soil a considerable number of even our more rare hardy herbaceous and alpine plants will thrive fairly well, but there are others again that require to be specially cared for, and these well repay the extra labour expended to suit their individual requirements. Many plants (especially alpines) which otherwise would perish, do well when planted in a mixture of leaf-mould and small stones, such as surface rakings, placing a few flat stones round the collar of the plant, and covering them with a thin sprinkling of soil. The stones thus act as a mulch, and keep the roots moist and cool.

Mr. Miln then spoke of the most approved methods of planting and arranging a herbaceous border, the distances required between the plants, and the necessity of thinning some of the more robust growing kinds. He thought it best to thin out principally from the centre, after the plants had attained a height of from 15 to 18 inches, then to gather the stems together and tie tightly at about 1 foot from the ground; in many cases no stake is necessary, as the stems tied thus act as so many supports, the one standing against the other in a slanting position. As the season advances it becomes necessary, for the sake of tidiness, to remove the haulm of some of the stronger growing species. In this case it is sometimes necessary to make compensation, as the crowns of some plants will be too much exposed by being deprived of their natural winter protection, and for this purpose a spadeful of soil from a brake that has been well manured for kitchen crops answers very well, affording both a protection and a supply of nourishment at the same time. The speaker then made some remarks on behalf of those old-fashioned flowers, pourtraying the picturesque and interesting style of the mixed border, the favourite fashion of a flower garden in the days o' langsyne. Hardy border flowers display a great variety in habit, much diversity and beauty of foliage, while they present a wonderful variety both in form and colour. Most of them bloom abundantly, and are excellent for cut flowers, and by a proper selection a continual bloom may be kept up from early spring till late in the autumn. They are also to be recommended as meeting the wants of more people with limited means, than any other class of plants.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
FOR THE WEEK ENDING WEDNESDAY, JAN. 19, 1881.

| Month and Day. | Barometer | | Temperature of the Air. | | | | | Hygrometrical Deductions from Glaisher's Tables 6th Edition. | | Wind. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean Reading Reduced to 32° Fahr. | Departure from Average of 18 years. | Highest. | Lowest. | Range. | Mean for Day. | Departure of Mean from Average of 60 years. | Dew Point. | Degree of Humidity. Sat. = 100. | Average Direction. | |
| Jan. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 13 | 29.44 | —0.28 | 32.3 | 20.7 | 11.6 | 27.1 | — 9.3 | 23.2 | 85 | SW : N. | 0.00 |
| 14 | 29.65 | —0.08 | 26.4 | 16 0 | 10.4 | 21.7 | —14.8 | 19.3 | 90 | N : NW | 0.00 |
| 15 | 29 58 | —0.16 | 25 6 | 15.0 | 10.6 | 21.0 | —15.5 | 17.1 | 84 | S.W. | 0.00 |
| 16 | 29.65 | —0.08 | 26.5 | 16.0 | 10.5 | 21.6 | —15.1 | 18.4 | 86 | S.W. | 0.00 |
| 17 | 29.56 | —0.17 | 30.0 | 15.0 | 15.0 | 22.6 | —14.2 | 16.0 | 74 | E. : N.N.E. | 0.00 |
| 18 | 28.79 | —0.74 | 30 0 | 25.9 | 4.1 | 28.2 | — 8.7 | 26.0 | 91 | E. | 1.30 |
| 19 | 29.09 | —0.65 | 29.0 | 25.6 | 3 4 | 27.1 | — 9.9 | 24.8 | 91 | N.E. | 0.00 |
| Mean | 29.38 | —0.31 | 28.5 | 19.2 | 9.3 | 24.2 | —12.5 | 20.7 | 86 | N. : E. | sum 1.30 |

Jan. 13.—Cold, dark, misty, dull morning. Slight snow after noon, afterwards fine, cold, with clear sky.
— 14.—Fine day, but dull and cold. Dense fog from sunset.
— 15.—Fine, but very cold day. Misty.
— 16.—Fine; sun's place visible. Misty.
— 17.—Fine; rather misty morning. Afternoon sun shone. Cheerful. Very dull at night.
— 18.—Bitter cold east wind, blowing a gale, with driving snow, that penetrated everywhere, and at midnight, in places free from drifts, it measured 15 inches in depth. The weather was the worst experienced near London for very many years, the barometer reaching 29.13 at 3 P.M.; after this turned to increase.
— 19.—A gloomy day, with occasional light snow during the day, and up to midnight snow was falling. Barometer readings began to increase quickly in the evening, and was 29.39 at the level of the sea at midnight; the temperature at this time was 26°, but fell afterwards to 18° at 9 A.M. of the 20th.

LONDON: *Atmospheric Pressure.*—During the week ending January 15, about London, the readings of the barometer at the level of the sea decreased from 30.54 inches at the beginning of the week to 29.51 inches by the afternoon of the 12th, increased to 29.69 inches by the morning of the 14th, and decreased to 29.55 inches by the end of the week. The mean reading at the level of the sea was 29.82 inches, being 0.58 inch lower than in the preceding week, and 0.07 inch below the average for the week.

*Temperature.*—The highest reading in the week was 38°, on the 9th; and the smallest of the highest temperatures was 25°.6 only, on the 15th. The mean of the seven high day temperatures was 32°. The lowest reading in the week was on Saturday, the 15th, and was 15°. The mean of the seven lowest readings was 24°.9. The greatest range of temperature in one day was 11°.6, on the 13th; and the least was 2°, on the 10th; the mean of the seven daily ranges was 7°.1.

The mean daily temperatures of the air were:—On the 9th, 35°.8; 10th, 33°.9; 11th, 33°; 12th, 38°.1; 13th, 27°.1; 14th, 21°.7; and 15th, 21°, and these were all below their respective averages by 0°.4, 2°.4, 3°.3, 7°.9, 9°.3, 14°.8, and 15°.5 respectively; therefore, each successive day was colder than the preceding.

The mean temperature of the week was 28°.7, being 7°.7 below the average of sixty years, and 9°.8 of lower temperature than in the preceding week.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, was 66°, on the 9th—the highest in the week—and the mean of the seven readings was 47°.6.

*Rain.*—No rain fell in the week.

ENGLAND: *Temperature.*—During the week ending Saturday, January 15, the highest temperature of the air was 41° at Truro, and 31°.7 only at Wolverhampton: the mean from all stations was 36°.6.

The lowest temperatures of the air in the week were remarkable; they took place on Saturday, the 15th. The lowest of all was at Nottingham, viz., 1°.7; at Leicester it was 6°; at Wolverhampton, 6°.8; at Hull, 7°; at Bristol, 9°; at Liverpool, 10°; at Norwich, 11°; at Cambridge, 12°, and at Truro, 12°; at Sheffield, 13°.8; at Blackheath, 15°; at Brighton, 15°.5 (the lowest temperature at Brighton for the last twenty-five years); at Bradford the lowest temperature was 16°; at Leeds, 18°; at Plymouth, 19°; and at Sunderland it was 20°. The mean from all stations was 11°.8.

On January 14 the temperature was low at many places; the reading at Bristol was 14°.5; at Leicester, 10°.2; at Norwich, 14°; at Wolverhampton, 9°.6; at Nottingham, 13°.1; at Sheffield, 13°.8; at Liverpool, 15°.9; at Bradford, 19°; at Leeds, 18°; and at Hull, 7°, being the same as on the 15th.

The range of readings in the week was the greatest at Nottingham, 35°.3; it was smallest at Sunderland, 16°; the mean from all stations was 24°.8.

The mean of the seven high day temperatures was the highest at Truro, 38°.4; and the lowest was at Wolverhampton, 29°.3; the general mean from all stations was 32°.8

The mean of the seven low night temperatures was 17° at Wolverhampton, 18° at Nottingham, 19°.3 at Hull. The three lowest temperatures were—at Plymouth, 26°.2; at Sunderland, 26°.1; and at Truro, 24°.3. The mean from all stations was 22°3.

The mean daily range of temperature was the greatest at Truro, 14°.1; and the smallest at Sunderland, 7°.4.

The mean temperature for the week was remarkable, being below 32° at all stations; the highest was at Truro, 31°.2; and at Plymouth, 31°.1; the lowest was at Wolverhampton, 22°.9; the next in order was Nottingham, 25°; the mean from all stations was 27°.2.

*Rain.*—At Sunderland 0.72 inch fell, mostly snow; at Liverpool 0.62 from snow on two days; at all stations snow fell on one or two days to small amounts; the average fall corresponded to 0.18 inch of rain.

*Weather.*—The weather was generally dull, gloomy, and cold. At Sunderland, on the 13th, there was a severe thunderstorm, followed by a severe storm of hail and snow.

SCOTLAND: *Temperature.*—During the week ending January 15 the highest temperatures of the air were 34°.5 at Leith and 30° at Perth. The general mean was 32°.4.

The lowest temperatures of the air were 2° at Perth, 4° at Glasgow; but at Leith the lowest temperature in the week was 20°.8 and at Greenock 20°, and the general mean was 13°.7.

The mean temperature of the air for the week was 26°.9 at Leith, the highest; was 19°.9 at Perth, the lowest; and the general mean was 23°.9, being 3°.3 of lower mean temperature than in England.

*Rain.*—No rain fell at Glasgow, Edinburgh, Greenock, Paisley, or Perth; at Aberdeen 0.69 inch fell, and the general average was 0.11 inch.

JAMES GLAISHER, F.R.S.

## Variorum.

THE NAN-MU TREE.—Reference has already been made, in the Kew Report for 1877, pp. 33, 34, to this interesting Chinese timber tree. Through the kind intervention of E. Bradford, Esq., F.L.S., Deputy Inspector-General of Hospitals, Mr. Arthur Davenport, H.B.M.'s Consul at Shanghai, made inquiries with a view to obtain better botanical data for its determination. He obtained the following information from Mr. Baber:—"Two days' journey south-east of Chungking, in Szechuen, I found several specimens of about a foot in diameter, one of them having a straight branchless trunk of 100 feet in height, with the branches and foliage rising 25 feet above that; another had 70 feet of bare straight stem, and 90 feet of total altitude. Although the trunks are branchless, yet in many cases they send out shoots resembling saplings, which rise parallel with the trunk. The wood is white and close grained, and I do not believe that the pillars at the Ming tombs near Peking are of this wood. They look more like true Teak. I have seen some much larger trees than the above, some 2 feet or more in diameter, straight and of great altitude. They are used in Szechuen for bridge work. I almost despair of procuring the flowers, for people who have spent their lives beneath the trees have never seen them in flower, and the young trees which the missionaries have planted in places do not flower, possibly on account of their youth. If the tree produces any noticeable flowers at all it must be on the summit, which is inaccessible." Eventually, however, through the instrumentality of Père Vincot, who resides at Chungking, flowering specimens were transmitted to the Kew herbarium From these the accompanying figure has been prepared, and they entirely confirm the previous identification of the tree by Professor Oliver (from the leaves alone) as a near ally of Phœbe pallida (one of the Laurel family). The genus Phœbe is now merged in Persea, and Professor Oliver has described the Nan-mu under the name of Persea nan-mu, distinguishing it from Persea (Phœbe) pallida "chiefly in stature, in the form of the acumen of the leaves, and the character of the indumentum." *Kew Report*, 1879.

## Answers to Correspondents.

ABSORPTION OF CARBONIC ACID: *Belgian Subscriber.* No carbon is assimilated by the roots; it is all taken up from the air—at least that is the prevalent belief.

APPLES: *H. C.* The Apple shoots you send are badly cankered. The cause of this disease is not known with certainty, but a water-logged soil, on the one hand, or too dry a one on the other, have been known to cause it. Sometimes it is the result of frost occurring after the shoots have begun to grow in spring, sometimes it is supposed to be the result of bad pruning. It is well known to affect some varieties more than others, and is said to be propagated by grafting. If your soil wants draining drain it; in any case cut away the diseased shoots and burn them.

ELECTRICITY ON VEGETATION: *B.* The experiments you refer to are probably those of Professor Edward Solly, recorded in the *Journal* of the Horticultural Society, 1846, p. 81. The history of the subject is there given and the results of numerous experiments made in the Society's garden at Chiswick, the general conclusion being that but little, if any, effect was produced on plants. On the other hand you should refer to Mr. Bridgman's experiments on the effect of galvanism on plants: see *Gard. Chron.*, 1873, pp. 142, 254, 326.

GARDEN ENGINE: *J. Shiel.* We are not aware of any garden engine such as we understand you to describe; nor, indeed, do we see the advantage of such an arrangement—that is, if we make out your meaning, of which we are by no means sure. Read's and Warner's are the best garden engines we know of.

GROWTH OF VESSELS: *Belgian Subscriber.* We do not fully understand your question. We do not think the whole of the protoplasm does disappear before the fusion of the cells; and if it did the vessels could obtain supplies from without—from the fluids in the intercellular passages, for instance.

NAME OF FRUIT: *John Watkins.* Your Apple is most probably Winter Colman; but why send us such small specimens?

NAMES OF PLANTS: *E. Roberts.* Elæagnus japonica and E. japonica variegata.—*C. E. F.* Goldfussia isophylla.

PLANS FOR CARPET-BEDDING: *N. G.* We do not know of any accessible book on this subject. There are instructions for drawing plans in some old gardening publications which can occasionally be bought in secondhand book shops which might help you if you could meet with any of them.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the

staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

## CATALOGUES RECEIVED.

WILLIAM BULL, King's Road, Chelsea—Select Flower and Vegetable Seeds, Lilies, Gladioli, and other Bulbs.

WM. CUTBUSH & SON, Highgate, N.—Flower, Vegetable, and Farm Seeds.

HOOPER & Co., Covent Garden, W.C.—Vegetable and Flower Seeds, Roots and Plants, &c.

FISHER, SON & SIBRAY, 4, Market Street, Sheffield—Kitchen Garden Seeds and Garden Requisites.

WALTER FORD, Pamber, Basingstoke—Select Garden Seeds and Seed Potatos.

C. PLATZ & SON, Erfurt, Prussia—Trade List of Flower, Tree, and Vegetable Seeds, &c.

ROBERT T. VEITCH, 54, High Street, Exeter—Kitchen Garden and Flower Seeds.

F. C. HEINEMANN, Erfurt, Prussia—General Catalogue of Seeds and Plants.

HOWDEN & Co., Inverness — Vegetable and Flower Seeds, Gladioli, Garden Implements, &c.

WOOD & INGRAM, Huntingdon — Vegetable, Flower, and Agricultural Seeds.

THOMAS PERKINS & SONS, Northampton—Vegetable and Flower Seeds.

JAMES WM. MACKEY, 23, Upper Sackville Street, Dublin — Annual Seed Catalogue and Amateurs' Guide.

HOGG & ROBERTSON, 22, Mary Street, Dublin — Select Vegetable and Flower Seeds, Garden Implements, &c.

JAMES FARRAR & Co., 36, Primrose Street, Bishopsgate, London, E.C.—Wholesale List of Garden and Agricultural Seeds.

EDMUND PHILIP DIXON, 57, Queen Street, Hull — Flower and Vegetable Seeds, Farm Seeds, and Garden Requisites, &c.

KELWAY & SONS, Langport, Somerset—Flower, Vegetable, and Farm Seeds, Nursery Stock, &c.

THOMAS KENNEDY & Co., Dumfries — Select Vegetable and Flower Seeds, &c.

W. DRUMMOND & SONS, 58, Dawson Street, Dublin—Vegetable and Flower Seeds.

WILLIAM FELL & Co., Wentworth Nurseries, Hexham—Spring Seed List.

KERR & FOTHERINGHAM, Dumfries—Farm and Garden Seeds, and General Nursery Stock.

W. SMITH & SON, 18, Market Street, Aberdeen—Flower and Vegetable Seeds, Florists' Flowers, &c.

EDWARD RUSH, 19, Foregate Street, Chester—Garden and Farm Seeds, Bulbous Roots, &c.

COMMUNICATIONS RECEIVED:—G. Lee.—G. N.—H. E.—J. R. J.—P. & M.—G. G.—J. B.—C. V. M.—W. C. S.—N. B.—A. F. B.—W. C.—Triton.—J. A. C.—J. C. & Co.—W. E. G.—M. F.—G. H.

# Markets.

*COVENT GARDEN, January* 20.

Nothing reaching our market; business is entirely suspended. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 1 6– 5 0 |
| Grapes, per lb. | 3 0– 8 0 | Pine-apples, per lb. | 1 0– 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Asparag., Fr., bndl. | 25 0– .. | — Cos, each | 0 6– 1 0 |
| — Sprue, per bund. | 1 6– 2 0 | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Parsley, per bunch | 0 4– .. |
| Celery, per bundle | 1 6– 2 0 | Radishes, per bun. | 0 2– .. |
| Chilis, per 100 | 3 0– .. | Rhubarb, per bund. | 1 0– .. |
| Cucumbers, each | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| Garlic, per lb. | 1 0– .. | Spinach, per bushel | 4 0– .. |
| Herbs, per bunch | 0 2– 0 4 | Tomatos, per lb. | 0 9– 1 0 |
| Horse Radish, p. bun. | 4 0– .. | Turnips, new, bunch | 0 4– .. |

POTATOS:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 45*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ferns, in variety, doz. | 4 0–18 0 |
| Begonias, per doz. | 6 0–12 0 | Ficus elasticus, each | 1 6– 7 6 |
| Cineraria, per doz. | 10 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cyclamen, per doz. | 12 0–18 0 | Genista, per doz. | 12 0–18 0 |
| Cyperus, per dozen | 6 0–12 0 | Hyacinths, per doz. | 8 0–12 0 |
| Dracæna terminalis | 30 0–60 0 | — Roman, doz. | 12 0– .. |
| — viridis, per doz. | 12 0–24 0 | Lily of the Valley, per pot | 2 0– 4 0 |
| Epiphyllum, per dozen | 18 0–30 0 | Myrtles, per doz. | 6 0–12 0 |
| Erica gracilis, dozen | 9 0–18 0 | Palms in var., each | 2 6–21 0 |
| — caffra, per doz. | 8 0–12 0 | Poinsettia, per doz. | 9 0–18 0 |
| — hyemalis | 12 0–36 0 | Primula, single, per dozen | 5 0– 6 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 9 0 |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 1 0– 2 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Bouvardias, per bun. | 1 0– 3 0 | Pelargoniums, 12 sprays | 1 6– 2 0 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Poinsettia, 12 blooms | 3 0– 6 0 |
| Chrysanthemums, 12 blooms | 2 0– 4 0 | Primula, double, per bunch | 1 0– 1 6 |
| Cyclamen, 12 blms. | 0 3– 0 6 | — single, 12 sprs. | 0 6– 1 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Roses (indoor), doz. | 2 0– 6 0 |
| Eucharis, per doz. | 4 0– 9 0 | — yellow Fr., doz. | 2 0– 4 0 |
| Euphorbia, 12 sprays | 3 0– 5 0 | — red French, doz. | 3 0– 4 0 |
| Gardenias, 12 blms. | 15 0–30 0 | — Christmas, 12 bl. | 1 0– 2 6 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Hyacinth, Roman, 12 sprays | 1 6– 2 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Tuberoses, per dozen | 4 0– 8 0 |
| — red, 12 blooms | 1 0– 3 0 | Violets, 12 bunches | 1 6– 2 6 |
| Lilac, Fr., per bunch | 8 0–10 0 | — Neapolitan, Fr., per bunch | 5 0– 7 0 |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | — Czar, Fr., bunch | 2 6– 3 0 |

## SEEDS.

LONDON: *Jan.* 19.—The excessively severe weather, as might be expected, stops all business in farm seeds; nevertheless, as stocks are unusually light, and the arrivals from every quarter exceedingly limited, values all round are firmly maintained. The English seed which is now offering comes forward in small parcels and shows very variable qualities. Spring Tares have advanced 1*s.* per quarter. The market for Linseed is steady. Blue Peas and Haricot Beans are held for full rates. *John Shaw & Sons, Seed Merchants,* 37, *Mark Lane, London, E.C.*

## CORN.

At Mark Lane on Monday trade in Wheat, though quiet, was firm, and former prices were realised. The trade for the better qualities of malting Barley was very firm, at extreme quotations; for medium and inferior sorts prices had an upward tendency. Grinding Barley was in fair demand on former terms. The malt trade was steady, especially for the better sorts. For Indian Corn prices ruled firm. Oats were in fair supply, and a moderate amount of business was transacted at full currencies. Beans and Peas were steady in value; and there was a moderate inquiry for flour at full rates.—Wednesday's trade was especially quiet at Mark Lane, the attendance owing to the state of the weather being more than unusually thin. Though there was next to nothing doing, a fairly steady tone characterised the market for Wheat. Barley was without change. Oats were held for full prices, but the demand was small. Maize was quiet and about the same in price, as also were Beans, Peas, and flour.—Average prices of corn for the week ending January 15:—Wheat, 42*s.* 1*d.*; Barley, 32*s.* 1*d.*; Oats, 19*s.* 5*d.* For the corresponding period last year:—Wheat, 45*s.* 11*d.*; Barley, 37*s.* 2*d.*; Oats, 21*s.* 1*d.*

## CATTLE.

At Copenhagen Fields on Monday trade in beasts was very dull, owing to the restrictions, and a clearance could not be effected of the very short supply. On the average prices were lower. The number of sheep, though small, exceeded the demand, all buyers beyond the metropolitan area being excluded. Good calves were readily disposed of at fully late rates. Quotations:—Beasts, 4*s.* to 4*s.* 8*d.*, and 5*s.* 2*d.* to 5*s.* 8*d.*; calves, 5*s.* 6*d.* to 6*s.* 6*d.*; sheep, 5*s.* 2*d.* to 5*s.* 8*d.*, and 6*s.* to 6*s.* 10*d.*—Thursday's market was quite a nominal affair. Scarcely anything was offering, and quotations were about the same as on Monday.

## HAY.

Tuesday's Whitechapel Market report states that the supply of fodder was rather large, but trade was almost at a standstill, owing to the hurricane of wind and snow. Quotations:—Prime Clover, 100*s.* to 120*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 105*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 41*s.* per load.—On Thursday, the roads being impassable, there was nothing up, the half-dozen loads sold being left over from Tuesday.—Cumberland Market quotations:—Superior meadow hay, 94*s.* to 105*s.*; inferior, 45*s.* to 76*s.*; superior Clover, 110*s.* to 120*s.*; inferior, 84*s.* to 95*s.*; and straw, 36*s.* to 40*s.* per load.

## POTATOS.

From the Borough and Spitalfields markets reports we learn that the markets were well supplied. There was a dull trade, at the following quotations:—Scotch Champions, 75*s.* to 85*s.*; Scotch Regents, 80*s.* to 100*s.*; Essex Regents, 80*s.* to 90*s.*; Essex Champions, 70*s.* to 80*s.* per ton; Belgian kidneys, 3*s.* 9*d.*; German reds, 3*s.* 6*d.* to 4*s.* 9*d.* per bag.—The imports into London last week consisted of 76 tons from Brest, 1568 bags from Hamburg, 140, St. Nazaire; 380, Ghent; and 9 bags from Bordeaux.

## COALS.

The quotations current at market during the week are as follows:—Bebside West Hartley, 14*s.* 9*d.*; Ravensworth West Hartley, 14*s.* 9*d.*; Walls End — Hetton, 18*s.* 6*d.*; Hetton Lyons, 17*s.*; Hawthorns, 17*s.* 3*d.*; Original Hartlepool, 18*s.* 6*d.*; South Hetton, 18*s.* 6*d.*; Tees, 18*s.* 3*d.*

**Government Stock.**—Consols for delivery closed on Monday at 98⅜ to 98¾, and at 98 11/16 to 98 13/16 for the account. The closing prices on Tuesday and Wednesday were, for delivery, 98⅜ to 98¾, and 98⅜ to 98⅝ for the account.—The final quotations on Thursday were, for delivery, 98½ to 98⅝, and 98⅝ to 98¾ for the account.

**Nothing but Flowers.**

**Beautiful Coloured Plate.**

H. CANNELL AND SONS beg to announce that the above is in the press, and will be issued shortly to all applicants on receipt of 12 stamps. *Free to Customers.*

It has been enlarged to such an extent that its postage will probably exceed 3*d.*, and the information it contains totally surpasses anything of the kind ever issued, and will certainly be acknowledged throughout the world (as previously), to be an absolute necessity to all possessing flowers.

**OUR PRIMULAS AND CINERARIAS.**

**Specially Grown for Seed-saving.**

PRIMULAS SWANLEY RED, DELICATA, and SWANLEY PURPLE—the two former awarded First-class Certificates by the Floral Committee, Royal Horticultural Society; these, and many others, forming the finest collection ever brought together, are now a grand feature, and the surprise of all beholders.

CINERARIAS are also unfolding their blooms, and are the most complete collection; even the species "Cruenta," the parent of all the present fine kinds, is now beautiful and highly interesting, and for cut flowers the best. The Doubles, in fourteen varieties, some of which were awarded First-class Certificates at Kensington, will shortly be the admiration and surprise of all. These, with the best show kinds, occupying houses 100 feet in length, are in the best possible health and beauty. Every flower will be hybridised by the most skilful hands, and the seeds offered for sale, and as the season arrives so will the many families of Florist Flowers each form an equally interesting display; and it is only just that every lover of such should become fully aware of the fact, that all our time and energy are devoted to the production of the choicest varieties and their seeds; and further, it is but right to mention that our Mr. H. CANNELL, Jun., resided on the Continent last season in order to procure the best strains in Germany and the South of France of those kinds whose seeds do not ripen well in England.

Therefore all our ASTERS, STOCKS, and ZINNIAS, &c., are of the very best quality, and all requiring such for exhibition or other special purposes, we shall be pleased to supply.

ALL ARE INVITED.

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H. C. & SONS' New Illustrated, and the most Complete, Correct, and Descriptive LIST of 200 varieties. All the new kinds are collected from all sources, and the very best only fertilised by most skilled hands; it is, therefore, quite certain that no better can possibly be offered. 2*s.* 6*d.* per packet.

Sown now plants will flower all next summer.

*From* C. BROWN, *Field House, Louth, Lincolnshire.*

"The plants from the Begonia seed you sent me afford me the greatest satisfaction. The flowers are the grandest I ever saw, much better than my named collection; flowers 4 inches over."

**SECRET OF SUCCESS!!**

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Confirming the above—

Mr. GILBERT, *Burghley Hall, Stamford, says:*—"Send me another 50 lb. of your fumigating material."

**Summer and Winter-flowering**

**ZONAL PELARGONIUMS,**

BOTH SINGLE AND DOUBLE.

H. CANNELL AND SONS beg to announce that they have a large stock of the twenty-four varieties which they exhibited, and caused such sensation and elicited the admiration of all beholders at the last Chrysanthemum shows held at South Kensington, Liverpool, Birmingham, Royal Aquarium, Tunbridge Wells, &c., many blooms measuring 2¼ inches across.

For a winter display of the most brilliant colours they are indispensable.

Single, 9*s.* per doz.; two dozen, 16*s.*; Cuttings, 4*s.* per doz.
Double, ,, ,, ,,

See eulogistic reports of our Doubles at all large shows.

Splendid varieties, in 5-inch pots, beautifully in flower, 13*s.* per dozen.

*Gardeners' Chronicle*, January 17, 1880, says:—"Messrs. Cannell & Sons again sent a rich collection of cut blooms of Zonal Pelargoniums, clear and lustrous in colour, and, if anything, larger than ever. The Committee recommended Messrs. Cannell & Sons' exhibits for the award of a Silver Medal.

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This valuable variety still maintains its reputation, and is justly pronounced by the Royal Horticultural Society and all who have tried it, as the best Celery in cultivation for hardiness, size, and flavour, and is suitable alike for Market Gardeners and Amateurs.

## TESTIMONIALS.

*From* Mr. O. ARKELL, *Gardener to* A. J. Shinner, Esq., *Cheltenham, December*, 23, 1880.
"I have taken First Prize with your Leicester Red Celery at the Cheltenham Society's Show held in June last, and also another First Prize at the same Society's Show held in September. It is undoubtedly the best Celery grown."

*From* Mr. JAS. GILL, *Wisbech, January* 28, 1880.
"I find your Leicester Red Celery the best of several sorts I grew for market."

*From* Mr. E. HULSE, *Macclesfield, December* 24, 1880.
"I grow a lot of Celery plants for the market, but can get none like your Leicester Red. It beats all I can get."

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*P.S.—We regret to hear that an inferior stock has been substituted for the true variety, so caution the Public to buy only in packets with our name and address printed thereon.*

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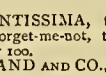
**SPRING 1881.**  **SPRING, 1881.**

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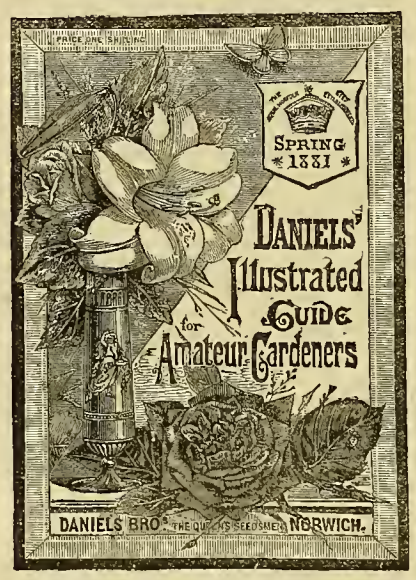


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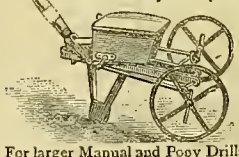

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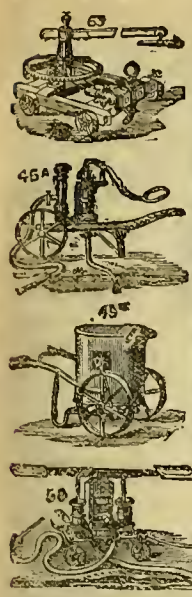
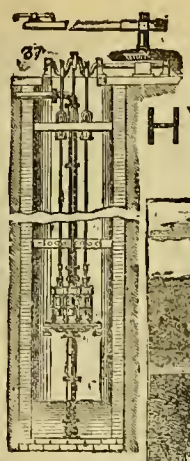

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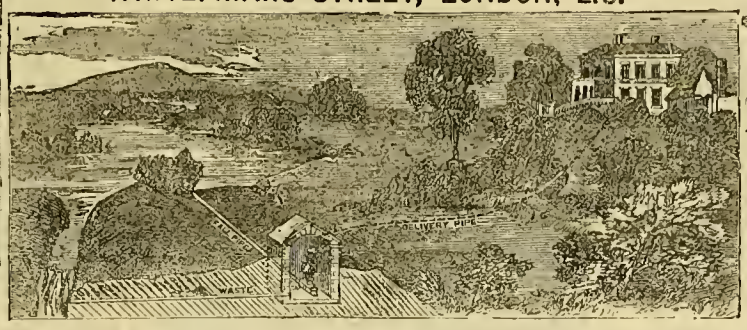
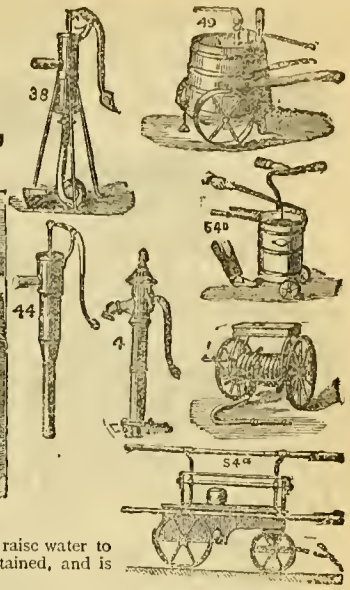

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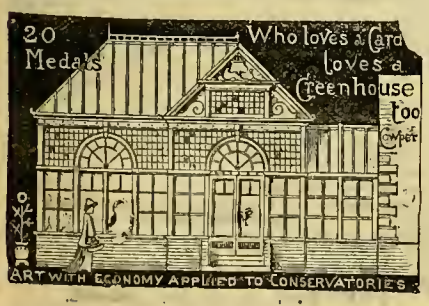


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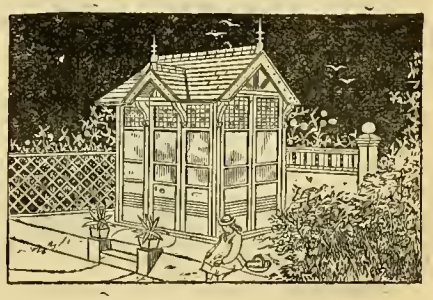

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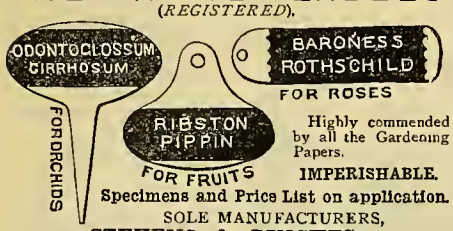


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All the usual kinds at reduced rates. SACKS and SEED BAGS, new and second-hand, of every description. RAFFIA FIBRE, NETTING, and TIFFANY, TARPAULINS, RICK COVERS, HORSE-CLOTHS, ROPES, LINES and TWINES. Price LIST on application to

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| 21-oz., Orchard House, | 20 × 12, | 16s., | 17s. 3*d.*, |
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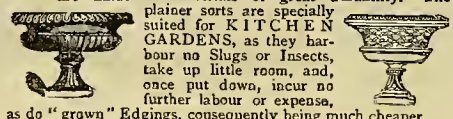
THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



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ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

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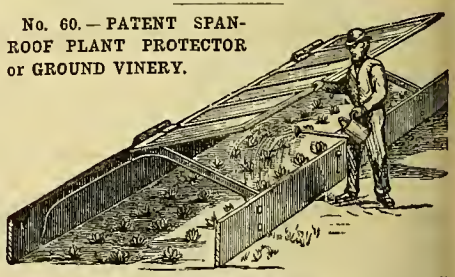

These useful frames will be found invaluable in large or small gardens for protecting plants in the open ground, or storing the same when turned out of the conservatory.

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| | £ s. d. | Ends per pair extra. s. d. |
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| 6 feet long, 3 feet wide | 1 17 6 | 7 0 |
| 12 feet long, 3 feet wide | 3 8 6 | |
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| 12 feet long, 4 feet wide | 4 8 6 | |
| 12 feet long, 5 feet wide | 5 15 6 | 10 6 |
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Several may be placed together, and only one pair of ends required. Descriptive LISTS post-free.

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Any damage in transit made good if advised immediately.

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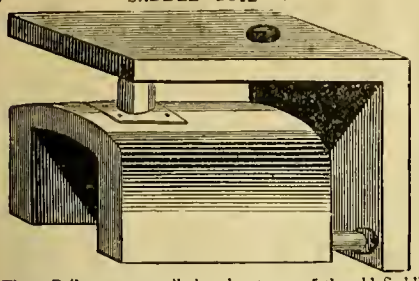

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. | | | To heat of 4-in. Pipe. | Price. |
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| High. | Wide. | Long. | Feet. | £ s. d. |
| 20 in. | 18 in. | 18 in. | 300 | 7 0 0 |
| 20 ,, | 18 ,, | 24 ,, | 400 | 8 0 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 0 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 0 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 0 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 0 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 0 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 0 0 |

Larger sizes if required.

*From* Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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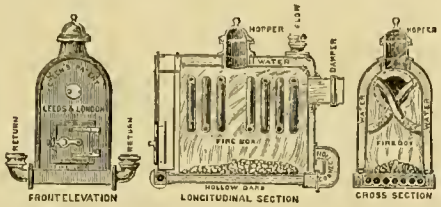
The Tubular ones are remarkable for their great Heating Power, Slow Combustion, and the length of time the Fire will Burn without requiring attention.

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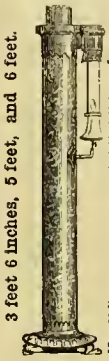

3 feet 6 inches, 5 feet, and 6 feet.

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**BOILERS,**

SPOUTING, PUMPS, TANKS, WROUGHT-IRON TUBING,

And every description of Ironwork for Horticultural and Building Purposes.

**SOCKET HOT-WATER PIPES.**

| | s. d. | s. d. | s. d. |
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| Pipes (6 ft. long)—2-in., | 1 8 .. | 3 in., 2 9 .. | 4-in., 3 6 each. |
| ,, (9 ft. long)— ,, | — .. | ,, 3 9 .. | ,, 4 9 ,, |
| Elbows (No. 12)— ,, | 1 1 .. | ,, 1 8 .. | ,, 2 0 ,, |
| Tees (No. 33)— ,, | 1 5 .. | ,, 2 4 .. | ,, 3 3 ,, |
| Syphons (No. 23)— ,, | 1 3 .. | ,, 2 0 .. | ,, 3 0 ,, |

**"Expansion Joint" Hot-water Pipes.**

The "Expansion Joint."

The Best and Quickest Made.

*This Joint, being easily removed, is specially adapted for Tenants.*

| | s. d. | s. d. | s. d. |
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| Pipes (6 ft. long)—2-in., | 1 6 .. | 3-in., 2 4 .. | 4 in., 3 1 each. |
| ,, (9 ft. long)— ,, | — .. | ,, 3 4 .. | ,, 4 6 ,, |
| Elbows (No. 3)— ,, | 0 9 .. | ,, 0 11 .. | ,, 1 1 ,, |
| Tees (No. 13)— ,, | 1 0 .. | ,, 1 4 .. | ,, 1 6 ,, |
| Syphons (No. 16)— ,, | 1 1 .. | ,, 1 6 .. | ,, 1 8 ,, |

Joint complete, with Rubbers and Pins, 2-in., *11d.* each; 3-in., *1s. 3d.*; 4-in., *1s. 6d.*

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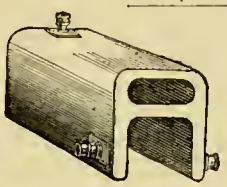

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Unsurpassed for economy and utility.

**HEATING APPARATUS fixed complete.**

Particulars on application.

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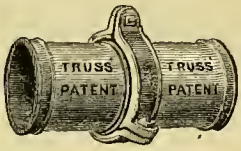
also SINGLE, DOUBLE, TREBLE, or QUADRUPLE

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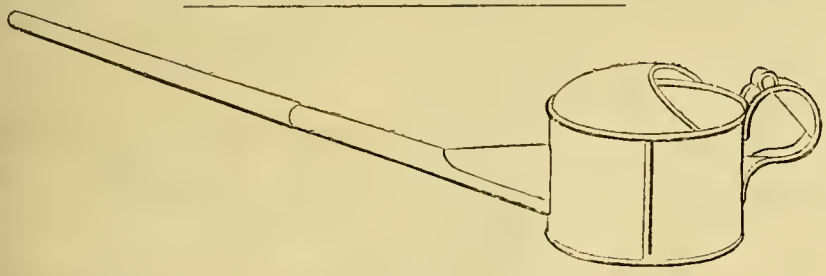

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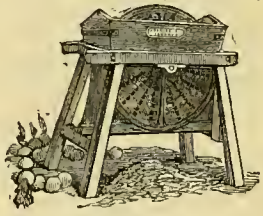

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| 10 ,, | 0 6 0 | 21 ,, | 0 11 6 |
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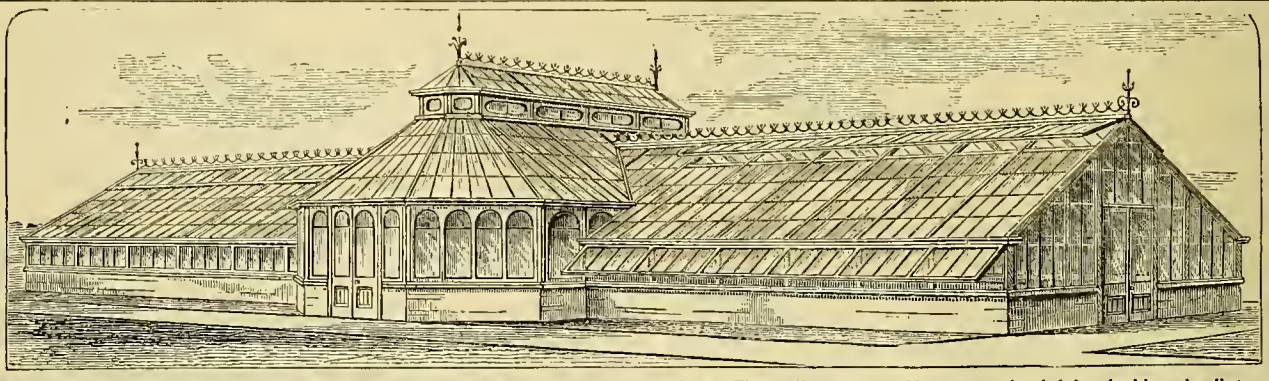

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Established 1841.

No. 370.—Vol. XV. { New Series. } SATURDAY, JANUARY 29, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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Volume XIV., JULY to DECEMBER, 1880.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY.—The ANNUAL GENERAL MEETING of the Royal Horticultural Society will be held in the Council Room at South Kensington on TUESDAY, FEBRUARY 8, to receive the Report of the Council, and for the Election of Members of Council, Officers, Expenses Committeemeo, and Auditors.
Chair to be taken at 3 o'Clock P.M.

BARNARD CASTLE HORTICULTURAL SOCIETY'S SHOW, FRIDAY, AUGUST 26.—£10 for Four Stove or Greenhouse Plants in flower; £8 10s. for Six distinct varieties of Fruit, and £5 for Four Ornamental-leaved Plants. Schedules on application to
J. J. BAILEY, Secretary.

OSBORN AND SONS beg to inform their Customers that the disorganization caused by the Fire which lately occurred on their Premises has now been entirely overcome, and BUSINESS IS BEING TRANSACTED AS USUAL. All Orders for Seeds executed with the greatest promptitude.
The Fulham Nurseries, London, S.W.

To the Trade.
CHARLES SHARPE AND CO., Seed Growers, Sleaford, are in a position to offer NE PLUS ULTRA and CHAMPION of ENGLAND PEAS. Samples and Prices on application.

CLAYWORTH PRIDE CELERY has proved to be the hardiest and best in cultivation. It blanches very readily, and will stand the frost and wet better than any other variety. In packets, 13 stamps; per ounce, 5s.
R. OGLEY, Clayworth, Bawtry, Yorkshire.

RHUBARB, Victoria and Albert. Cask and packing included, 16s. per 100.
T. EVES, Gravesend Nurseries.—Established 1810.

RHUBARB FOR SALE, CHEAP.—Strong Planting Roots, 15s. to 20s. per 100; ditto for Forcing, 25s. per 100, 6s. per dozen. Package free for cash with order to
S. BIDE, Alma Nursery, Farnham, Surrey.

SEAKALE.—SEAKALE.—SEAKALE.—Also ASPARAGUS and RHUBARB, for forcing and planting. Prices on application. Our Seed CATALOGUE is now ready, and will be forwarded free on application.
H. THORNTON AND CO., Nurserymen and Seedsmen (Dancer's Nurseries), Fulham, S.W.

ASPARAGUS for FORCING.—A large supply of the above still on hand, which can be supplied at a very moderate price. Also good Planting Roots.
OSBORN AND SONS, The Fulham Nurseries, London, S.W.

THE BEST PEAS FOR EXHIBITION.
All competent authorities agree that the following are the best varieties for exhibition purposes:—CARTERS' TELEPHONE, price 3s. 6d. per pint; CARTERS' STRATAGEM, price 5s. per pint; CARTERS' PRIDE OF THE MARKET, price 3s. 6d. per quart; TELEGRAPH, price 2s. per pint.
CARTERS, The Queen's Seedsmen, and Seedsmen by Special Warrant to His Royal Highness the Prince of Wales, 237 and 238, High Holborn, London, W.C.

THE BEST ASPARAGUS FOR EXHIBITION.
CARTERS' NEW MAMMOTH EMPEROR, far in advance of the American Colossal or any other giant variety. Price, in sealed packets, 2s. 6d. per packet, post-free.
CARTERS, The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.

THE BEST TOMATOS.
CARTERS' PRIZE-MEDAL COLLECTION, awarded the Medal of the Royal Horticultural Society, containing eight distinct varieties, post-free, 5s.
CARTERS, The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

Trade Price Current.
THE LAWSON SEED AND NURSERY COMPANY (Limited) have posted their SEED CATALOGUE for 1881, but should any omissions have inadvertently occurred copies will be sent on application.
106, Southwark Street, London, and George IV. Bridge, Edinburgh.

To the Trade.
E. S. KNOX, SEEDSMAN, Alcester, can offer DR. MACLEAN PEAS.
Sample and price on application.

To the Trade.
CUCUMBER SEED (Rollisson's Telegraph).—Warranted true, 3s. 6d. per 100. 30s. per 1000. Offered by WM. DERRICK, 20, Saint Mark's Street, Kingsholm, Gloucester.

Seventh Year of Distribution.
TELEGRAPH CUCUMBER (Warranted), 18 Seeds, 1s.; 7 Seeds, 6d., post-free. The Seed has been collected from handsome, well-grown fruit. Price per ounce on application.
R. W. BEEDELL, The Nurseries, Wallington, Surrey.

Floral Commission Agency.
NOTICE TO SENDERS.—In consequence of the severe weather, senders are particularly requested to be careful in Packing their Goods, to prevent being damaged in transit.—W. CALE, 4, Tavistock Row, Covent Garden, W.C.

WANTED, EUCHARIS AMAZONICA; bulbs out of pots.—State quantity and lowest price to J. C. SCHMIDT, Erfurt, Germany.

Gardenias.
WARREN AND CRAIK will return the highest Price for GARDENIAS, TUBEROSES, and MARÉCHAL NIEL ROSES. Not for commission.
43, Jermyn Street, St. James's, London, W.

WANTED, MANETTI STOCKS.
State quantity and price to
R. AND F. ALLUM, Nurserymen, Tamworth.

WANTED, strong LARCH.—Samples and prices to
CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, Hereford.

WANTED, 1,000,000 2-yr. Seedling LARCH. Send post samples and lowest price, with quantity on offer, to
RODGER McCLELLAND AND CO., 76, Hill Street, Newry.

WANTED, CHOICE FLOWERS and FRUITS, CUCUMBERS, &c.
WISE AND RIDES, Horticultural Agents, Tavistock Court, Covent Garden, London, W.C.

WANTED, SHALLOTS.—Sample, price, and quantity, to
G AND W. YATES, Seed Merchants, Manchester.

THE FROST. SUTTON & SONS
THE FROST. recommend
THE FROST. Early Seed Orders.
MESSRS. SUTTON advise their Customers that Seed Orders should now be made out in order to ensure despatch the moment the frost breaks.
THE FROST. To be despatched
THE FROST. the moment
THE FROST. the frost breaks.

ROYAL BERKS SEED ESTABLISHMENT, READING.

LILIUM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz.; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

LILIUM AURATUM.—Good sound Bulbs, just arrived from Japan. Special low offer of the above on application.—GEORGE REID, Seed and Bulb Merchant, 20, Castle Street, Long Acre, London, W.C.

ARAUCARIA IMBRICATA.—A large Stock of fine Specimens of the above, from 6 to 9 feet high. Price on application to
T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

Seeds.
CHARLES TURNER'S Descriptive Price LIST for the present season is now ready, and may be had on application.
The Royal Nurseries, Slough.

WHITE CAPE FLOWERS.—New Crop, finest quality, 10s. per 1000, for cash with order.
TURNER BROS., 2, Parker Street, Liverpool.

CHRYSANTHEMUMS.—210 Best Varieties only. Rooted Cuttings, 2s. 3d per dozen; 12s. per 100. Now ready. LIST one stamp.
WM. ETHERINGTON, Manor House, Swancombe, Kent.

HENRY SURMAN, FLORIST, Witney, Oxon, again Offers SEED from his Prize PETUNIAS, which contain all shades of colour, Striped, Flaked and Mottled—double, beautifully Fringed, 2s. per packet; single, 1s. per packet.

BUYERS wishing to avail themselves of a CHEAP OFFER of various TREES and SHRUBS should refer to large Advertisement appearing in this Paper on the 8th of this month, or see T. L. MAYOS' reduced LIST.
Highfield Nursery, Hereford.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Sample hundreds or thousands. Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

HAZEL and EVERGREEN PRIVET.—Price on application to
GEORGE TOWNSEND, Nurseryman, Fordham, Cambridgeshire.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Roses, Fruit Trees, &c.
WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.
Ottershaw Nurseries, Chertsey.

STANDARD PLUMS.—Green Gage, Prince of Wales, Prince Engelbert, and many other of the finest kinds. Special Prices to the Trade and Large Buyers.
EWING AND CO., Eaton, Norwich.

Grapes this Year.
FRUITING CANES, thoroughly ripened without bottom-heat, 7s. 6d. to 10s. 6d. each. PLANTING CANES, 3s. 6d. to 5s. each. Leading kinds.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

Vines—Vines—Vines.
J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

VINE POTS.—VINE POTS.
The strongest and most desirable POTS for VINES or FRUIT TREES are supplied by
JOHN MATTHEWS, Royal Pottery, Weston-super-Mare.
"References to most of the leading Firms in the Trade."

## SALES BY AUCTION.

**5000 Lilium auratum, just received from Japan.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, January 31, at half-past 12 o'Clock precisely, an importation of 5000 Bulbs of LILIUM AURATUM, and fine Roots of IRIS KÆMPFERI, just received from Japan; a consignment of 3000 TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, and 3000 GLADIOLI, from New Jersey; also an importation of choice CALIFORNIAN BULBS, including Butterfly Tulips (Calochortus), Mariposa Lily, the Vegetable Fire-Cracker of California, the Golden Star Tulip; some Bulbs of a new LILY from Oregon, and some of the best kinds of Californian and Japanese LILIES; the new LILIUM PARRYI, figured in the *Garden*; gigantic Bulbs of LILIUM HUMBOLDTII, L. PARYUM, L. PARDALINUM, and L. WASHINGTONIANUM, the finest ever imported; and a consignment of 2000 fine Bulbs of double Italian TUBEROSES, from America, &c.; ninety plants of ARAUCARIA EXCELSA, &c.

May be viewed morning of Sale, and Catalogues had.

**Periodical Sale of Poultry and Pigeons.**—Sale No. 5780.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, February 1, at half-past 12 o'Clock precisely, First-class POULTRY, consisting of superior Black Spanish, from Mr. E. Jones; Light Brahmas, Silver-grey Dorkings, Black-red Game, and others; also choice PIGEONS, including Black and Dun Carriers, Blue and White Pouters, Almond Tumblers, Antwerps, &c. The above include many PRIZE BIRDS, from the yards and lofts of well-known Breeders and Exhibitors. GALVANISED POULTRY HURDLES, GARDEN ARCHES, &c.

May be viewed the morning of Sale, and Catalogues had.

**Valuable Imported Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 3, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, of St. Albans, large importations of ORCHIDS, consisting of extra fine pieces of Anguloa eburnea—this fine pure white Anguloa produces its large sweet-scented flowers during the late autumn and in great abundance; about 2000 Masdevallia tovarensis in splendid condition; Colax jugosus, Sophronites grandiflora, Oncidium phymatochylon, O. sarcodes, Epistephium elatum, a very fine lot of Masdevallia maculata, of which some will soon flower; Masdevallia triangularis, Odontoglossum constrictum, Epidendrum ionophlebium, Anthurium Andreanum, Luddemannia species; the Sale will also contain a very splendid specimen of LÆLIA ANCEPS ROSEA or DAWSONI—the mass is in finest health, and has some 200 bulbs.

May be viewed the morning of Sale, and Catalogues had.

**Monday Next.**

6000 LILIUM AURATUM and 2000 L. KRAMERI, in unusually fine condition.

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, 6000 magnificent Bulbs of LILIUM AURATUM and 2000 L. KRAMERI, from Japan, 4000 splendid double TUBEROSES, from Philadelphia; 2000 AMARYLLIS FORMOSISSIMA, from Mexico; a superb assortment of English-grown LILIES, including gigantic Bulbs of HUMBOLDTII and many other well-known varieties; CALOCHORTUS, CARNATIONS, PICOTEES, and MISCELLANEOUS ROOTS and BULBS.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Brox Nursery, Chertsey, Surrey.**

NOTICE OF SALE.

In the High Court of Justice, Chancery Division, in the matter of the Estate of George Gray the Younger, deceased.—Gray *v.* Gray.

MR. R. WATERER (of the Firm of R. & J. Waterer & Son), the person appointed by Vice-Chancellor Sir C. Hall (the Judge to whose Court this action is attached), will SELL by AUCTION, upon the Premises, in FEBRUARY, the whole of the valuable and well-grown NURSERY STOCK, comprising about 150 lots of Mixed Ornamental Shrubs, including many fine Specimen Plants, well furnished and well-rooted; 2000 Standard and Dwarf Roses, 40,000 Green and Variegated Hollies, 1 to 4 feet; 1000 Kalmia latifolia, 4000 Rhododendron ponticum, 1 to 2 feet; 10,000 do., 3 to 6 inches; 2800 Rhododendrons, to name; 300 fine do., 3 to 4 feet, well set for bloom; 200 Golden Yew, 1 to 2 feet; 3000 common do., 3500 Portugal Laurel, 6 inches to 2 feet; 10,500 common Laurel, 1 to 3 feet; 6000 caucasica do., 1 to 2 feet; 3000 Aucuba japonica, 6 inches to 2 feet (bushy plants); 500 mascula do., 3000 Cedrus Deodara, 2 to 5 feet; 5000 Wellingtonia gigantea, 1 to 4 feet; 2000 austriaca and Laricio, 2000 Silver Fir, 500 Picea Nordmanniana, 1 to 3 feet; 1500 Weymouth Pine, 3 to 5 feet; 500 Abies Douglasii, 3 to 6 feet; 2500 orientalis, 1 to 3 feet; 600 Menziesii, 2 to 5 feet; 3000 Retinospora ericoides, leptoclada, plumosa nana, 6 to 18 inches: several thousand Forest Trees, Scarlet Chestnut, common Horse Chestnut, Poplar, Mountain Ash, Sycamore, common Purple Beech, Spruce, from 3 to 14 feet; fine Weeping Ash and Willow, 7 to 8 feet; 2000 Fruit Stocks, consisting of Pears, Crabs, Mussel and Common Plums, a quantity of clean-grown Fruit Trees, of the most choice sorts, and true to name, comprising 3000 Standard and Pyramid Apples, Pears, Plums, and Cherries, 15,000 Maiden Apples and Pears (very strong); 2000 Paul's Double Scarlet Thorn, 2000 Berberis, japonica, Aquifolia and Darwinii; 500 Clematis in pots, to name; 300 Ivies of sorts, 3000 Deutzia gracilis, and a variety of other Stock, all well grown, well rooted, and in good condition for removal; also a very valuable powerful 6-yr. old Bay CART-HORSE, PONY, and Village CART; Two nearly New Crosskill CARTS, one with Springs and patent Axletrees; capital HARNESS, and other effects.

May be viewed seven days prior to the Sale, and Catalogues had upon the Premises: of Messrs. HEATHFIELD AND SON, Solicitors, 44, Lincoln's Inn Fields, London; of J. A. REDHEAD, Esq., Solicitor, 5, Mark Lane, London, and Chertsey; and of Messrs. R. AND J. WATERER AND SON, Auctioneers and Valuers, Chertsey, Surrey.

**In Liquidation.**—*Re* Alexander McRohie.

PETERSHAM NURSERY, PETERSHAM.—The Beneficial Interest in the Lease of the above Premises, having a term of nearly ten years unexpired, for SALE. Also Stock in Trade, Trade Effects, Plants, &c.

For particulars, apply to the Trustee, Mr. FRANK HERRING, 4, Billiter Square, London, E.C.; or to Messrs. NORRIS AND NORRIS, Solicitors, 23, Bedford Row, London, W.C.

**In the High Court of Justice, Chancery Division.**

G. Gray, Jun.'s Estate—Gray *v.* Gray, Brox Nursery.

TO BE LET, the Old Established NURSERY, known as Brox Nursery, Chertsey, of 12 a. 0 r. 28 p., with or without Dwelling-house, Stable and Offices, 3 Greenhouses and Pits, and 2 Labourers' Cottages, very advantageously situate at Brox, Chertsey, about 2½ miles from the Woking and Chertsey Stations on the South-Western Railway, together with the Goodwill, presenting an exceptionally good opportunity to any person wishing to secure a well-established Nursery Business.

For particulars apply to Mr. R. WATERER, Receiver appointed by the Court, Auction and Estate Agency Offices, Chertsey; J. A. REDHEAD, Esq., Solicitor, Chertsey; or to Messrs. HEATHFIELD AND SON, Solicitors, 44, Lincoln's Inn Fields, London, W.C.

## ARTHUR VEITCH MEMORIAL.

A LIST of COLLECTORS for the above object, will be Advertised in the *Gardeners' Chronicle* on Saturday Next, February 5.

**Hon. Secretaries.**
- W. WILDSMITH, Heckfield Gardens, Winchfield.
- J. HUDSON, The Gardens, Gunnersbury House, Acton, W.
- J. AUSTEN, The Gardens, Ashton Court, Bristol.

**Hon. Treasurer.**
- J. ROBERTS, The Gardens, Gunnersbury Park, Acton, W.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At a General Meeting of the Members of this Institution, held on the 13th inst., for the purpose of Electing 11 Pensioners on its Funds, the following were the successful Candidates:—

| | |
|---|---|
| GEORGE McKAY .. .. .. .. | 2054 Votes |
| WILLIAM YOUELL .. .. .. | 1962 ,, |
| GEORGE CURD .. .. .. .. | 1485 ,, |
| REBECCA LAYBANK .. .. .. | 1391 ,, |
| JOHN CONOLLY .. .. .. .. | 1262 ,, |
| ELLEN SMITH .. .. .. .. | 1122 ,, |
| WILLIAM MORSE .. .. .. | 1051 ,, |
| ANNE WELLS .. .. .. .. | 1023 ,, |
| THOMAS SMART.. .. .. .. | 916 ,, |
| ANN KAY .. .. .. .. .. | 771 ,, |
| JAMES PIKE .. .. .. .. | 744 ,, |

In consequence of certain vacancies having occurred in the List of Pensioners since the Candidates were selected it was resolved that the following Candidates, being the two next highest on the Poll, be declared Pensioners:—

| | |
|---|---|
| JAMES DUCKETT .. .. .. | 726 Votes |
| JAMES PORTERFIELD .. .. | 521 ,, |

EDWARD R. CUTLER, Sec.

14, Tavistock Row, W.C.—Jan. 15.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
,, Golden, many thousands, 3, 4, 5 to 10 feet high.
,, Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
,, laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
,, Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
,, Golden Queen, 4, 5, 6 to 10 feet high.
,, Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
,, ,, ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUIOPSIS BOREALIS, 4, 5 to 10 feet.
,, DOLABRATA, 3, 4 and 5 feet.
THUJA AUREA, 2, 3 and 4 feet high.
,, SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

DWARF GERMAN TEN-WEEK STOCK—Twenty-four varieties, each distinct, 4*s.* 9*d.* per ounce, 2*d.* per packet; finest mixed, 60*s.* per pound, 3*s.* 9*d.* per ounce; assortment of twenty-four varieties, containing each 100 seeds, 2*s.*

LARGE-FLOWERING TEN-WEEK STOCK—Twenty-four varieties, each distinct, 6*s.* per ounce, 2*d.* per packet; finest mixed, 70*s.* per pound, 4*s.* 6*d.* per ounce; assortment of twenty-four varieties, containing each 100 seeds, 2*s.* 4*d.*

The Stocks I supply are always raised by myself, and are of unsurpassable quality (pot-raised seed), and I do not cultivate any that are not extra double and pure and beautiful in colour. For years past in Germany they have gained the utmost approbation.

A Special Price LIST, in German, sent gratis.

FRIED. ROEMER, Seed Grower, Quedlinburg, Germany.

THE BEST BROAD BEAN FOR EXHIBITION.

CARTERS' LEVIATHAN produces enormous pods, 14 to 16 inches in length. Takes the 1st Prize everywhere. Price, in sealed packets, 2*s.* 6*d.* per pint.

CARTERS, The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.

THE BEST CUCUMBER FOR EXHIBITION.

CARTERS' MODEL.—This is the handsomest variety grown. Price, in sealed packets, 2*s.* 6*d.* and 3*s.* 6*d.* each, post-free.

CARTERS, The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.

THE BEST MELON FOR EXHIBITION.

CARTERS' BLENHEIM ORANGE, awarded 1st Prize in a competition of thirty-one of the best known varieties at the Great Show of the Royal Horticultural Society. Price, in sealed packets, 2*s.* 6*d.* and 3*s.* 6*d.*, post-free.

CARTERS, The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.

SPRUCE FIRS for Christmas Trees, well formed, 3 to 4 feet, 30*s.* per 100; 4 to 5 feet, 40*s.* per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

MY ENGLISH CATALOGUE of German Flower Seeds, and also my German CATALOGUE of Vegetable Seeds, Agricultural and Horticultural Seeds, Bulbs and Flowers, have been published, and will be sent free and prepaid on application.
FRDR. SPITTEL, Seed Grower and Merchant, Arnstadt, near Erfurt, Germany.

**Gold Medal Begonias.**

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 1*s.* and 2*s.* 6*d.* each. All first quality. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

**Bulbs, Orchids, &c.**

THE NEW PLANT and BULB COMPANY beg to announce that their New Autumn CATALOGUE of BULBS of ALL KINDS, ORCHIDS, &c., has now been issued to their Customers. Also post-free, on application.
Lion Walk, Colchester.

APPLE TREES with MISTLETO growing on them. Price from 7*s.* 6*d.* to 21*s.* each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8*s.* per dozen, 50*s.* per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**To the Trade.**

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
Seed Growing Establishment, Wisbech.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

CHRYSANTHEMUMS.—CHRYSANTHEMUMS.—Strong stock plants to furnish cuttings, our selection from 300 of the best varieties grown, 4*s.* per dozen, 25*s.* per 100.

Strong cuttings of the best large-flowered ANEMONE or POMPON CHRYSANTHEMUMS, 12 varieties, our selection, 1*s.* 6*d.*; 50 varieties, 5*s.* 6*d.*; 100 varieties, 10*s.*, post-free. Cuttings of JAPANESE varieties, 2*s.* 6*d.* per dozen.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

**TO THE TRADE.—SPECIAL OFFER.**

**VINES—VINES—VINES.**

W. G. CALDWELL AND SONS can still supply strong FRUITING CANES of the following varieties, at 4*s.* 6*d.* each; Planting Canes, 3*s.* each:—

| | |
|---|---|
| Alnwick Seedling, | Foster's Seedling, |
| Black Humburgh, | Lady Downe's, |
| Duke of Buccleuch, | Madresfield Court, |
| Gros Colmar, | Trebbiano, |

The Nurseries, Knutsford, Cheshire.

FOR SALE,

A Large Quantity of

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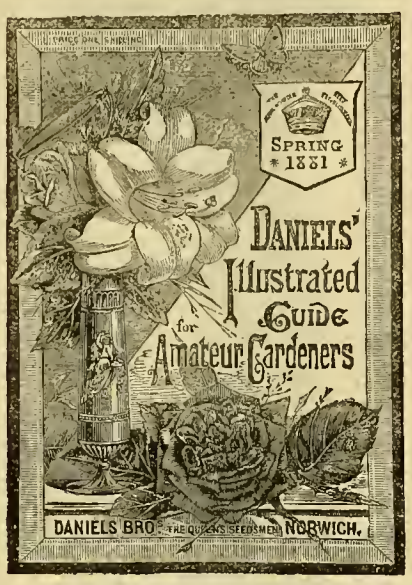


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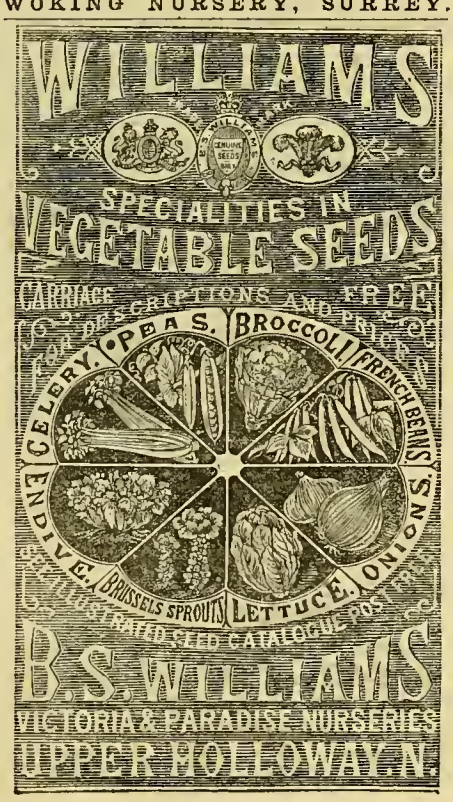


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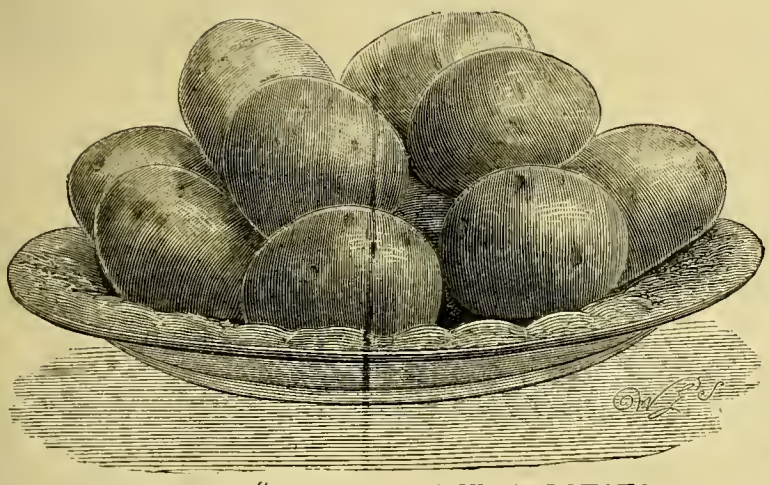

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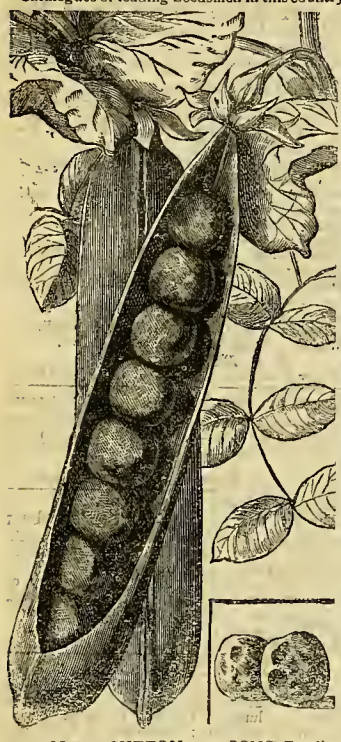

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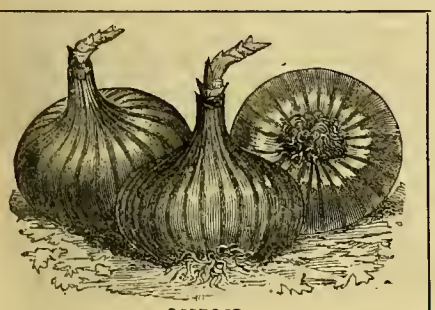

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**Williams' Primula sinensis fimbriata alba MAGNIFICA.**
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The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.
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This is best described as the most brilliant crimson-scarlet Primula yet sent out, with habit as robust as "Alba Magnifica," the foliage very finely cut and deep green. Sold only in sealed packets bearing my trade mark.
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For Opinions of the Press and Testimonials see
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# B. S. WILLIAMS,
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THE
# Gardeners' Chronicle.
*SATURDAY, JANUARY* 29, 1881.


## NEW FRUITS AND VEGETABLES.

IT is not a very difficult task to pass in review the new fruits of 1880. Although few in number they are not the less important, but add materially to our already rich stores in this department. The past year was in itself a tolerably favourable one for fruit and fruit-growing, but having to pay a heavy debt to its predecessor on account of badly ripened wood and a scarcity of bloom, a very bountiful supply could scarcely have been expected and the actual result was somewhat disappointing. The fruit crop of 1880 may be best described as a partial one—immense crops of some particular varieties against total failures with others. And so with locality—in one district a most abundant crop, in the other a blank. The past year was, moreover, a year of specimen fruit. The crop being slight and the season favourable the produce was in general remarkably fine, and indirectly this must materially affect the introduction of new fruits.

*Grapes.*—We speak of Grapes first, as being the grandest of our fruits. Here there was nothing essentially new, but during the past year the great and true merits of Gros Maroc—a variety introduced by the late Mr. Rivers so long back as 1855 from M. Vibert, of Angers—were brought before the public and recognised. It is very singular how long this noble Grape has been in having its merits acknowledged. It is large, black, and handsome, is stated to keep well, but this has to be proved, and is very good in quality, and therefore cannot fail to be extensively grown.

*Peaches* were almost a total failure in the open air, and no novelties were brought under notice. Sea Eagle, a comparatively new variety, was remarkably well shown on one occasion from Trentham.

In *Plums* Mr. Rivers sends us an acquisition in Grand Duke, a large ovate, late-ripening variety, with reddish-purple skin, and very good in quality.

*Cherry.*—St. Margaret, an old variety, of the Black Bigarreau class, was very highly commended for its excellent late-keeping properties and first-rate quality. It deserves to be better known, for there is no late Cherry equal to it in quality.

Amongst *Apples*, a great number of aspirants arose, but our lists here are already so full and good there is no place for anything that is not exceptionally good. The Queen, from Messrs. Saltmarsh, is a good one, large, handsome, and a good keeping variety. It is distinct, but rather too strongly resembles Cox's Pomona ever to remain so. Laxton's Schoolmaster is a very excellent culinary apple of medium size, and greenish-yellow in colour. It was raised, we believe, from an American variety.

In *Pears* there was no actual novelty of any merit brought forward. Auguste Jurie received honours as a large, well-flavoured variety, ripening very early, and very valuable on that account. Vineuse, a Belgian Pear, of some years' standing, of large size and most excellent quality, is deserving also of mention. Fertility (Rivers) is a new variety of great promise.

In *Raspberries* Baumforth's Seedling is recommended for its great size and productiveness.

*Melons* were good and abundant during the past year, and many new varieties are submitted to our notice. Bellamore Hybrid Green-flesh again proved to be of truly excellent quality. Blenheim Orange, scarlet-flesh (Carter & Co.), is perhaps the best scarlet-fleshed Melon we have yet seen—large, tender-fleshed, and excellent. Welford Park is another very handsome yellow-skinned variety, with pale red flesh and of good quality. Sutton's Hero of Lockinge is a very beautiful variety, with tender white flesh and very fine in quality; so that here we have Melons of all colours of flesh, all excellent in quality, to choose from. What has colour to do with flavour, we wonder.

Amongst *Strawberries* many novelties, but no direct acquisitions, deserve to be recorded.

VEGETABLES.

In this department we may be permitted to again repeat, that we do not look for novelty so much as for selection. It is by true and careful selection that the high standard of our vegetables is chiefly maintained. There are practically no new introductions amongst our vegetables at the present time—as in the case of plants, and but few that are the result of hybridisation, so that we look to the selectors almost entirely. Even in such cases where the hybridiser is the means of introducing fresh blood or novelty, it is the selector upon whom falls the chief share of the work to fix or secure and maintain the points arrived at, and especially is this the case with *Peas*, which first demand our attention. Peas have been productive of novelty, and have been much improved (a very good word when properly applied) of late, and a great measure of credit is due to Mr. Laxton—who set the ball rolling in earnest—who is now sending out two very fine new varieties, viz., John Bull, a blue wrinkled marrow, and Minimum. The first is of the same parentage as Marvel, which is some recommendation. The Baron, too, another of Mr. Laxton's long over-due children, is this year to be sent out by Messrs. Veitch. Carter's Pride of the Market is a wonderfully fine dwarf, round blue Marrow, and an extraordinary cropper, like its twin-brother Stratagem. Day's Early Sunrise is highly spoken of, and there is both novelty and considerable merit in Mr. Tipping's Cleopatra and Distinction.

In *Broad Beans*, Carter's Leviathan Windsor is an acquisition, and in *Broccoli*, Ledsham's White is one of the hardiest and best varieties we have seen. The trial of *Brussels Sprouts* at Chiswick served to show the decided superiority of certain stocks in a remarkable manner. The best were the Aigburth or Otterspool, the Dalkeith, Scrymgeour's Giant, and Craigo's Favourite. In *Capsicums*, the Yellow of Nocera of Henderson is a very beautiful variety, the fruits large, yellow, and borne erect; but whether it may be as useful as ornamental is not known. In *Cucumbers* we have Selborne Rival and Montrose Seedling, and many more promising aspirants. In *Onions*, the Zittau Giant Yellow of Benary is a fine-looking sort, and said to keep well, and there is absolute novelty and improvement in Mr. Pond's Jersey white *Shallot*. In *Beets*, Messrs. Rutley & Silverlock's "Green's Selected" is a very fine sort, and an acquisition.

*Potatos.*—The great amount of interest and attention that have been devoted to this most important of the vegetable products that come under the care of the gardener has resulted in the raising of immense numbers of new varieties in this country and in America. We are overdone with new varieties of Potatos at present, so can only notice a few of the more important amongst them:—Lord Mayor (Dean) is a large, white, roundish variety, a seedling between Early Rose and Early Market; Holborn Favourite (Carter) is a very handsome variety, of American origin and an enormous cropper; Wiltshire Snowflake is a large handsome variety, good in quality, and an immense cropper; Wormleigton Seedling is very promising, but there is a doubt whether, under general cultivation, it will be distinct from Magnum Bonum. There are a number of American varieties to hand, but few of them seem to equal the already known sorts. We make one exception—St. Patrick, now being sent out by Messrs Veitch. This is from the raiser of Early Rose—Mr. Goodale, of New York—and in bulk somewhat resembles Magnum Bonum in appearance.

## New Garden Plants.

ANGRÆCUM HYALOIDES, *Rchb. f., Gard. Chron.* 1880, Feb. 28, 264.

This nice little gem appears to be a thankful creature. Last year I had a tiny peduncle with a single flower. A few bracts seemed to indicate the probability of a greater fertility. This year Messrs. Veitch kindly sent in lieu of that little bit three inflorescences, one of five, one of nine, one of eleven flowers, which are remarkably elegant. It appears to be the habit of this plant to begin with expanding the top flowers, under a few empty bracts. When these flowers begin to fade there are still buds left at base. *H. G. Rchb. f.*

POLYPODIUM KRAMERI, *Franchet et Savatier, Enum. Plantarum Japonicum*, ii. 244 (Kremeri), 641.

Fronds membranaceous, glabrous, bipinnatifid, pale green, the lamina subtriangular or ovato-deltoid, articulated with the stipes, and usually more or less refracted, deeply pinnatifid, the segments being united by a broad wing to the rachis, which turns to a chestnut-brown as the fronds acquire age; segments deflexed, the lowest especially, unequal-sided, cut more than half-way down into oblong crenate lobes; veins conspicuous, pinnate (in the segments of the lower pinnæ), slightly flexuose, simple or forked about half-way across, the round or oblong sori placed about midway between the costa and margin, and variously situated on simple or forked veins, in the latter either on the fork or on the anterior venule, the posterior venule often again forked, the veinlets extending free to the margin; sori scattered over every part of the frond, including the wing of the rachis, various in form, but usually oblong near the secondary rachides, and smaller and rounder near the extremities of the lobes; occasionally the lowest anterior vein running up the wing parallel to the rachis is united to the lowest posterior vein of the next segment above, and forms a long costal areole; caudex slender, extensively creeping.

This pretty little hardy Fern was introduced from Japan, its native country, in 1878, by Messrs. Veitch & Sons, of Chelsea. It is allied to our P. Phegopteris, but sufficiently distinct, as the annexed descriptive particulars will show; it however resembles that plant in being deciduous, and in having an extensively creeping and freely ramose slender caudex, which is covered with ovate pale-coloured scales. The stipes is smooth, slender, 3 to 4 inches long, pale green. The lamina is about the same length or longer, 5 to 6 inches, articulated with the top of the stipes, and more or less refracted at that point, in general outline triangular, or sometimes inclining to ovate when the lower pair of pinnæ (segments) are more than usually deflexed; these segments are oblique from the greater development of the posterior side, the upper ones, though somewhat oblique, being less unequal-sided. All the segments are connected by a broad wing to the primary rachis, which as the fronds become mature, as well as the secondary rachides and principal veins, take on more or less of a chestnut-brown hue, by which they become more clearly marked out on the pale green under-surface of the fronds. The segments are cut halfway down—the basal ones still deeper—into oblong lobes, which in the garden plant are simply crenate, but in one of the forms referred to by the authors of the species are incisely toothed. The venation is very distinct; a flexuose vein proceeds from the rachis into each segment, its branches extending to the edge, and being either simple or once or twice forked; occasionally but rarely the lowest anterior one combines with the lowest posterior vein of the next superior segment, and forms a long costal areole in the wing of the rachis, but these veins usually curve abruptly, and pass out to the edge without coalescing. The sori are numerous, scattered over the whole surface from the wing to the apex of the segments, those situated near the secondary rachides being usually larger and oblong, often very distinctly oblong, and those near the apex of the lobes becoming smaller and globular; they mostly form two lines on each segment, about equidistant from the costa and the margin, but the veins which traverse the wing are also soriferous. On the forked veins the sorus is either placed at the fork or on the anterior branch (venule), in which latter case the posterior branch is often again forked near the margin.

It is a free-growing dwarf Fern, and a very desirable species for the hardy rockery, where it will take a place alongside our native P. Phegopteris and the North American P. hexagonopterum. *T. Moore.*

MASDEVALLIA IGNEA STOBARTIANA.

Take Masdevallia ignea Marshalliana and give it the finest mauve-purple over the chief nerves, and you will form an idea of this delightful variety, just received from Mr. William C. Stobart, Spellow Hill, Burton Leonard, Leeds, whose name it justly bears. *H. G. Rchb. f.*

CALANTHE BARBERIANA, *n. hybr.* (CALANTHE VESTITA TURNERI).

It appears no one had succeeded in crossing Calanthe vestita with C. Turneri, the former being the male parent; finally Mr. J. T. Barber, of Old Hall, Spondon, Derby, was successful, and raised a virginal beauty. The bulbs are few and intermediate, having a slight constriction at the part which is so striking in C. Turneri. It is very robust, as so many mules are. The flowers are of vestita character, but would appear more slender; they are of the purest white, with yellow at the base of the lip and at the inferior face of the column; in some cases there is a light wash of purple before the yellow area. It is a great pleasure to dedicate this beauty to Mr. J. T. Barber. *H. G. Rchb. f.*

MORMODES CARTONI (*Hook.*) STENANTHUM, *n. var.*

This has light ochre-coloured flowers, with sepia-brown stripes, five on the sepals and petals. Column white, with some purple spots. All the parts of flower are exceedingly narrow. It was sent from New Grenada by Mr. W. Kalbreyer to Messrs. J. Veitch & Sons, who kindly sent me the inflorescence. *H. G. Rchb. f.*

MORMODES CARTONI (*Hook.*) AURANTIACUM, *n. var.*

Flowers orange. Lip only sulphur-yellow, ochre beneath, the two angles on the sides orange. Parts of flower shorter and broader than in Mr. Carton's stenanthum. It was sent from New Grenada to Messrs. Veitch by Mr. W. Kalbreyer. *H. G. Rchb. f.*

MORMODES PARDINUM (*Bat.*) ASPERSUM.

Once more a new variety of this old species. It is of pallid sulphur colour, and has numerous very inconspicuous pallid sepia-brown small spots. It was sent to me by Messrs. J. Veitch & Sons, who had it from Mrs. Arthur Walter, Finchhampstead, Wokingham. *H. G. Rchb. f.*

ODONTOGLOSSUM NEVADENSE, *Rchb. f., Xenia Orchidacea*, ii., p. 206, tab. 191, i., ii., 1—7.

This exceedingly rare species is quite unique amidst Odontoglossa, by the most singular crescent shape of its base of lip before the nail, which bears an angle on each side. Hitherto it had only appeared in Director Linden's establishment, a discovery of the late Gustav Wallis. I believe there were only found three or four plants, which appeared, by-the-bye, between the masses of Odonotoglossa Wallis had sent, he himself not having known the curiosity he had sent, having seen no flowers. Mr. Mendel's celebrated plant came from that source. Now I have at hand a fresh good infloresence of another variety, with more yellow tint on the sepals and petals, from Messrs. Veitch. May the stock be rich enough! *H. G. Rchb. f.*

## THE KEW ARBORETUM.

THE MAPLES.—IV.

ACER DASYCARPUM (fig. 24), *Ehr.*; Koch, *Dendrologie*, theil i., p. 541; Gray, *Manual of Botany*, p. 541. Figs.: Emmerson, *Trees and Shrubs of Massachusetts*, vol. i., p. 556; Loudon, *Encyclop. of Trees and Shrubs*, pp. 91, 118. *A. eriocarpum*, Michx.; *A. glaucum*, Marsh; *A. virginianum*, Duh.; *A. rubrum*, Wangenh.

"White Maple, Silver Maple, Sir Charles Wager's Maple. Northern Vermont, south to Florida; west to Minnesota, Eastern Nebraska, and the Indian territory, most common west of the Alleghany Mountains. Wood soft, white; of little value. A large tree, 60 to 80 feet in height, with a trunk 6 to 8 feet in diameter; along streams. Maple sugar is occasionally manufactured from the sap of this species:" Sargent, *Catalogue of the Forest Trees of North America.*

Besides its fruit characters this beautiful species is

distinguished from A. rubrum by the silvery whiteness of the under surface of its larger finer leaves, the lobes of which are more deeply cut, and by the colour of its twigs, &c. It is a fast growing tree of the first rank for ornamental purposes, its graceful habit and handsome foliage causing it to be extensively planted as an avenue and general shade tree both in its native country and in Europe. The flowers which clothe the leafless branches in early spring somewhat resemble those of A. rubrum, but are not nearly so highly coloured as are those of that species; they expand, too, a fortnight or more earlier. In autumn the decaying foliage assumes a bright lemon-yellow tint—at any rate, as far as I have observed in this country. Seeds are freely produced and ripened both in England and on the Continent, and a crowd of sports and seedling forms have received names in nurseries. After a careful examination of a large series of such forms I find the differences in most cases so exceedingly slight as to render the task of discriminating between them and describing their distinctive peculiarities altogether impossible. As is the case with so many of the Maples, several of the names which have been given to forms of this species have also been attached to forms of other and totally different species, and so no little confusion exists. I have measured leaves as much as 8 inches long (not reckoning a petiole 4 inches in length) by about 10 inches broad.

*Var.* PENDULA: a weeping form, which has recently originated in Van Volxem's nursery.

*Var.* AUREO-VARIEGATA: a variety with leaves irregularly variegated with yellow.

In addition to these and the synonyms above quoted, A. dasycarpum is found in nurseries and gardens under the following names:—A. album, A. coccineum, A. dasycarpum macrophyllum, A. dasycarpum monstrosum, A. floridanum, A. floridum, A. hybridum, A. macrocarpum, A. palmatum, A. Pavia, A. saccharinum floridanum macrohpyllum, A. saccharinum floridanum palmatum, A. Saira, A. tomentosum, A. virginicum rubrum, A. Wagneri dissectum, A. Wagneri laciniatum, A. Weiri laciniatum.

A. HELDREICHI, *Orph.*, in Boiss. *Diagn.*, ser. ii., v., p. 71; Boissier, *Flora Orientalis*, vol. i., p. 949.—Native of Greece, Servia, Herzegovina, Montenegro.

In the flowers and fruits this recently introduced species (fig. 25, p. 141) approaches A. opulifolium, but in its handsome foliage it is quite distinct from that as well as from any other of the cultivated Maples. The sub-coriaceous leaves, shining green above and somewhat glaucous beneath, are so deeply divided as to resemble to a remarkable extent those of the Virginian Creeper. Specimens introduced from the second of the above mentioned countries are growing in the Kew arboretum. *Geo. Nicholson, Royal Gardens, Kew.*

FIG. 24.—ACER DASYCARPUM, LEAVES SILVERY BENEATH. (SEE P. 136.)

## MELCHET COURT, ROMSEY,

IN the neighbourhood of the New Forest, 6 miles north-west of Romsey, and 11 south-east of Salisbury, on a knoll in the midst of an undulating park, which is nicely wooded, is situate Melchet Court, the picturesque residence of Louisa, Lady Ashburton, which is approached from the Salisbury and Southampton road through an avenue of promising young Lime trees. The Court, which partakes of the Italian style of architecture, was burnt down in 1873, but since then it has been rebuilt and decorated. It is a large handsome building, with a lofty tower, from which charming panoramic views of great extent and beauty are obtained, including Southampton Water, with the numerous steamers sending up their dark and spiral clouds of smoke to the brigh blue sky as they ply hither and thither on the billowy waters, and, as already hinted, the great historical Forest of Hampshire. The flower garden, which is geometrically laid out and contains a good sized fountain, is situate opposite the south front of the Court, and runs in an oblique direction from the terrace, from whence nice views of the park and immediate neighbourhood are obtained, to the park, from which it is suitably enclosed.

The grounds, which are contiguous to the flower garden and east and west of the Court, are, like the place in general, well kept and planted with an assortment of approved Coniferæ, which are all in a flourishing state; notable amongst which are a few specimens of each of the following varieties, viz., Wellingtonia gigantea, Cupressus macrocarpa, Cryptomeria elegans, and Picea Pinsapo, which for size, symmetry and luxuriant growth are the finest I have seen for many a day. Then again there are three magnificent Cedars of Lebanon, growing within a couple of dozen yards of the west end of the house, that also deserve special notice. These trees are nearly, if not quite, as large as the famous Cedars at Wilton House, Salisbury, and Frognal, Chislehurst, but are in a better state of preservation; in fact, they appear to be in the full vigour of health and beauty: the soil and situation at Melchet evidently suits them, as also those above-named. Adjoining, and at the west end of the Court, is a lofty conservatory—a combination of brick, iron, and glass—which communicates, by ascending a flight of steps, with the drawing-room. This house was at the time of my visit (the last day of the old year—certainly not the best time to see and make notes of a garden) very gay with foliage, flowering and climbing plants, which hung gracefully from the roof, pillars, and walls. Notable amongst the flowering plants were several large and well-flowered specimens of Amaryllis, some of which had a very good effect standing on either side the steps communicating with the drawing-room, &c., whilst in the centre of the same house, standing on the floor, were some good plants of Arundo Donax variegata, Araucaria excelsa, Tree Ferns, Camellias, &c.

The kitchen gardens, in which are situate the numerous forcing and plant houses, the head gardener's house (a good house too!) and the young men's apartments, are adjoining the grounds, and are well stocked with the usual winter and spring vegetables and fruit trees. The plant and fruit-houses, not including the conservatory and pits, are eighteen in number, and measure in the aggregate 475 feet long by from 15 feet to 18 feet wide, and of proportionate height. These houses, with the sheds, offices, &c., at the rear, were erected some ten or twelve years ago by Mr. J. Gray, of Chelsea. They are light, strong, and well-built houses, and fitted up with the most

approved ventilating machinery. They consist of seven plant-houses (span-roofed), five vineries, two Peach-houses, one Fig-house, and Cucumber and Melon-houses. One of the latter houses was planted with, and carrying a good crop of, Vick's Criterion Tomato. I must not omit mentioning that one of the vineries is detached from the main range of houses, and was originally in three compartments, and were designated the "Old Vineries;" but a few years ago, in consequence of one particular old Vine requiring more room, the partition walls and glass on either side the (then) central house were removed, as also the old roof, and replaced with a new one—glass and iron. The Vine above-mentioned is planted in an outside border nearly in the centre of the range, and taken into the house under the wall-plating, which is of stone, and up to the first wire (about 3 feet from the plating), when it is trained horizontally right and left, and from which sufficient canes to fill the house are trained up under the roof. This Vine, which at 2 feet from where it is taken into the house measures 18 inches in circumference, will have filled the entire house, which is 96 feet long and 15 feet wide, with good bearing wood within a few years hence. In the meantime, there are a few Muscat Vines, which have made splendid well-ripened wood this year, planted on a raised bed inside the house, and from which I have been informed fine examples of Grapes had been cut during the last couple of years. These are, however, if I mistake not, to be removed, as the young rods from the old Vine require more room.

The plant-houses, which contain a numerous and extensive variety of foliage and flowering plants, chiefly of a decorative description, were very gay for the time of year with Begonias, Lapageria (trained over the roof of an intermediate-house had a very good effect), Aphelandras, Eucharis amazonica (a good batch just coming into flower), Amaryllis, &c., the greenhouse being gay with Primulas, Callas, &c. The most noteworthy amongst the foliage plants was a grand plant of Alocasia metallica. One of the plant-houses was devoted to the growth of exotic Ferns, of which there was a good collection of large, healthy, well-grown plants, and Palms. In this house a few baskets of Ferns suspended from the roof had a pleasing effect also. It will, perhaps, be within the recollection of many of the readers of the *Gardeners' Chronicle* that during the time Mr. W. Cross (now of Ford Nursery, Salisbury) was gardener at Melchet Court, he got together and established a large and good collection of Orchids, some of which found their way to Stevens' Rooms, and thence to the now celebrated collection at Burford Lodge; but on Mr. Cross leaving Melchet this fine collection of Orchids was partly broken up—sold. However there had been a sufficient number of plants retained to illustrate the ability of his immediate successor (Mr. Kennedy, recently left) as an Orchid grower, conspicuous amongst which are several good plants, having several flower-spikes each, of Lælia and Cœlogyne cristata, a fine plant measuring 3½ or 4 feet in diameter, and having, roughly speaking, from 300 to 400 flower-spikes, which when in flower must make a grand display. I may remark, in conclusion, that at the time of my visit an early vinery and early Peach-house had just been started (it would appear that they do not force very early at Melchet), and, like the several other departments in these gardens, which I have been informed cover an area of 52 acres, bore ample evidence of skilful management. *H. W. W.*

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LABEL FOR PLANTS.—The Council of the Society of Arts are prepared to award a Silver Medal, together with a prize of £5, which has been placed at their disposal for the purpose by Mr. G. F. Wilson, F.R.S., for the best label for plants. The object of the offer is to obtain a label which may be cheap and durable, and may show legibly whatever is written or printed thereon; the label must be suitable for plants in open border. These considerations will principally govern the award. The award will be made on the recommendation of a committee, which will be appointed for the purpose by the Council. Specimen labels, bearing a number or motto, and accompanied by a sealed envelope containing the name of the sender, must be sent in to the Secretary not later than May 1, 1881. The Council reserve to themselves the right of withholding the medal and prize offered, if, in the opinion of the judges, none of the specimens sent in are deserving.

## GRAPES IN SCOTLAND AT CHRISTMAS.

How well they manage some things in the North! It is a singular fact, account for it as we may, that Grapes, more especially late Grapes, are better cultivated in the North, and there are more of them at command, than in the South. The extraordinary examples from Mr. Thomson, of Clovenfords, are so well known, that it is almost a work of supererogation to speak of them—they are to be seen in every fruit-shop of any importance in all parts of the country; but there are many more, the produce of private growers, that never come to public market or exhibition, and are to some extent unknown.

Dalkeith has long been famous for its gardening. Every garden-loving tourist to the North knows all that is to be seen there in the season. But Christmas is not a tourist season, and the riches of Dalkeith are then not so well known. Grapes are at all times interesting, but at Christmas especially so, and Mr. Dunn had many fine examples to show. One long house contained a great number of varieties—Muscat of Alexandria, very good; Gros Colmar, large, but flavourless as usual; Foster's Seedling, bunches large, and with very fine berries, and most excellent in quality. What a fine late Grape it really is: whoever would have thought of trying it for such a purpose? We always look upon Foster's Seedling as an early Grape, but here it was keeping company with its twin sister, Lady Downe's, which is the best of all Grapes to keep, and which was also very fairly grown. The new Grape, Mrs. Pearson, was here uncommonly good—we have never seen it finer: bunches 3 to 4 lb. in weight, berries of good size, round, rich amber in colour, and with a rich sprightly Muscat flavour. Mr. Dunn deserves to be highly complimented on his success with this fine Grape.

Oxenford Castle is not far from Dalkeith and here in the fine range of houses lately erected by Messrs. Boyd & Sons, were to be seen as magnificent a lot of Grapes as need be looked upon at any season. Muscat of Alexandria was the chief variety, and when well done, as was the case here, there is no Grape to equal it. There were bunches 3 to 4 lb. in weight—many more—and scores of them still hanging as yellow as gold, perfect examples indeed. They will be all cut by this time and "bottled" as Mr. Anderson informed us—that is, cut, their stalks put in bottles of water, and placed in the Grape-room—a room which Mr. Anderson has had specially constructed—to keep for use in March and later. White Tokay was here exceedingly good. It is very rarely to be seen, which is rather strange, as it is by no means a bad Grape. In appearance, when well grown, it will almost pass muster for a Muscat, as, indeed, they have often been confounded with each other. The berries of the White Tokay are generally much whiter in colour and with a firmer, harder texture of flesh than the Muscat. It is a better Grape in all respects than the Trebbiano, as compared here side by side, and Mr. Anderson grows the Trebbiano as well as most people. The bunches of it were large, and the berries too, and of that deep amber tint it assumes when dead ripe, and sadly wanting in flavour. Yet another noble-looking amber-coloured Grape attracts our attention. What is it? Mr. Anderson cuts a small bunch (quite 2 lb.) and we taste—and can't tell. It is remarkably handsome, bunches large, berries large, long ovate, clear golden or pale amber skin, very firm flesh, and remarkably sweet and pleasant, nearly equal to the best Muscat, but so distinct. Mr. Anderson slowly replies, "That is Pearson's Golden Queen." Well, we have seen Golden Queen a good many times—when Mr. Pearson exhibited it before the Fruit Committee and received the certificate; at the Crystal Palace, where the prizes offered were withheld, the examples being so wretched; at South Kensington the following year, where they were not much better: we have grown it ourselves, and seen it growing in many places, and had come to condemn it as a bad one—as a Grape quite unfit to grow—when here it stands before us, under the skilful treatment of Mr. Anderson, as a veritable queen among Grapes.

Of Alicante there were many fine bunches, well grown, well coloured, and good in quality, which is not always the case; but the best late keeping black Grape was Lady Downe's, of which there were some very good examples. *A. F. B.*

## NOTES ON ORCHIDEÆ.

By GEORGE BENTHAM, F.R.S.*

IN this important contribution the subject is prefaced by a short historical sketch of the more eminent workers in this group from the end of last century. The wonderful variety of tropical forms of Orchids early attracted attention among botanists, and in later years the collection of Loddiges were the first of any importance. Since then, having become fashionable and popular objects of cultivation, through the example set by the Duke of Devonshire in his Chatsworth collection, they have acquired great practical importance, and a still more marked incentive to their production has arisen from the studies of Charles Darwin on the singular modifications of their fertilising apparatus and its protecting perianth.

In their systematic arrangement, Swartz' labours (1800), and afterwards those of the Richards, Dupetit-Thouars, and others observations have become obsolete from the vast influx of forms then unknown. Robert Brown first published the principles of their classification on a solid basis, and Lindley afterwards, in his *Genera and Species of Orchids*, further summarised and grouped in such a way as even to remain true till the present day. Blume's labours must always take a high rank. Excellent analyses of generic character are to be found in Sir W. Hooker's writings, and in the illustrations of Wight, Griffith, Fitzgerald, &c., devoted to their scientific aspect, besides the numerous works containing chiefly the more showy forms in cultivation, all are useful adjuncts. The younger Reichenbach has devoted very great and life-long attention to the group, and has become the greatest authority on their determination, especially of those in cultivation; but from him we still lack a synopsis of contrasted characters adapted to the limitation of tribes and genera. Dr. Pfitzer, of Heidelberg, has studied Orchideæ according to their vegetative characters, and this has made an important advance. A full abstract of Dr. Pfitzer's paper is given in the last volume of *Gardeners' Chronicle*, p. 750. J. G. Beer, of Vienna, in strongly criticising Lindley's classification, proposed a division of the order, with six tribes founded solely on the modifications of the labellum, but to the total neglect of all other characters, structural or vegetative.

In reviewing the Lindleyan system, Mr. Bentham observes that the primary division, founded on the consistence of the pollen, has not been replaced by any other equally good, although it is by no means absolute. He admits that the distinctions founded upon the so-called caudicles and gland can scarcely be maintained so exclusively as was done by Lindley, independent of the confusion occasioned by the term "caudicle" having been applied to three different parts of the pollinary system, which he enumerates.

In the case of Vandeæ, Darwin, distinguishing it from the caudicle, proposes to call it pedicel; but as this word has already a special designation in some flowers, Bentham thinks stipes a more appropriate term. The result of the latter botanist's detailed examination of all the genera proposed or established, of which he could procure specimens living or dry, checked by published descriptions and illustrations, has been their distribution into five tribes and some twenty-seven subtribes, as tabularly indicated below. Mr. Bentham thereafter enters into lengthened explanations of the several tribes, sub-tribes, and more remarkable genera in the order, in his usual critical and careful manner.

ORCHIDEÆ.

*Tribe I.—Epidendreæ.*
Subtribes 1. Pleurothalleæ
,, 2. Microstyleæ
,, 3. Liparieæ
,, 4. Dendrobieæ
,, 5. Erieæ
,, 6. Bletieæ
,, 7. Cœlogyneæ
,, 8. Stenoglosseæ
,, 9. Læliеæ

*Tribe II.—Vandeæ.*
Subtribes 1. Eulophieæ
,, 2. Cymbidieæ
,, 3. Cyrtopodieæ
,, 4. Stanhopieæ
,, 5. Maxillarieæ
,, 6. Oncidieæ
,, 7. Sarcantheæ
,, 8. Notylеæ

*Tribe III.—Neottieæ.*
Subtribes 1. Vanilleæ
,, 2. Corymbieæ
,, 3. Spiranthеæ
,, 4. Diurideæ
,, 5. Arethuseæ
,, 6. Limodoreæ

*Tribe IV.—Ophrydeæ.*
Subtribes 1. Serapiadeæ
,, 2. Habenarieæ
,, 3. Diseæ
,, 4. Corycieæ

*Tribe V.—Cypripedieæ.*

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* Read at Linnean Society, January 20, 1881.

## THE FOOD OF PLANTS.

By W. IVISON MACADAM, F.I.C., F.C.S., &c., LECTURER ON CHEMISTRY AND ANALYTICAL CHEMIST, EDINBURGH.

(*Concluded from p.* 108.)

THE saline matter consists of potash and soda in combination with chlorine, sulphuric and carbonic acids :—lime, and magnesia, as carbonates and phosphates, with small quantities of iron and alumina, and some sand. The proportions in which these salts are present in the ash differ in the various classes of plants, and to a less extent in the varieties of each class. The tables below will show these points.

These results show a wide range of difference in all of the mineral constituents, not only in the average of the various classes of plants, but also in the results of the analyses of the various members of each class. Thus we see in Pelargoniums that the potassic oxide (potash) may be as high as 22.11 per cent., or may run as low as 9.69 per cent. Calcic oxide (lime), another of the principal constituents, runs from 28.44 per cent. down to 16.20 per cent., whilst phosphoric acid is found to be present in some cases to the extent of 12.98 per cent., or it may be as low as 7.30 per cent. These remarks also apply to the other classes of plants examined, for we find that the Fuchsia contains potassic oxide from 16.36 to 26.13 per cent., calcic oxide from 11.11 to 14.01 per cent., and phosphoric acid from 8.46 to 9.63 per cent.

Silica or sand is occasionally found in large quantity, as in Cyclamen persicum, which contains 27.27 per cent., or fully one-fourth of the whole ash. As a rule, this substance constitutes from between 5 or 6 per cent. up to 12 to 16 per cent. of the saline ingredients in plants.

AVERAGE COMPOSITION OF THE ASH OF PLANTS.

| | Pelargonium | Fuchsia. | Primula. | Heliotrope. | Cyclamen. | Lobelia. | Dracæna. |
|---|---|---|---|---|---|---|---|
| Potassic oxide ($K_2O$) .. .. | 14.21 | 20.45 | 24.02 | 25.15 | 26 84 | 23.01 | 19 40 |
| Sodic oxide ($Na_2O$) .. .. .. | 3.92 | 6.32 | 3.27 | 3.70 | 4.88 | 7.32 | 2.48 |
| Calcic oxide (CaO) .. .. .. | 23.91 | 12.44 | 16.94 | 19.13 | 6.23 | 7.57 | 20.40 |
| Magnesic oxide (MgO) .. .. | 9.41 | 12.71 | 7.03 | 3.10 | 4.87 | 4 93 | 6.90 |
| Ferric oxide ($Fe_2O_3$) .. .. | 1.09 | 1.49 | 0.57 | 0.21 | 0.23 | 0.32 | 2.05 |
| Aluminic oxide ($Al_2O_3$) .. .. | 0.34 | 0.57 | 0.28 | 0.14 | 0.16 | 0 24 | 0.90 |
| Chlorine (Cl) .. .. .. .. | 3.06 | 5 87 | 3.76 | 4.21 | 8.33 | 4.82 | 5.87 |
| Sulphuric anhydride ($SO_3$) .. .. | 0.98 | 2.55 | 2.87 | 1.43 | 1.19 | 4.71 | 6.27 |
| Phosphoric anhydride ($P_2O_5$) .. | 10.14 | 9.15 | 6 82 | 9 16 | 9.78 | 7.17 | 10 97 |
| Carbonic anhydride ($CO_2$) .. .. | 25.04 | 14 85 | 20.16 | 22.51 | 10.22 | 15.24 | 17.90 |
| Silica and silicates .. .. .. | 7.90 | 13.70 | 14.30 | 11.26 | 27.27 | 24.67 | 6.86 |
| | 100.00 | 100 00 | 100.00 | 100.00 | 100 00 | 100.00 | 100.00 |

COMPOSITION OF THE ASH OF PELARGONIUM.

| | Madame Vaucher. | J. and W. Shearer. | Brassidas. | Sweet-scented. | Saintly. | J. C. Musters. | Nillson. | Lucius. | Fireball. |
|---|---|---|---|---|---|---|---|---|---|
| Potassic oxide ($K_2O$) .. | 22.11 | 13.85 | 11.76 | 26.61 | 13.81 | 16.01 | 13 42 | 12.80 | 13.65 |
| Sodic oxide ($Na_2O$) .. | 2.19 | 1.03 | 2 04 | 1.75 | 2.68 | 4.82 | 2.61 | 4.88 | 6.62 |
| Calcic oxide (CaO) .. | 18.84 | 23 63 | 25.53 | 16.20 | 26.76 | 23 07 | 27.83 | 25 87 | 19.43 |
| Magnesic oxide (MgO) .. | 5.63 | 13.15 | 9.03 | 2.38 | 5.39 | 11.56 | 7.12 | 6.97 | 12.93 |
| Ferric oxide ($Fe_2O_3$) .. | 0.64 | 1.12 | 0.83 | 0.62 | 0.76 | 1.22 | 1.35 | 0.85 | 1.26 |
| Aluminic oxide ($Al_2O_3$) .. | 0.12 | 0.23 | 0 21 | 0.11 | 0.32 | 0.46 | 0.56 | 0.21 | 0.38 |
| Chlorine (Cl) .. .. | 2 61 | 2 25 | 3.15 | 4.09 | 3 01 | 3 45 | 2.56 | 2.85 | 3.01 |
| Sulphuric anhydride ($SO_3$) | 0.86 | 2.45 | 1 44 | 0 29 | 0.45 | 0.56 | 0.42 | 0 49 | 0.92 |
| Phosphoric do. ($P_2O_5$) .. | 12.91 | 7.93 | 9.01 | 8.92 | 12.52 | 10.01 | 7.81 | 10.84 | 12.98 |
| Carbonic do. ($CO_2$) .. | 21.59 | 22.29 | 23 88 | 26.43 | 26.19 | 24.49 | 27 61 | 25.03 | 24.20 |
| Silica and silicates .. | 12.50 | 12.07 | 10.12 | 12.60 | 8.11 | 4.35 | 8 71 | 8.21 | 4.62 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

| | Golden Superb. | Sir Edward Landseer. | Florence Durand. | Globosa major. | Miss Wakefield. | Rose of Allandale. | Edmond. | Laura Walters. | |
|---|---|---|---|---|---|---|---|---|---|
| Potassic oxide ($K_2O$) .. | 12.04 | 17.36 | 11.47 | 12.56 | 9.69 | 9.90 | 10.81 | 10.68 | .. |
| Sodic oxide ($Na_2O$) .. | 2.92 | 2.61 | 4 08 | 6.06 | 5.93 | 6.57 | 4.30 | 5 55 | .. |
| Calcic oxide (CaO) .. | 26.20 | 21.16 | 28.44 | 22.51 | 26.48 | 27.10 | 22.90 | 24 47 | .. |
| Magnesic oxide (MgO) .. | 10.89 | 12.22 | 10.36 | 11.69 | 11.93 | 10.69 | 8.26 | 9.85 | .. |
| Ferric oxide ($Fe_2O_3$) .. | 1.32 | 1.23 | 1.21 | 1.54 | 1.48 | 1.04 | 0.83 | 1.21 | .. |
| Aluminic oxide ($Al_2O_3$ .. | 0.46 | 0.32 | 0.36 | 0.62 | 0.59 | 0.34 | 0.21 | 0.33 | .. |
| Chlorine (Cl) .. .. | 2.71 | 3 22 | 3.75 | 2.25 | 2 85 | 2.71 | 4.81 | 2.73 | .. |
| Sulphuric anhydride ($SO_3$) | 1.12 | 2.19 | 0.12 | 0.71 | 0 81 | 0 95 | 0.41 | 2.49 | .. |
| Phosphoric do. ($P_2O_5$) .. | 11.15 | 10.45 | 9.01 | 12.28 | 8.94 | 7.30 | 9 82 | 10.58 | .. |
| Carbonic do. ($CO_2$) .. | 24.36 | 21 41 | 25.39 | 24.73 | 25 69 | 26 77 | 21.13 | 23 48 | .. |
| Silica and silicates .. | 6.83 | 7.83 | 5 81 | 5.05 | 5.61 | 6.63 | 16.52 | 8 63 | .. |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | .. |

COMPOSITION OF THE ASH OF PLANTS.

| | Fuchsia Arabella. | Fuchsia Harry Williams. | Fuchsia Rhoderick Dhu. | Primula sinensis rubra. | Primula sinensis alba. | Heliotrope Lizzie Holland. | Begonia semperflorens. | Cyclamen persicum. | Lobelia speciosa. | Dracæna Dennisoni. | Dracæna gracilis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Potassic oxide ($K_2O$) .. .. .. .. .. | 18.85 | 16.36 | 26.13 | 24.04 | 23.96 | 25.15 | .. | 26.84 | 23.01 | 20.29 | 18 49 |
| Sodic oxide ($Na_2O$) .. .. .. .. .. | 6.15 | 8.27 | 4.54 | 3.05 | 3.48 | 3.70 | .. | 4.88 | 7.32 | 3.04 | 1.90 |
| Calcic oxide (CaO) .. .. .. .. .. | 14.01 | 12.20 | 11.11 | 16.58 | 17.31 | 19.13 | .. | 6.23 | 7.57 | 20.65 | 20.04 |
| Magnesic oxide (MgO) .. .. .. .. .. | 16.39 | 9.00 | 12.73 | 6.09 | 7.97 | 3.10 | .. | 4.87 | 4.93 | 4.33 | 9.46 |
| Ferric oxide ($Fe_2O_3$) .. .. .. .. .. | 2.14 | 1.02 | 1.32 | 0.52 | 0.63 | 0.21 | .. | 0.23 | 0.32 | 1.86 | 2 23 |
| Aluminic oxide ($Al_2O_3$) .. .. .. .. .. | 0.85 | 0.33 | 0.54 | 0.26 | 0.31 | 0.14 | .. | 0.16 | 0.24 | 0.74 | 1.06 |
| Chlorine (Cl) .. .. .. .. .. | 5.05 | 5.11 | 7.44 | 4.39 | 3 13 | 4.21 | .. | 8.33 | 4.82 | 6 51 | 5.42 |
| Sulphuric anhydride ($SO_3$) .. .. .. .. | 2.44 | 3.41 | 1.79 | 2.98 | 2.76 | 1.43 | .. | 1.19 | 4.71 | 6.53 | 6.01 |
| Phosphoric anhydride ($P_2O_5$) .. .. .. .. | 9.36 | 9 63 | 8.46 | 6.42 | 7.22 | 9 16 | .. | 9.78 | 7.17 | 8.84 | 13.10 |
| Carbonic anhydride ($CO_2$) .. .. .. .. | 14.15 | 16.62 | 13.78 | 19.29 | 21 02 | 22.51 | .. | 10.22 | 15.24 | 18.45 | 17.14 |
| Silica and silicates .. .. .. .. .. | 10.60 | 18.05 | 12.16 | 16 38 | 12.21 | 11.26 | .. | 27 27 | 24 67 | 8.76 | 5 15 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | .. | 100 00 | 100.00 | 100.00 | 100.00 |

The carbonic anhydride (carbonic acid) is obtained from the decomposition of the organic acids present in the living plant—these, on being heated, give off a certain quantity of water of constitution, and leave behind carbonates of the metals.

Having now considered the chemical composition of the ash of plants let us look at the ingredients present in a soil such as those commonly to be met with in greenhouses. The following analysis gives the composition of such a mould :—

*Greenhouse Mould.*

| | |
|---|---|
| Organic matter .. .. .. .. .. | 14.17 |
| Ferric oxide ($Fe_2O_3$) .. .. .. .. | 2.54 |
| Aluminic oxide ($Al_2O_3$) .. .. .. | 1.72 |
| Calcic oxide (CaO) .. .. .. .. | 1.11 |
| Magnesic oxide (MgO) .. .. .. | 0.16 |
| Potassic oxide ($K_2O$) .. .. .. .. | 0.03 |
| Sodic oxide ($Na_2O$) .. .. .. .. | 0.01 |
| Phosphoric anhydride ($P_2O_5$) .. .. | 0.62 |
| Sulphuric anhydride ($SO_3$) .. .. .. | 0 28 |
| Carbonic anhydride ($CO_2$) .. .. .. | 0.13 |
| Chlorine (Cl) .. .. .. .. .. | 0.01 |
| Clay and sand .. .. .. .. .. | 79 22 |
| | 100.00 |

This soil contains, therefore, all the ingredients necessary to the life of the plant, but as in many cases the quantity present is very minute, and sometimes not readily available, it is better to give the plants from time to time more or less plant food. For this purpose manures can be applied. During the course of this investigation very many of these mixtures have been examined, and the results have shown that in many instances the manures were good useful compounds, but in every case the price charged was very much above the market value. The particulars are as follows :—

No. 1 manure contains phosphate, sulphate, and carbonate of lime, soda and ammonia salts, &c. The price is 1*s.* per tin, which weighs, gross weight, 1 lb. 3½ oz.; deducting from this the weight of the tin, 4½ oz., the amount of manure is found to be 15 oz. For this weight of manure the sum of 1*s.* is paid by the purchaser; in other words, he buys at the rate of £119 9*s.* per ton. Should he desire to employ the mixture on his garden, he is told to apply 1 lb. per square yard; in other words, he is to put on 2240 lb. per acre, which will cost at the above rate £117 6*s.* 4*d.* The number of tins of manure in every ton manufactured is 2389.

No. 2 manure is similar in composition to No. 1. The gross weight of the tin as purchased is 1 lb. 8 oz.; weight of tin, 3½ oz.; leaving 1 lb. 4½ oz. for manure. The cost is 1*s.* per tin, equivalent to £89 12*s.* per ton.

No. 3 manure is a mixture of soda, ammonia, and potash salts. The package weighs 13 oz., 6½ oz. of which consists of manure. The price is 1*s.*, which, calculated to the ton of manure, comes to £275 14*s.*

No. 4 manure contains phosphates, sulphate of lime, ammonia and soda salts, &c. The package weighs 1½ lb. Price 1*s.*, or equal to £74 17*s.* per ton.

No. 5 manure and No. 6 manure contain phosphates, sulphates of lime and iron, ammonia, &c. The price is 1*s.* for a 2 lb. tin, or £56 per ton.

No. 7 manure consists principally of sulphate of lime, sand, and organic matter yielding a proportion of ammonia. The charge is 1*s.* for 2 lb., or £56 per ton.

No. 8 manure contains soluble and insoluble phosphates, organic matter yielding a fair proportion of ammonia, &c. The cost is 6*d.* per lb., or £56 per ton.

Now it is quite apparent from the above figures that all of these manures are sold to the horticulturist very much above their market value, and very much above what the farmer can buy the same or similar mixtures for. It may be urged that while in the one case a ton or more is sold, in the other instance only a pound is desired; but surely the mere retailing should not demand such excessive profits. It is true that tin cans and other packages are supplied with the manure, but whilst these may be desirable they are not necessary, as few households do not contain one or more old mustard or other tins into which the manure could be put. Allowing, however, for all packages whatever, such cannot, and do not entail such extra expense on the manufacturer as to require a retail price double of that charged to the farmer, far less a quadruple, double quadruple, or treble quadruple price.

I have now given you the results of my researches conducted during the past year in the province of horticulture. I ask you members of the Scottish

Horticultural Association to aid me, and aid yourselves, in obtaining a knowledge of the materials you work with. The results may not bear fruit for some time, but depend upon it your business is not different from other businesses, and the man who knows the most about his work will be foremost in the ranks. There is little doubt that very many, if not all, our plant diseases are due either to starvation or improper feeding. By care and the application of proper manures to the Coffee plant the disease peculiar to that tree has already been much diminished on one estate in Ceylon, and it now seems as if only time and patience were necessary to entirely eradicate that plant plague. Why should such results not be possible in other cases, such as the Apple trees of the south of England, the Larch pest, the Chrysanthemum mould, and many others? For successful growing it is as necessary to keep up the food of the plant to a proper level as it is to feed a man or other animal. Let the system down and the plant is as ready to fall a victim to disease as the animal: keep both properly fed and the result will be a vigorous and full development of all the parts and a non-liability to disease not obtainable by any other means.

## STERCULIA MEXICANA.*

THIS Sterculia, which has been in cultivation for twenty years, or more, was imperfectly described by Robert Brown in Horsfield's *Plantæ Javanicæ Rariores*, p. 227, from a specimen bearing male flowers, collected in Tabasco by Mr. Linden. The reddish-brown flowers are inconspicuous for the genus, but the shining digitate leaves are handsome. They are borne on long petioles, and in vigorous plants they usually have seven leaflets, though the terminal one of a shoot before us has only three. The petiole is sometimes more than 1 foot long, and the largest leaflets—for they are unequal in size on the same leaf—are 18 inches long, or more, and 6 inches wide. A plant of Sterculia mexicana is now bearing male flowers in the Palm-house at Kew, from which, and specimens in the herbarium, we have been able to extend the description, though not to complete it, as ripe fruit is wanting. From a dried specimen at Kew it appears that a plant in the Jardin des Plantes, Paris, bore female flowers in 1863. There are also female flowers in the herbarium that were produced in the garden in 1867. *W. B. H.*

## CINCHONA GROWING.

[THE following suggestions for raising Cinchona plants from seed and establishing Cinchona plantations in Jamaica have been issued by Mr. Morris, the Director of the Government plantations in Jamaica, and as they are applicable in other colonies with the necessary modifications we reproduce them in this place. EDS.]

### I.—RAISING SEEDLINGS IN BOXES.

*Boxes.*—For raising small quantities of plants—say from 30,000 to 80,000—it is desirable to sow the seed in small shallow boxes under cover, where they can be conveniently attended to.

The boxes may be of any size as regards length and breadth, but should not be more than about 3 or 4 inches deep. Ordinary brandy or wine cases reduced to the above depth answer well.

To promote drainage, holes about three quarters of an inch in diameter should be made in the bottom of the boxes at distances of about 6 inches apart. The inside of the boxes should be treated with whitewash, or thoroughly dusted with quick lime to prevent mouldiness of the soil and subsequent injury to the young seedlings. Over the holes in the bottom of the boxes place pieces of broken pots or brick, and cover the surface to the depth of 1 inch with rubble or broken stones.

*Soil.*—The soil for the boxes should consist of one-third of leaf-mould, or that kind of soil of a black peaty character which is often to be found under large trees in the forest: one-third of good ordinary garden soil, and one-third of sharp sand or fine river gravel. These should be mixed thoroughly together and passed through a ¼ inch sieve.

The boxes may then be filled within a quarter of an inch of the top, with the sifted soil placed over the broken stones, &c., and slightly pressed so as to present an even unbroken surface.

*Sowing of the Seed.*—After slightly watering the soil in the boxes the Cinchona seed, which is very light and small, should be sprinkled rather thickly over the surface, so as to cover nearly every part with a rich brown tint. When this has been done, take a small quantity of the fine sifted soil mentioned above, and sprinkle it over the seeds, barely covering them.

*Watering and Shading.*—The boxes should then be placed in the shade, sheltered from sun, wind and rain, and kept regularly watered, daily, with the finest possible spray from a watering can. Under the conditions above mentioned, the seeds will begin to germinate in about three or four weeks. They will require regular watering, however, till they are 1½ or 2 inches high, when they are ready for the nurseries.

### II.—RAISING SEEDLINGS IN BEDS.

Where seedlings are required to be raised on a large scale it is advisable to grow them in beds protected by a roof of shingles or good thatch. The roof, sloping south and supported on posts 4 feet 6 inches high on the north and 3 feet 3 inches on the south side, should completely cover the beds and keep off both sun and rain. It is also advisable to shelter the sides of the beds by grass or wattle fence, so as to keep off the slanting rays of the sun and strong winds.

The beds should run in parallel rows due east and west, be about 3 feet wide, and with a path between each bed about 2½ feet wide. After the beds are laid out the surface should be covered to the depth of 2 or 3 inches with the same mixture of soil as recommended above for the boxes. The seeds may then be sown and kept regularly watered night and morning.

### III.—ESTABLISHING CINCHONA NURSERIES.

*Nursery Beds.*—When seedlings have been raised either in boxes or beds, and are about 1½ or 2 inches high, the next step is to transplant them into the nurseries. In selecting situations for seed beds and nurseries it should be borne in mind that a sheltered situation, with a plentiful supply of water, are no less important considerations than nearness to the land intended to be planted.

The beds for the nurseries should be laid out in every respect as for seed beds, *i.e.*, about 3 feet wide, with paths 2½ feet wide, treated on the surface with a mixture of good soil, and placed in rows due east and west.

Before the seedlings are transferred to these beds it would be well to prepare, beforehand, the necessary materials for shading them.

These may consist of long straight wattles, supported on forked sticks and covered with grass, Ferns or Palm leaves. Side shading is also advisable especially on the south side.

Pricking out seedlings into nurseries is a work requiring great care; but with a little experience it can be done very successfully and expeditiously.*

The seedlings being about 1½ or 2 inches high may be carried in the boxes or raised from the seed-beds in lots of 200 or 300 and brought into the nursery. The beds already prepared for them should receive a good watering and be pressed evenly by gentle tapping with a piece of board. The person about to prick out should be provided with a small wooden peg about 4 or 5 inches long and ¾ inch in diameter at one end, tapering to a dull rounded point at the other. Taking up a seedling carefully by the leaves, with the left hand, a small hole should be made with the peg in the right hand, just deep enough to take the tender roots of the seedlings without bending or crushing them. When placed in the hole, the soil should be pressed closely to the rootlets by means of the peg and the seedling left firmly fixed with its leaves and stem well above ground. The seedlings should be placed in rows at regular distances apart, so as to allow about 2 inches between each plant.

As soon as an appreciable number of seedlings have been pricked out, the shading, as shown above, should be immediately placed over them, to prevent injury from sun or rain.

The nursery beds will require regular watering for some time, but when the plants are about 4 or 5 inches high it would be well to remove the shading little by little, in order that the plants may become gradually hardened and ultimately fit for transplanting to their permanent places in the field.

(*To be continued.*)

## PEDIGREE POTATOS.

IN his *Rose Annual*, Mr. Wm. Paul writes disparagingly of pedigree Roses. He says, truly enough, that the public will care little for the pedigrees, but much for the Roses if they are good; and this remark will apply with equal force to Potatos. It is the quality and not the parentage that will be made the test of value. None the less, it is of some importance that we should know something of the parentage of new Potatos. We have had thrust into the market so many kinds that were of doubtful origin, and have been so much bothered in consequence, that something useful is done if henceforth raisers of new kinds will tell us from what sorts they may have sprung, and such evidence will put the *bona-fides* of the new sort beyond doubt. But farther than this, pedigrees, if of little value to the general public, are of the first importance to the intelligent raiser. Thus the American raisers can give us the parentage of many of their kinds, and trace through that pedigree the various features that new crosses have developed. They work for some tangible end, and whether they are satisfied that the end has been obtained or not, at least they know by the results what sorts are good parents, and what ones are useless.

In this country little so far has been done systematically to produce a pedigree race of Potatos. Mr. Robert Fenn has been the principal, and indeed almost the only one who has kept an exact record of his various crosses, and worked for a definite object. Most of our home-raised kinds so far have doubtful parentage, or are more accurately described as chance seedlings. In this latter category must be placed the various Ashleaf and Lapstone Kidneys, so abundant a few years since; for all, if seedlings at all, were but natural uncrossed seedlings of the parent, simply reproducing the parent in all its features and nothing more. Thus we now find that no Ashleaf, however large its appellation, excels the old Ashleaf Kidney of our fathers' days, and no Lapstone the original Cobbler's Lapstone of Haigh the shoemaker. Natural seedlings may be classed as the product of uncrossed flowers. Chance seedlings are better classed as those that have been cross-fertilised by natural agency, but of which nothing is known of the pollen parent. Of this class are Magnum Bonum and Covent Garden Perfection, the mother of these having been Early Rose, whilst it is suspected that Paterson's Victoria might have supplied the pollen, but no human agency performed the crossing. Two seed-balls were found on the Early Rose in 1870, and it was a happy inspiration that induced the raiser to save the seed-balls and sow the seed.

In this simple way has come one of the most popular and widely-grown sorts of the present day. The parentage of the Champion is somewhat obscure, and it is supposed to be the product of the Scotch Rock, to which it bears a close resemblance. Schoolmaster, also a popular Potato, is said also to have come from the Early Rose, but as the facts as to the raising of that kind have been disputed, it seems difficult to obtain reliable information. King of the Potatos is no doubt a natural seedling from the old Fluke, which it closely resembles, and lots of others have been raised upon it, that were proved to be but duplicates. One of the best perhaps is Advance, which is a King of Potatos exactly, but really gives quite one-third more crop. The raiser claimed that this was the product of fertilisation with the Victoria, which, if correct, might account for the freer bearing qualities. Vicar of Laleham, raised by the Rev. Mr. Peake, of Laleham, has at least this extent of pedigree—that it was raised from the Victoria crossed with Red Emperor.

It is not till we come to Mr. Fenn's Potatos that we really get to pedigrees. Onwards was the first kind Mr. Fenn sent out. This was the product of, I believe, the old Stretford Seedling and Hogg's Coldstream, both small choice garden kinds. Following this came Early Market, Rector of Woodstock, and

* *Sterculia mexicana*, R. Br. char. emend. Frutex vel arbor parva, ramis ultimis crassis fulvis. Folia longe petiolata digitata sæpissime 5 7-foliolata, interdum 3-foliolata; foliola longiuscule petiolulata, petiolulis basi tumidis, lanceolata vel obovata acuminata usque ad sesquipedalia glaberrima nitida subcoriacea; petiolus viridis teres, basi apiceque incrassatus, maximi pedales et ultra. Flores rubro-brunnei, in paniculas angustas erectas disposii, paniculæ axillares, pauciflorae, 4—6 pollicares, rhachi crassa; calycis segmenta 3—4 lineas longa, recurva, intus (præsertim in fl. ♀) barbata; ovarium tomentosum, loculis pluriovulatis. Fructus maturus nobis ignotus.

* At the Cinchona plantation, pricking out seedlings is done by contract at the rate of 9*d.* per thousand. A man or woman after a little experience can prick out about 2000 per diem.

Bountiful, all the produce of crosses designed to secure high-class quality, and this was without doubt obtained. Mr. Fenn, however, soon found that the large introduction of the American sorts had considerably demoralised public taste in favour of size and quantity, and therefore his sorts have found it uphill work to become popular; as table sorts, however, they are first-rate. One of the best of the same generation, Bedfont Prolific, has shown greater productive powers and more size than the others, and therefore will perhaps be more widely grown. Anxious, however, to get a stock that would give more size, to suit the public taste, Mr. Fenn cross-fertilised one of his good seedling kidneys with Dawe's Matchless, and from that cross have come the handsome International and the beautiful Woodstock Kidney. Both of these give not only size and crop but also beauty, whilst the latter has table quality that is equal to that of the Lapstone, if not better.

Still not satisfied, Mr. Fenn now took in hand some of the American kinds, in the hope of obtaining sorts that would give out best quality with the big cropping features of the American kinds. The kinds employed were Snowflake, Late Rose, and Willard crossed with Bountiful and some own seedlings. From the Bountiful and Late Rose cross have come some fine white as well as red kinds, and the Snowflake cross has given several superb sorts. More than once I have been privileged to taste these seedlings when cooked, and have found the quality to be first-rate, so that much has been gained, as will be seen when these kinds are put into commerce. Mr. Fenn has parted with some half-dozen of his best kinds to Messrs. Sutton, of Reading, and probably next winter they will be offered for sale. It is not possible to distinguish them at present, as the names are under consideration, but we shall most probably find these very widely grown in a few years, whilst their handsome forms will make them favourites at the show table. If the reproach hangs about some of our best show kinds of Potatos that they are not good when cooked, it is at least Mr. Fenn's desire to wipe off that reproach; I also am both hoping and striving to do the same. Although so largely associated with the Potato for many years, I did nothing to promote this desideratum until some three seasons ago, when I made a successful cross on the large white American kidney, Success, with pollen from the Woodstock Kidney, having been privileged to grow a few for trial then before it came into commerce. At the same time I made a cross upon the Early American Rose with the Early Market. From these have come several very fine and promising kinds; amongst which, from the latter cross, is Lord Mayor, a Regent-like tuber of fine quality, and a wonderful cropper, that I am hopeful will become in time widely grown. My hope in making this cross was to secure a white Early Rose; but the best white kidney from it is, though a very fine cropper, I fear not so early. That point, however, another season will show.

Out of the Success cross have come several fine white kidneys, the finest of which, named Cosmopolitan, in compliment to the Anglo-American nature of its parentage, will, I hope, presently supersede the now popular International, because, whilst it has all the beauty and cropping qualities of that fine kind, it has also the mealiness and flavour of the Woodstock Kidney. This is high praise, but it is, I am sure, well deserved. Another want is a large cropping first early white kidney that would supersede, if possible, the Ashleaf for market growth. Good as this old kind is it is not a large cropper, and in these days of sharp competition with foreigners our market growers would hail with delight a first early kind, white in skin and flesh and of good quality, that would mature as early as the Ashleaf, and give double the crop. That is something yet to be aimed at, and is, I hope, not beyond securing. The next year I made another cross between that fine cropping coloured kind, the Vicar of Laleham and Woodstock Kidney. This latter kind figures largely in all my crosses, not only because it has a robust habit and fine quality, but also because it possesses an abundance of pollen.

In the raising of seedling Potatos one of the chief difficulties to be encountered is the amount of space required to grow all the products of the fertilised seed-pods, and to store and grow them in several succeeding years before the final selection of the best can be made. This one cross with the Vicar of Laleham gave two seed-balls, and, when grown in the following spring, about 100 plants. These were raised in pans and pricked out into two long rows in the open ground early in May. With most the top was very robust, and when lifted there were plenty of tubers of table size, some roots carrying quite 2 lb. of Potatos. Not a few are white kidneys, whilst those that retain the coloured skin show a tinge of yellow in the flesh that is most promising as far as flavour is concerned. Some fifteen kinds have been selected for further growth, and I have no doubt that whatever may be their other features all will be immense croppers. Thus far for what has been done to obtain really fine cropping Potatos of high quality. The verdict upon them rests with time, but I am certain that did some of those who so sharply criticise our new sorts of Potatos but understand how much of patience and care is needed on the part of raisers, and how many discouragements they meet with in their labours, somewhat more charitable opinions would be held.

Beyond the production of kinds of high-class table quality, or useful for exhibition, we had somewhat rudely forced upon us in 1879 the supreme necessity of having many sorts of a race that would withstand the attacks of the disease. Magnum Bonum has shown powers in that direction of a remarkable kind, and in the hope of securing in time more kinds that would possess disease-resisting powers, what so natural as that Magnum Bonum should be largely employed as a seed parent? The past summer was singularly favourable for the production of bloom and pollen, and advantage was taken of this to make several promising crosses with other kinds that have proved also fairly disease-resisting. Of these specially King of Potatos and Vicar of Laleham have been intercrossed with Magnum Bonum, and some very robust kinds ought to result. Woodstock Kidney has also been used with Magnum Bonum, as also with Beauty of Hebron, the best of the American first earlies, and again with the early round white Emperor. Bountiful has been employed on the Early Rose, the American Purple with a purple seedling kidney of high quality, Grampian with Radstock Beauty, and several other crosses. This means next spring a thousand seedlings, and an immense amount of labour, possibly also of disappointment; but raisers will be well rewarded if but three or four good sorts should result. *A. D.*

FIG. 25.—LEAF OF ACER HELDREICHII. (SEE P. 137.)

## TRADE MEMORANDUM.

WE are informed that the Mr. Robert Hurst, of Mansfield, Notts, as to whose connection with the firm of Messrs. R. & E. Hancock, of Newcastle-upon-Tyne, inquiry was made in our issue for January 15, has this week been brought before the Mansfield bench of magistrates, and remanded, on a charge of being a member of a "Long Firm," and obtaining goods under false pretences.

## FORESTRY.

PRESERVING TREES AND HEDGES.—"Prevention is better than cure," and therefore it is well to direct attention to a few things which the season of the year suggests as being in peril. Upon almost every estate of considerable extent, where trees, and especially hedges, exist, there are fields and arable land on which manure-heaps are laid down in readiness for the future crop. It is not just at the time heaps are laid down that the injury is done, but at least several days or weeks subsequently. It is a well-known fact that the liquid from a dung-heap, or urine-tank, invariably destroys the vitality of trees and other woody plants; it is, therefore, not to be wondered at that foresters have a positive dread and terror of seeing manure-heaps laid down upon sloping ground with hedges or trees below it; for, although laid down at a considerable distance from it, unless a furrow or drain be cut to convey the liquid away from the hedge, it is certain to seriously injure, if not entirely destroy it.

It therefore becomes necessary on the part of the forester to warn all the tenants against laying down manure in such places, and in such a manner as to injure the trees, shrubs, hedges, or other plants in their vicinity. It is not only necessary to forewarn the tenants against laying down manure-heaps in such places as to injure the hedges and trees, but it is absolutely necessary to examine all manure-heaps, to see that the liquid is not running down upon the hedges or trees, which it often does to a great distance.

I have often had cause to lament the mischievous results of tenants and others driving nails and staples into trees, and twisting wire round them, as straining-posts. This practice should on every estate be strictly prohibited, as every one accustomed to manufacture wood knows too well the serious consequences of a circular saw cutting through a nail, or other piece of iron. If a tree is necessarily destined to fill the place of a straining fence-post it should have its top cut off, so that it would be known to posterity that the tree had been so used, and thereby the dreaded consequences avoided.

Another evil, too frequent to require description, is that of hares and rabbits barking trees and bushes of almost all kinds, with the exception of Rhododendrons and Boxwood. One very good and effective means of preventing injury during frost or snowstorm is to cut off a few branches from the tree, and lay them around the stem. The game invariably bark the branches thus cut off before they interfere with the growing plant. R. Davidson's composition is doubtless a very useful and effective means of preventing injury, but it is not always convenient to apply it, and there are cases when perhaps it cannot be used till too late; and again, although it does no positive injury to the bark of the plants to which it is applied, yet to some persons it appears rather offensive to the eye by discolouring the bark.

In districts where hares and rabbits abound they should be fed till the snowstorm passes over. This can be done in various ways, such as cutting down brushwood, lopping off branches, or, where practicable, to thin patches of young plantations here and there, and leave the thinnings on the ground. Although the game have a preference for Ash, Willow, Holly, Laburnum, and some others, yet when hard frost or snow prevails they indiscriminately eat the bark of all kinds—Pine Fir as well as hard woods. Thorn hedge or Apple tree prunings are excellent food, and if the prunings are strong—say two or three years' growth—and can be left on the ground and kept above the snow, they serve a very good purpose for a time.

When, however, branches, prunings, and thinnings are not available, the next thing to do is to clear patches of snow off the ground here and there, where there is any herbage they can eat, and if the herbage is Heather it answers well, and is not difficult to clear, unless the snow becomes baked and hard, which it does if once partially thawed and then frozen. The next, and last resort, is to hand-feed them; and this, though expensive, and attended with no small inconvenience, has often to be resorted to. The common plan is to lay down small handfuls of hay upon the feeding-ground, a little at a time, and renew the supply every day. If much is laid down at once it is not all eaten, and what remains is tainted so that they will not eat it.

When Turnips can be procured, they should be given along with the hay, and where this is practicable both hares and rabbits do well upon it, and under such feeding suffer little, if at all, during a severe and protracted storm such as that now prevailing all over the country. Of course winged game, as pheasants and partridges, require attention as well as ground game, and the singing birds are often as much in need of a crumb as any other, and it is very pleasing to think that this is much better attended to now than in former times. Many ladies make it a special care and work; and even boys who would throw a stone at other times, now as readily throw a crumb, which it is needless to say does both the giver and receiver more good. *C. Y. Michie, Cullen House, Cullen, Jan.* 18.

## Foreign Correspondence.

ST. PETERSBURG: *Jan.* 14.—The Phylloxera has not spared us. The presence of this insect is ascertained in the Crimea beyond doubt by the investigations of the secretary of our Entomological Society, Mr. Porkchinsky, who was sent by the Minister of Domains to investigate the matter. The necessary arrangements to localise the evil have been taken. The insect was imported from Bordeaux, with Vines bought by Mr. Rajewsky, an intelligent gentleman filling an important position in the Department of Agriculture in our empire. It is to be hoped that, owing to the position of the mountains of the Crimea, the insect will not spread so freely as in other countries. The American blight, Schizoneura lanigera, has also appeared in the Crimea and neighbouring provinces, where the Apples form the staple commodity. To prevent the spread of the Phylloxera it is seriously proposed to forbid the introduction of all plants whatever into Russia; and it is, moreover, proposed to establish a quarantine station, where the plants may be detained and observed for twelve months before being despatched to their destination! Mr. Cornu himself would not be so absurdly severe as this. The matter is to be brought before our Horticultural Society. *Correspondent.*

## FLORISTS' FLOWERS.

SEASONABLE NOTES.—AURICULAS.—With the advent of mild weather the plants in frames will very soon start into growth; but after this frost the surface dressing in the way previously recommended should not be attempted until very much later on—about the middle of February is a good time to do it. The compost we use is one of half-rotten cow-manure and good yellow loam; but the manure should be broken to pieces by the hands, and any white maggots should be picked out of it, and the loam must be searched for wireworms; mix the two well together, and use it in a moderately dry state. The plants have required rather more water this winter than usual, owing to the mild weather that preceded the recent frost, but care must always be taken not to give any unless the soil has become quite dry.

### CARNATIONS AND PICOTEES.

The plants are showing some signs of growth, although the lights have been removed on every favourable occasion, and plenty of air admitted at all times. Our early potted plants are now in much the same state of growth as they usually are in February. See that the plants are kept quite clean, and they must now be cleared of green-fly, which can more easily be done now than afterwards. The later plants are not so forward, and it is not unlikely that these will grow away more steadily and give the best flowers. The perpetual-flowering section should now be producing some good flowers, which are more valuable for some purposes than choice exotics. If the side growths formed since the beginning of December are far enough advanced to form cuttings they should be taken off, and put in under a propagating frame or some glass arrangement in the forcing-house.

### DAHLIAS.

It would very much depend on the stock of plants required whether the tubers should be placed in heat this month. Dahlia growers who possess but single roots of any scarce variety will not be behindhand with placing them where cuttings will be ready by the first week in February. It is best to pot such singly, using light sandy soil, with a very small proportion of manure. When the cuttings are about two inches long they may be taken off with a sharp knife, but not so close to the crown of the tuber that one or more growths may be prevented from starting from the same place. So early in the year it is best to put the cuttings in a heated pit, but they should be near the glass and have bottom-heat. The cuttings are best planted singly in thumb-pots.

### HOLLYHOCKS.

Cuttings taken from the main stems form roots very freely at this time, but they also should be placed in a heated pit or house; they are likely to damp-off in hot-beds, especially if water is applied to them. The cuttings should be inserted firmly in light sandy soil, and some clean silver or river sand ought to be placed quite at the base of the cutting. No water will be required for some time, at least after potting, and if it can be withheld until roots are formed so much the better. Root grafting may also be practised with considerable success at this season of the year, and is a rather more expeditious method than propagating by cuttings.

### PANSIES.

The plants in beds had up till lately a much better time of it this season than last; and where they were planted early, so as to become firmly established before the winter, they have made fair progress. They do not require further attention than as previously advised. Plants to flower in pots in frames were growing very freely; and are clean and healthy. We have some strong plants in 60-sized pots, that were late potted, they should soon be potted into 6-inch pots without disturbing the roots. The long growths are pegged down to the surface of the pots until neat compact specimens are formed. There is no better place for them than a cold frame, where the plants are well exposed to light and air.

### PINKS.

These may be classed with Pansies as far as treatment is concerned out-of-doors. The beds should be clean and the surface of the soil stirred when necessary. The young leaves at the points may be pecked at by sparrows, or eaten by grubs or rabbits, all of which must be guarded against. Those in pots must be freely aired, and they must not now be too dry at the roots. If they are to be planted out about the end of next month the beds should be prepared for them.

### POLYANTHUSES AND HARDY PRIMULAS.

All these ought now to be secure under glass in cold frames. The first-named are growing, and the flower trusses are coming up strongly; in that case they must be encouraged to come on steadily, and should frost set in the frames must be covered with mats at night. Remove the lights still in fine weather and air freely, as the Polyanthus is more easily drawn up than the Auricula. The hardy Primulas of many distinct species are now in a dormant state—none of them require much water. Primula amœna in variety are starting into growth, and require more water than they have hitherto had.

### ROSES.

Planting may still be attended to in mild weather if not yet done. The ground ought to be well prepared by deep trenching and manuring. I think it was the late Rev. Mr. Radclyffe who had much faith in pig manure for Roses. I have proved that it does well for them on light soils. In heavy clay soils good stable-manure should be freely trenched in, and a thick mulching of it over the surface after the Roses are planted is useful to open the soil as the manure is dragged into it by worms. Those who approve of standards should, when the frost breaks, have the stocks planted for budding on next summer; these will produce much better Roses the following season than purchased plants. Small seedling plants of the Brier Rose should also be planted after the frost; the one-year-old seedlings will be old enough to bud upon in the autumn of next year. The ground should be trenched and manured for the stocks as well as for the Roses. *J. Douglas, Loxford Hall, Ilford.*

# Garden Operations.

## FRUIT HOUSES.

PINES.—Repotting requires great care and discrimination, so that the work may be carried out with method and regularity. Have sufficient help at command, so that each operation is got over quickly to prevent the plants from being chilled by keeping them about too long. Clean pots and perfect drainage are indispensable. Let the crocks be well placed, one large one in the bottom, over this a layer of large crocks, then finish with a layer of small ones, and over all place a layer of dry moss: this keeps the drainage intact. Before potting put a thick dusting of fresh soot in the bottoms of the pots, to prevent the inroads of worms. When the plants are knocked out of the sucker pots remove the lower leaves carefully, put the required quantity of rough loam in the bottom of the fruiting pots, beat it well down, and then place the plant in its proper position, so that the ball is not moved again. Place the plant well down in the pot, and gradually work the fresh material round the old ball; this should be firmly rammed down, but see that the rammer does not go too near to the roots. By placing the plants well down they take a firm hold of the soil, but if potted shallow the plant becomes loose in the pot—a very undesirable thing, which cannot be afterwards remedied. It is also essential that during potting no loose soil should be allowed to get into the centres of the plants. The sizes for fruiting pots should be 11, 12, and 13 inches; the first two sizes are generally used, but it is better to keep to one size as much as possible both for plunging and arranging the plants, with the additional advantage that the watering can be carried out with more uniformity. A large batch of all kinds may now be shifted so as to give them a long season to make their growth in. When the potting is completed plunge them thickly in a good bottom-heat of about 90°—if plunged in fermenting materials 5° more, but these limits should not be exceeded at the base of the pots. Keep the temperature at 65° by night, with a rise of 5° by day; but in mild weather it may rise to 75°, with air on. If the soil is in a proper state of moisture no water will be required at the roots for three weeks or a month, but on bright afternoons the plants may be syringed overhead; also keep the atmosphere moist by damping the paths, &c. As the days advance in length keep the fruiting-houses about 70° at night, with a rise of 5° by day, which may be increased to 80° in mild weather. Syringe slightly on bright afternoons with water at 85°, and have the paths, walls and plunging materials that may be dry well damped with tepid water. The rooted suckers in 5 and 6-inch pots may now be shifted into 8 and 9-inch pots; in the repotting of these avoid having hollow places in the new soil. These will form a second batch for transferring into fruiting-pots at the end of May. Suckers should never be allowed to become pot-bound before shifting, as this is one of the causes of premature fruiting. *D. Wilson, Castle Hill, Devon.*

VINES.

The severe weather is very unfavourable for forcing Vines, and those who have both inside and outside borders well protected with fermenting materials will no doubt see the benefit which the Vines derive from it. In very severe weather it is better to have the night temperature a few degrees lower, say 55°, than to use fire-heat excessively, raising the heat early in the day to 65°, and if bright then put on a little air, shutting up early, to economise the heat. Vines in flower will be better with a few degrees more heat in the day, and tapping the rods occasionally to disperse the pollen. It is a good plan when Vines are in flower to let the evaporating pans go dry for a few days until they are set, when they should be at once filled again with weak manure-water, or clear water with a little guano added, which gives off ammonia, that is very beneficial, and helps to keep down red-spider. Attend to tying down, disbudding, and stopping as required, taking off all surplus bunches as soon as you can discern which will be the best. Is is generally a safe plan to take off about half the bunches before they set. Houses started for succession Grapes will require a few degrees more heat as the buds swell, raising them gradually, and well damping Vines, paths, walls, &c., with tepid water. Vines pruned and at rest will be better kept as cool as possible, a few degrees of frost will do them good. Any late Grapes not cut and bottled had better be done at once, for if left longer they will not keep so well when cut, and will only exhaust the Vines. It is best not to shorten the wood beyond the bunch when bottling. During the severe weather of last week our Grape-room was kept at about 38°, which answers well, keeping them plump and sound. The earliest pot Vines will now be ready for thinning, which will require to be done carefully, taking out all the inside berries, for it is better to have smaller bunches, if they are compact and the berries good, than large loose bunches with small berries. After thinning is a good time to top-dress them, using some pieces of turfy loam about 4 inches deep round the edge of the pots, filling the centre with some strong rich soil, taking care to leave plenty of room for water. The Vines will root in the new soil readily, and then give them tepid manure-water while swelling. If not already done put in some Vine eyes, using only thoroughly ripened wood. If for permanent vineries, they are best put in turfs 9 inches square. *Joshua Atkins, Lockinge Gardens, Wantage.*

## HARDY FRUIT GARDEN.

Exceptionally severe frosts and heavy snowstorms have brought about the entire suspension of outdoor operations, but if due thought be given to the varying needs of this department many things may be forwarded that would require more valuable time to prepare hereafter. List may be cut into shreds of different sizes, and if each size be kept separate it will facilitate their subsequent use. Old nails may be passed through a fire to remove worn-out shreds, and be dipped in boiling linseed oil. See that all stakes likely to be wanted for fruit trees during the next twelve months are procured, trimmed and pointed; and if the stakes be slightly charred a little beyond the portion intended for insertion in the ground it will greatly conduce to the prevention of decay at the part where stakes first fail. Labels may be prepared by stamping the names required on strips of lead. Whatever system of labelling is adopted see that it is of a permanent and legible description, and that no freshly planted or removed trees are neglected. For permanency and distinctness no labels surpass those furnished by the Stratford label factory. The effectual drainage of fruit quarters is often impeded by the labour required to make a sufficiently deep main drain as an outlet in gardens that stand in much need of thorough drainage, but labour may possibly be afforded now without inconvenience for such an undertaking. See that the main is cut to a sufficiently low level to allow of a good fall from the bottom of the cultivated soil at the lowest portion of any ground that may require at some future time to be drained. Use socket-pipes for all main drains, so as to prevent roots entering and causing an obstruction—a few pipe lengths from each junction with the main may with advantage be socketed for the same reason. The drainage of the portion of ground traversed by the main drain may be effected by a row of ordinary pipes at a higher level. Let the principal drain be made with pipes of a size proportionate to the area to be drained, of which a better estimate can be formed by the conformation of the surrounding ground and the nature of the subsoil than by the extent of the garden to be operated upon. It is well to err on the safe side, by having pipes of greater capacity than is supposed to be required. Let a correct plan be made of any drains put in; this will save much trouble and prevent great vexation later on.

As soon as favourable weather prevails, see that any pruning that may have been hindered be completed as speedily as possible. Grape Vines on walls, if not already pruned, must be attended to at once, for if the operation be longer delayed bleeding will result. The laterals may be cut back to the base-bud if it is sufficiently prominent; but where this is not the case, cut to the first bud that is of a promising appearance. Remove entirely part of the spurs where too thick; and where young canes have been trained in, part of the old ones may be removed. The latter treatment is necessary for such sorts as do not bear freely from the old spurs—of which the Muscadine is an instance. Filberts may be pruned as soon as it can be decided with certainty which are the blossom-yielding buds. Let all last years' fruiting shoots be cut back to within 1 inch of the branch from which they started, and the bearing shoots for this year may be cut in to a female bloom-bud. Many short shoots will be found with such buds at their points—these must be left uncut. Observe that a sufficiency of catkins be left to insure a good set. Carefully remove all suckers, and see that the trees generally are kept well open and in no part crowded. A good stock of loam is of great advantage, and in no department more so than in the fruit garden, where work has to be proceeded with in, frequently, very uncertain weather when delay occasioned in procuring materials may cause the loss of a season. Loam may sometimes be cut, where covered with a good herbage, in quite hard frosts, when no spade could be put into the garden quarters; and certainly no opportunity of laying in a stock should be lost. *R. Crossling, St. Fagans, Cardiff.*

## PLANT HOUSES.

STOVE.—While this severe frost lasts it will not be advisable to attempt to hasten the growth of plants in this department. The advantage will now be apparent of keeping the stove at a minimum temperature through our uncertain English winters. Where plants have been unduly forced a check in the growth will now ensue if the high temperature kept previous to the advent of this frost cannot still be maintained. No harm will accrue to the majority of stove plants if the temperature does occasionally touch 55°. This will be safer than heating the pipes to an undue extent, thus causing too sudden evaporation to take place, and also rendering the atmosphere too dry for the healthy condition of the plants. Watch should now be kept against the spread of thrips, green-fly, and red-spider, which seem to increase more rapidly when the atmosphere becomes drier through the greater heat of the pipes. Fumigation with good tobacco-paper will destroy the two former, and the best remedy I have found for red-spider is to have a small bag of soot sunk in the water-tank; this will keep it in check, and not injure the most tender foliage.

FERNS.—Those sorts which are usually grown in every mixed collection of stove-plants should now be looked over, repotted where necessary, and the stock increased by the division of such kinds as are most in request, where the operation can be performed by this means. Plants of Adiantum cuneatum which have been used up considerably for cutting purposes, and thereby weakened in growth, will succeed better if they are thus treated. Davallia bullata is a good Fern for cutting purposes, having the property of retaining a healthy, fresh condition long after it is cut. This sort being deciduous may be easily increased now before it starts into growth by dividing the rhizomes, leaving a few roots to each if possible. In potting them use a few pegs to keep them close to the fresh soil. Another good Fern, and one that makes a pretty plant for the dinner-table, is Asplenium cicutarium; this can be increased readily from its spores, and if seen to now will make nice stuff by the autumn. Let the forms, both silver and golden, of the Gymnogrammas, have the driest part of the stove, where they will be freer from damping-off in the fronds. Do not by any means let the syringe play upon them. These Ferns thrive best when potted in pure peat and sand, pressing the soil as firmly in the pot as one would for a Heath or New Holland plant grown on quickly, and kept freely watered. Good plants may soon be had if the seedlings are looked after at once. Among Ferns thriving in a temperate-house none surpass the Gleichenias for beauty. These will now be commencing to throw up fresh fronds from the soil, and also extending the growth on the older ones. Where plants of these are required to be increased in size now would be a favourable opportunity to go over them and re-arrange the growth, before the young fronds become too far developed. In potting select shallow pots or pans, and crock these well up, the Gleichenias being mostly disposed to keep their roots near the surface. With the exception of G. flabellata, they succeed best in a rather dry position, neither should they be syringed, except the kind aforenamed, which thrives best when frequently damped overhead. As their creeping rhizomes lengthen they should be pegged down to more readily strike root. Where an opportunity occurs to increase them by division, it had better be done at once. Pteris serrulata and its forms should now be increased where the supply is short. Asplenium bulbiferum may also be rapidly increased from its older fronds, from which young plants commence to grow freely at this season. This Fern and the preceding should be grown largely for conservatory decoration. Give the Todeas and other filmy Ferns the coolest position possible, with exclusion of frost and freedom from draught. Tree Ferns should be potted if they require it, before they commence a rapid growth. The stems of almost all kinds may be increased more rapidly in height (if this is desired) by binding the stem up to the green fronds with sphagnum moss, in which the young roots soon strike freely, thereby causing a more vigorous growth. If attention is paid to this now, the result will soon be evident. A good general mixture of soil for Ferns may be made with three-quarters of good fibry peat and one-quarter of yellow loam, adding a good quantity of silver sand, and also some small pieces of charcoal for the more tender kinds.

GREENHOUSE.—Do not attempt to increase the temperature of this structure beyond excluding the frost during this severe weather. Closer attention will be requisite to the watering, now that the temperature has to be maintained by a greater amount of artificial heat. Statices, of which S. profusa is one of the most useful, should now be propagated where addition to the stock is required. If the plants have been removed to a temperate-house as previously recommended, the cuttings will strike the more readily. If not already done, it will not be advisable to delay the propagation of Chrysanthemums any longer. Cuttings should also now be taken of Tree Carnations and Bouvardias, where an early bloom is required during next autumn. Where a good type of Solanum Capsicastrum is secured, cuttings of these should also be put in to insure good plants. Lachenalia pendula and tricolor will be benefited by an occasional supply of manure-water now they are pushing up their flower-spikes. *James Hudson, Gunnersbury House Gardens, Acton, W.*

APPOINTMENTS FOR THE ENSUING WEEK.

| | | |
|---|---|---|
| MONDAY, | Jan. 31 | Sale of Japanese and other Lily Roots, at Stevens' Rooms; and at the Auction Mart, by Protheroe & Morris. |
| THURSDAY, | Feb. 3 | Meeting of Linnean Society, at 8 P.M. Sale of Imported Orchids, at Stevens' Rooms. |

THE lecture of Mr. MACADAM before the Scottish Horticultural Association, reported in our last and concluded in our present issue, is remarkable for its copious analyses of certain garden plants, and though we could have desired more full information, especially as to the form in which the constituents he enumerates exist in the plants during growth, we are none the less glad to have brought forward so much information of a character not common in garden literature. It will be seen that Mr. MACADAM, after having given the average proportions of water, of various organic and saline matters, in different plants and parts of plants, then addresses himself to the question of ARTIFICIAL MANURES. Now, it must be remembered that the analyses of the chemist furnish only indications and not direct information as to the most suitable manure to be employed in particular cases. To give one illustration which has become classic from the results of the splendid series of experiments carried out at Rothamsted by Messrs. LAWES and GILBERT, for so many years, leguminous plants, though known to contain so large relative a quantity of nitrogen are by no means specially benefited by a nitrogenous manure but rather by a mineral one containing salts of potash, lime, magnesia, and so forth. If then, relying on the analysis of these particular plants, a nitrogenous manure were employed in their culture, the result would be relatively vain, and money and labour uselessly expended. In this case the plants derive from the soil as much nitrogen as they require, and any artificial addition is so much waste.

Plants and animals—living beings, in fact—have been, hitherto, too much considered in the light of mere chemical substances acted on in various manners by other chemical substances. Because in the test-tube of the chemist a certain reaction occurs when a test of a particular nature is applied to a particular solution, it has been tacitly, and sometimes overtly, assumed that the same reactions must take place in the growing plant, because when analysed, it is proved to possess the substances which, under the conditions mentioned, would give the reaction in question. But in this way the chemist is really dealing with substances outside the plant—substances, so to say, in an abnormal condition, or at least not necessarily in the same state that they are in the plant itself.

We want, for practical purposes, as also for the better understanding of the physiology of plants, to know what is actually in the living plant, not the result as apparent after the manipulations of the chemist. We want to know in what condition or state these ingredients are, how they act and react on one another at various stages of the plant's growth, what differences there are in the chemical history of the plant as it unfolds its leaf, hardens into wood, matures its fruit, or ripens its seed. Not until all these matters are clearly made out shall we arrive at any completely acceptable theory of manures. As it is, it is certain that in the application of manures we act more or less blindly and fortuitously. Chemical investigation and practical experience have shown us—as in the Rothamsted experiments—that nitrogenous manures used alone favour rapid growth of cellular tissue, filled with watery contents, but that the assimilation of carbon from the atmosphere is by no means proportionate, and the consequent consolidation of tissue, in gardening phrase "ripening the wood," does not take place commensurately with the increased luxuriance; a "sappy" style of growth being produced in place of that firm, well developed wood which the gardener likes to see. To ensure this, salts of potash and phosphoric acid in combination with lime are requisite in association with more or less nitrogenous matter, according to the kind of plant cultivated, and other circumstances.

For the profitable application of manure, the composition of the soil also should obviously be known, for it stands to reason that a manure should furnish what the plant wants, and which is either not in the soil, or if present, not in a form suitable for plant food, so that the roots cannot avail themselves of it.

Although certain general principles deduced from the investigations and experiments of the chemist may be laid down for the guidance of the cultivator, yet nothing but actual practical experience can determine what is best to be done for particular plants grown for particular purposes. So many considerations have to be dealt with in practice that the abstract teachings of chemistry can only be looked on as general indications, not as special guides. The soil, the season, the purpose for which the plant is grown, the cost, in many cases even fiscal regulations, may each or all tend to modify very materially the lessons set us by the chemist. In addition to these may be mentioned those changes which go on in the plant itself, to which we have already alluded, and which we may still, without chance of being misunderstood, conveniently, if not strictly correctly, call vital processes.

Of late years many attempts have been made to manufacture manures of various kinds applicable for different purposes. In many cases these manures have been suggested by eminent chemists who have devoted much attention to these subjects: in most cases their composition attests that the lessons of chemistry have been more or less utilised. When these artificial manures are manufactured for commercial purposes there are, as it seems to us, two special evils against which the consumer should be on his guard. He should know how to discount the statements of those manufacturers who, following the lead of the vendors of quack medicines or of ground lentils as food, openly proclaim that their productions are good for all plants, at all times, under all circumstances, and so on. These gentlemen do protest too much. Their products may be very useful in some cases, but they are no more of universal application than are Messrs. So-and-So's heal-all pills, which are guaranteed to cure all diseases flesh is heir to, and a good many more.

The second matter on which the customer should exercise caution is in the matter of cost. For a good article a fair price should be paid, and it is fair also that the knowledge and skill of the producer should be represented in the cost. Still, after making due allowance for cost of material and distribution, for labour, time, intellect, or skill, it must be admitted that the consumer often has to pay an amount which is perfectly preposterous. Some illustrations of this are given by Mr. MACADAM in his lecture, where the price to the consumer of various manures offered for gardening purposes is shown to vary from £56 to £275 per ton! Fortunately, the gardener does not as a rule deal with the large quantities required by the farmer, and an expenditure of a shilling for a pound canister, though representing ten or twenty times the actual value, is not, after all, a very ruinous matter when it is considered how little is necessary for his purpose.

In the lecture before referred to Mr. MACADAM alludes to several illustrations of manures, which we recommend to the notice and consideration of the reader. M. VILLE, whose work on artificial manures has lately been translated by Mr. CROOKES, divides plants (he is speaking of those grown by the farmer) into three categories:—1, those in which nitrogen is the dominant constituent, as in cereals and general garden stuff; 2, those in which phosphate of lime is the preponderating ingredient, as Maize, Turnips, Jerusalem Artichokes; and 3, those in which potash is the special ingredient, as in leguminous plants, Potatos and Vines; and he has in consequence devised what he calls normal manures, containing superphosphate of lime, potash, and nitrogenous matters, differing only in the proportionate amounts of the substances in question.

Recently, too, Mr. WITH, of Hereford, has published his directions for making what he calls the Carbon Universal Manure, as follows:—

| | Quantities. | | | Cost, approximate. | | |
|---|---|---|---|---|---|---|
| | Cwt. | qr. | lb. | £ | s. | d. |
| Finely sifted dry earth .. .. | 14 | 0 | 0 | 0 | 5 | 0 |
| Charcoal dust .. .. .. | 9 | 0 | 0 | 0 | 16 | 0 |
| Kainit, finely powdered.. .. | 0 | 2 | 14 | 0 | 3 | 0 |
| Nitrate of soda, finely powdered | 0 | 2 | 14 | 0 | 10 | 0 |
| Best Peruvian guano .. .. | 1 | 3 | 0 | 1 | 5 | 0 |
| Best superphosphate of lime .. | 1 | 0 | 0 | 0 | 6 | 0 |
| Pure bone meal .. .. .. | 1 | 2 | 0 | 0 | 12 | 0 |
| Pure dissolved bone .. .. | 1 | 2 | 0 | 0 | 15 | 0 |
| Coprolite or phosphorite powder | 1 | 0 | 0 | 0 | 4 | 6 |
| | 31 | 0 | 0 | £4 | 16 | 6 |

The composition of Dr. JEANNEL'S mixture, much used in France, as given by that gentleman, is as follows:—

| | Grammes. |
|---|---|
| Nitrate of ammonia .. .. .. .. .. | 380 |
| Biphosphate of ammonia .. .. .. .. | 300 |
| Nitrate of potash .. .. .. .. .. | 260 |
| Biphosphate of lime .. .. .. .. .. | 50 |
| Sulphate of iron .. .. .. .. .. | 10 |
| | 1,000 |

Fifteen to thirty grains, say half a small teaspoonful of this mixture, mixed with a gallon of water, is recommended to be applied once a week.

All these manures are open to the suspicion that they supply more than is wanted of some particular ingredient and not enough of others, that they are not specially adapted to the wants of particular plants, or to particular parts of plants, at particular stages of their growth. They are all more or less of the "heal-all" quality, and would rest under the same sort of suspicion as quack pills, except for one important difference—a difference of very great moment, as it enables the cultivator to select what is most useful to him, and to apply it in the most rational way—the composition is made known, and is not treated as a trade secret, still less as a quack nostrum.

For other manures, the composition of which is not made known, there is nothing for it but to try experiments or to call in the aid of the analytical chemist to tell us what are the useful components of the mixtures in question. The value of these complex manures as plant food depends mainly on the proportion of available ammonia, of nitrates, phosphates, and of potash they contain, and on their judicious admixture. Cultivators with special knowledge of the qualities of their soil and of the requirements of particular plants will, of course, prefer to make their own preparations in conformity with their own requirements.

As to the actual value of the ingredients we have alluded to, that, of course, varies according to circumstances, but we may take 6*d.* a pound as a fair average value for small quantities, such as would be bought at retail prices—wholesale, of course, they would be very much cheaper. A fair sum must also be allowed for the cost of preparation, and for the skill and intelligence brought to bear in their admixture.

It would be invidious on our parts to comment on the individual manures in use by horticulturists, but with a view of assisting them in their selection we have briefly referred to the general principles applicable in this case, and we propose to give, from time to time, the

FIG. 26.—SALVIA HOVEYI. (SEE P. 146.)

results of an analysis of various manures bought by us in closed canisters or bottles, retail, in the ordinary way of business, and which will be submitted by us to a competent chemist for analysis. It will be interesting to compare these analyses with the similar ones given by Mr. Macadam (who, however, does not say what were the manures he dealt with, but only refers to them by number), and to study their composition with reference to the general principles already referred to.

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—— Salvia Hoveyi (fig. 26). — We have already alluded to the beauty and distinctness of character of this plant, as grown by Mr. Cannell, from whom the specimen here figured was derived. It has something the aspect of S. splendens in its foliage and general character; but the flowers are blue-purple, and the calices dark purple, so that it might be regarded as a purple form of S. splendens. Mr. Hovey has stated in our columns that it originated in his establishment, and hence, we presume, comes to bear his name. It has, however, been pointed out, we believe, by the Rev. H. Harpur-Crewe, that the plant in question appears to be identical with S. ianthina, as figured in the *Flore des Serres*, and we are bound to admit that that figure very closely resembles the plant which Mr. Cannell has had under cultivation under the name here quoted.

—— Manual of the Coniferæ.—We are glad to see that Messrs. Veitch announce for publication early in March a work with the above title, including a general review of the order, a synopsis of the genera, species, and varieties suitable for the climate of Great Britain, and a section on the planting of Conifers as a branch of British arboriculture and horticulture. Messrs. Veitch, in publishing this work, are upholding the traditions of the Exotic Nursery, Chelsea, from which was issued, many years ago, when the establishment was conducted by Messrs. Knight & Perry, one of the best, if not the best, garden manuals of Conifers up to the date of publication.

—— Welbeck.—We are informed that plants—flowering and fine-foliaged—are to form a greater feature than heretofore in the hothouses at Welbeck Abbey, and that in order to accomplish this Mr. Carr, the gardener, has had to convert several of the large span-roofed Peach-houses and late vineries into plant stoves. In order to maintain the higher temperature necessary more hot-water piping has to be put into these houses, and Messrs. J. Weeks & Co., of Chelsea, have received orders to make the necessary additions, and to put down one of their largest Duplex boilers, the present boilers not being sufficiently powerful to meet the increased demand upon them.

—— Insects and Flowers.—Dr. Hermann Müller, of Leipsig, has lately published a volume on alpine flowers and their relation to insects, which contains an historical introduction to the subject, with full lists of alpine flowers and the insects which visit them. The book is entitled *Alpen Blumen ihre Befruchtung durch Insekten und ihre anpassungen an dieselben*, and is provided with numerous illustrations.

—— Presentation to Mr. Judd.—We are informed that Mr. Daniel Judd, on relinquishing the charge of the gardens at Warwick Castle and leaving the neighbourhood, was presented by a few of his friends at Warwick with an elegant timepiece and a handsome gold scarf-pin as a mark of their high esteem and respect for him.

—— Pandanus furcatus.—The *Revue Horticole* announces that this plant has produced fruit in the nursery of M. Jacquemet-Bonnefont at Annonay, France. The fruit is not unlike that of a Pine-apple, and measures 11—12 inches in diameter.

—— Northern Florists' Societies. — The annual general meeting of the members of the National Auricula (Northern Section) Royal National Tulip, and National Carnation and Picotee (Northern Section) Societies will be held at the old "Bull's Head" (off the market-place), Manchester, on Wednesday, February 2, at 3 o'clock P.M., to arrange the dates for this year's exhibitions, and to consider the schedules of prizes, plan of judging, and any other matter connected with the management of the societies.

—— The Extraordinary Tithe.—The *Times* states that Mr. Inderwick's Bill provides that an additional tithe-rent charge by way of extraordinary charge shall not be imposed on any Hop-ground, orchard, fruit plantation, or market garden that may hereafter be newly cultivated as such. Where, however, any land ceases to be subject to the extraordinary charge by reason of the cultivation being transferred to other land in the same parish, the latter is to be subject to the charge—subject to the restriction that the aggregate amount of extraordinary charge on land in the parish is not to be thereby increased. The Bill contains a saving clause with regard to pending proceedings, where the application to the Tithe Commissioners was made before the commencement of the present session.

—— Australian Algæ.—In the form of a supplement to Baron von Mueller's eleventh volume of the *Fragmenta Phytographiæ Australiæ*, Dr. Sonder has given a complete enumeration of the Algæ of Australia, with the localities where they have been observed.

—— Linnean Society.—Tha papers to be read at the next meeting are :—1. Notes on Cyperaceæ; by G. Bentham. 2. Observations on some British Fishes. By Dr. F. Day. 3. Remarks on the Coffee-leaf Disease in India. By Wm. Biddie. 4. Coffee Disease in South America. By Dr. M. C. Cooke.

—— New Chinese Primula.—We have received from Mr. Cannell flowers of a very pretty and novel variety of Primula sinensis, a large well-formed stout fringed flower, in which the centre portion is white with a yellowish-green eye, and the outer part for about one-third the width of the limb has an unequal lacing or margin of peach-bloom or clear rose-pink. We have not previously seen the same colour and marking, which is very chaste and pleasing.

—— The Snowfall in London.—In the House of Commons on Monday night Sir J. M'Garel-Hogg, Chairman of the Metropolitan Board of Works, stated that on the Victoria Embankment 400 men, forty carts, and two snow-ploughs, were employed for nearly three days in removing the snow, beginning work at 3 o'clock in the morning; and added that, assuming a depth of 6 inches, the fall of snow over the whole metropolitan area of about 117 square miles has been roughly estimated at the enormous amount of $8\frac{3}{4}$ millions of tons. This is probably a misprint for $3\frac{3}{4}$ millions of tons, as may be calculated roughly on the following data :—An inch of rain is equivalent to 101 tons of water per acre; 12 inches of snow are reckoned as equal to 1 inch of rain; so that, estimating the fall of snow over the metropolitan area at 6 inches—that is $50\frac{1}{2}$ tons of water per acre, there being 640 acres and 36 square yards per square mile—the result above given of $3\frac{3}{4}$ millions of tons represents roughly the snowfall in London.

—— Galls.—Some curious horn-shaped ones, growing from a branch of Pistacia atlantica, were shown and commented on by Mr. Thos. Christy at the Linnean Society on the 20th inst. These were somewhat similar in appearance to those known in India under the name of Kalera singhi galls. From them a substance exuded not unlike Chian turpentine.

—— Laps in Glasshouses.—We now and then find discussion wax warm as to the merits of long or short laps in glasshouses, and whether these laps should be close or open. If laps are close and tight, say some contestants, there is no room for evaporation,—all the drip is sent inside the house, and much healthful air is excluded. Others contend for close laps, on the ground that in open ones dirt and conferva accumulate, and that when keen cold winds prevail far too much air, and such as is far from healthful, finds admission, and renders the inside temperature far too low. There are seasons of the year when open laps are advantageous, and probably there are many vineries where the air thus admitted between the foliage and the glass serves to prevent scald, but it is evident that any properly arranged ventilation should render dangers of that kind capable of easy prevention. It is when such weather as we experienced on the 18th comes, that open laps in the roofs of houses become troublesome. How the snow found its way through every lap and crevice, especially into houses that stood broadside to the east, from whence came the bitter biting blast! The oldest inhabitant fails to remember such a bitter piercing wind, and withal so terrible in its force. It was literally killing. With such a foe playing upon a forcing-house of any kind, with a furious battery of the coldest air humanity has had to brave in this island for generations, how difficult it must have been to keep up the needful temperature—perhaps, how impossible! No doubt those houses that were most closely glazed came off best, and wheresoever Nature or the art of man has provided some kind of barrier to the fierce gale much less harm was done. In the construction of many gardens it is too much the habit to seek for effect in the grouping of the glasshouses, but the recent weather must have told all gardeners, if not all architects, conclusively enough, that favourable position and plenty of shelter from the north and east are of the utmost importance.

—— Illustrations of British Fungi.—Dr. M. C. Cooke has issued the first part of a series of coloured lithographic illustrations of British Fungi (Williams & Norgate), intended to serve as an atlas to the useful *Handbook of British Fungi* by the same author. In the part before us the illustrations are, generally speaking, admirable; but a standard of measurement and a fuller representation of the spores would be desirable, together with some reference to the page of the Handbook. The illustrations of Agarics in the present part are so good that we can but express a hearty wish for the success of this new venture of the indefatigable Dr. Cooke.

—— The Schedule of the York Gala, 1881.—The schedule of the great horticultural exhibition in June next has just been issued. In it we see that £558 are offered for plants, cut flowers and fruit. The prizes throughout are on a liberal scale, and, as it is improbable that there will be a great summer exhibition at Leeds this year, as there has been in years past, the York summer show will, in all probability, be more extensive than in any year of the past twenty-two exhibitions of the Society. For sixteen stove, greenhouse and ornamental plants prizes of £20, £14, and £8 are offered. Groups of plants have £45 allotted to them. Show and Fancy Pelargoniums, always fine here, have £54 in prizes; and Zonal, Variegated and Bronze Pelargoniums share £55 10s. amongst them. The committee have for years past given liberal encouragement to Roses, hoping to get Southern growers down, as it is too early for the Northern growers to put out their strength. Again, this year £59 is offered for Roses in pots, and £45 for cut Roses; and it is hoped that Southern growers will respond to the liberality of the committee. Fruit is always a strong point of the exhibition, and on this occasion £60 is offered in the various classes for fruit, including £10, £7, and £5, for a collection of ten varieties. Hitherto vegetables have not been invited at any of the exhibitions, but on this occasion Messrs. Backhouse & Son offer liberal prizes for a collection of ten distinct varieties of vegetables, which, it is hoped, will be well responded to by the growers of these things.

—— Frosted Potatos.—It is not at all improbable that the recent searching frost will have found the weak points of Potato stores, and that many of the tubers will have been utterly spoiled. Such a disaster may well lead to a demand for frost-resisting Potatos, as well as disease-resisting kinds; but the chances that such a demand will be satisfied is by no means probable. Those who have big stores, where their stocks lie in bins, and where, under almost any conditions of weather, only little frost can enter, may feel easy as to the danger resulting to the starchy tubers from the recent intensely severe weather. Even stores in pits in the open field may prove not unhurt, if to the usual depth of soil there has been added a heavy covering of straw, whilst the snow has made them safe enough since it first fell. But the worst mischief was doubtless done prior to

that terrible snowstorm, which will live in the remembrance of all of us till death. A succession of frosts varying from 25° to 28° must make themselves felt where frost has not entered for many years, and the protection and covering of the two preceding severe winters would quite fail to meet the exigencies of the recent weather. Whilst large quantities of tubers will be found as soft as a rotten Apple, perhaps not a few, not so far damaged, will be found to have had the eye-buds irrevocably destroyed; and planters by-and-bye will do well to assure themselves as to this feature before they commit their seed tubers to the soil. Could we have had but a few days' warning of the coming fall in the temperature something might have been done to check its effects, but a fall of 20° in a single night was a terrible and unusual experience. It is too evident that in no case will it do to trust to the tender mercies of English winters. We have need always to be prepared; still farther, we have need of such appliances as shall render our preparations complete.

—— THE SHEFFIELD FLORAL AND HORTICULTURAL SOCIETY.—On January 6 the first general meeting of this new Society was held at the Wentworth Café, Holly Street, when the following members were chosen as officers:—Treasurer, Mr. John Haigh; Trustees, Messrs. James Udall and John Eadon; Curator, Mr. Benj. Simonite; Secretaries, Messrs. W. Woodcock and J. F. Hanson; Committee: Messrs. Joseph Walker, Henry Davy, J. G. Newsham, Thomas B. Haigh, C. E. Makin, Edward Holden, Thomas Woodcock, David Clements, and another; Librarian, Mr. George H. Day. The objects of the Society include the mutual improvement and instruction of its members, by the reading of essays on horticultural subjects, and by providing for periodical lectures of a scientific character, to be delivered by well-known lecturers; the holding of exhibitions (annually or bi-annually, as may be found practicable) of a larger and more comprehensive character than as yet have been held in Sheffield, and monthly shows by the members of special subjects; and the purchasing of books and the leading horticultural periodicals, and distributing the same amongst the members, on the principles adopted by the circulating libraries. The programme for the current half year includes members' exhibitions of Primulas on Feb. 3, Hyacinths on March 31, Azaleas on April 14, best hardy plants in bloom adapted for spring gardening on May 12, and show and fancy Pelargoniums on June 9. Lectures will be delivered on Feb. 3 and April 14, and the following papers are announced to be read on the dates given:—Feb. 17, Cinerarias (with specimens), by Mr. Jos. Walker; March 3, Chrysanthemum Culture, by Mr. Jas. Udale; March 17, Hyacinths (with specimens), by Mr. J. Haigh; March 31, Camellias (with specimens), by Mr. Keeling; April 28, Auriculas (with specimens), by Mr. B. Simonite; May 12, Vine Culture, by Mr. Holden; May 21, Pelargoniums, show and fancy (with specimens), by Mr. Woodcock; June 9, Calceolarias (with specimens), by Mr. Shelley; and June 23, Dendrobium nobile and varieties, by Mr. Clements.

—— FOOLS' PARSLEY NOT POISONOUS.—A few years ago Dr. JOHN HARLEY, of St. Thomas' Hospital, commenced experimenting with Fools' Parsley (Æthusa Cynapium), in the hope of obtaining a useful medicine. He did not succeed in his purpose, but he discovered, as we have previously mentioned, that this plant, which is described in almost all books as a virulent poison, is perfectly harmless. As long ago as 1873 Dr. HARLEY read a paper at the meeting of the British Association giving the results of his experiments, and as that paper seems to be very little known he has published the results of further experiments in "St. Thomas' Hospital Reports, 1880," a reprint of which has come under our notice. It is curious that there are numerous "authenticated" cases of poisoning by this plant on record in English, French, German, and other medical works, many of them most circumstantially related. Dr. HARLEY quotes each statement in full and then carefully analyses it, with the result that in almost every case the evidence is clear against the plant having been Æthusa, and in some cases points to Conium as the agent. In other cases the effects ascribed to this plant were due to other causes. But Dr. HARLEY has not contented himself with negative evidence of the harmlessness of Fools' Parsley, he has placed it beyond doubt by actual experiment on himself and other persons. Even in BENTLEY and TRIMEN's *Medicinal Plants* and WOODMAN and TIDY's *Forensic Medicine and Toxicology*, both works published since Dr. HARLEY had determined and published the true nature of the plant, Fools' Parsley is described as an dangerous poison. In the latter work it is stated that five members of a family became ill from eating a veal pie which had been flavoured with Fools' Parsley instead of ordinary Parsley. "Flavoured!" exclaims Dr. HARLEY: "Oh, pernicious plant, worse than the worst, even Aconite itself!" Disregarding his earlier experiments, in which he took and administered the juice of the plant and tinctures of the fruit in various stages of maturation, we append his latest observations on the juices of the mature and immature plants in his own words:—"Being thus provided with carefully prepared juices of the young in its most succulent condition, and of the same generation of plants in their fully matured condition, I exhausted my supply upon four patients, one a little girl, six years old, who took them in doses ranging from 2 drachms to 2 ounces; myself, who took them in quantities ranging from 2 to 4 fluid ounces; and two other adults, who were the subjects of spasmodic torticollis. These two persons took one or other of the juices in doses ranging from 1 to 8 fluid ounces. Effects were carefully looked for, but there were absolutely none in either case after any one of the doses. Further detail is superfluous, and I may say, in conclusion, that the Æthusa Cynapium of Sussex, Kent, Surrey, Essex and Hertfordshire is not only absolutely free from the noxious properties attributed to it, but that it is pleasant to sight, smell and taste, and, in the absence of the more fragrant and succulent plants, might well be used as a pot-herb or a salad. If any one should think differently of the plant of his locality, I will be ready to indulge his scruples, to test the matter with him, and satisfy him, as I have no doubt I shall be able to do, that my conclusions are independent both of locality and season, and that the only influence which these conditions have on Fools' Parsley, as on Hemlock, is to increase or diminish its succulency."

—— PUBLICATIONS RECEIVED. — *The Handy Book of Bees.* By A. Pettigrew. (4th ed.) (Blackwood.)—*The Rosarian's Year Book for* 1881. (Bemrose.)—*The Potato and its Cultivation.* By A. W. Crews. (*Field* Office.)—*Manures: their Respective Merits from an Economical Point of View.* By A. W. Crews. (*Field* Office.)

—— THE WEATHER.—General remarks on the weather during the week ending January 24, issued by the Meteorological Office, London:—The weather has continued exceedingly cold and wintry in all places. At the commencement of the period it was exceedingly wild and squally, and enormous quantities of snow fell over England—especially in the south. The temperature was again much below the mean in all districts, the deficit ranging from 12° in "Scotland, E." and "England, N.E.," to 17° in the "Midland Counties." The lowest reading recorded at any of our stations was minus 4° at Wick on the 18th. In most other places the minima were registered on the 22d, and were as low as zero at Cirencester and over central Ireland. In nearly all parts of the kingdom the minima were below 10°. The thermometer was highest on the 23d, when a slight temporary thaw occurred. The rainfall was more than the mean in "Scotland, E.," and less in all other districts; but in consequence of the existence of the gale on the 18th the snow was not retained in the gauges, so that the above measurements are probably far short of the correct amounts. Bright sunshine was more prevalent in the south-west and west than elsewhere, the percentages varying from 39° in "Ireland, S.," to 8° in "England, N.E." The wind has been generally between north and east, but at the close of the period a westerly breeze set in at the Scotch stations. In force it varied greatly; on the 18th a violent easterly to north-easterly gale was raging at all except our most northern stations, and continued in some places through part of the following day; but on the 20th fresh northerly breezes were general, and from that time till the close of the period moderate breezes, very light airs, or calms, were experienced on all but our extreme south-western coasts.

—— GARDENING APPOINTMENTS.—Mr. WILLIAM J. CONNELLY, late Foreman to Mr. DRAPER, at Seaham Hall, Sunderland, has been appointed Gardener to J. WELD, Esq., Leagram Hall, Preston.

## ARTIFICIAL MANURES.

### FLORVITA.

[THE following analysis of a sample of a manure known as Florvita, and "prepared only by Prentice Brothers, Stowmarket," has been made at our request by Mr. Bernard Dyer, F.C.S. The sample was bought by us in the ordinary way of trade, in a closed glass bottle, at a price of 1*s.*, the total weight being just over 13 oz. In estimating the actual value of this manure for gardeners' purposes reference should be made to the article on the subject in another column (p. 144), but it may here be said that the combination and proportionate amounts of nitrogenous matters, potash, and other saline ingredients in this manure are well devised for a good general plant manure. EDS.]

"COMPOSITION OF A SAMPLE OF MANURE MARKED 'NO. 2.'

| | |
|---|---|
| Water, &c. | 8.15 |
| Ammonia | 7.94 |
| Potash | 19.89 |
| Soda | 8.81 |
| *Soluble phosphoric acid | 5.64 |
| Sulphuric acid | 10.13 |
| Chloride of sodium | 6.89 |
| Nitric acid | 31.90 |
| Insoluble matter | 0.60 |
| | 100.00 |
| *Equal to phosphate of lime | 12.31 |

BERNARD DYER, F.C.S., F.I.C."

## THE SEVERE WEATHER.

BURFORD LODGE, DORKING.—We have here twice registered below zero. On Friday, the 21st, the thermometer at 12 P.M. stood at 1½° below zero. There were 28° of frost for the greater part of the time from 7 P.M. to 11 P.M., when the glass took a sudden upward movement of several degrees. Its downward course, till it reached the point given, was equally rapid, and the time of the lowest reading of very short duration. On the 25th, at 1 A.M., 3° below zero were registered. The instruments are in an exposed situation facing north, and are 2 feet 6 inches from the ground line. The River Mole runs within 300 yards and about 30 feet below them. I quite agree with Mr. Thomson that many instruments from which readings have been given are totally unreliable, not only because of their sheltered positions, but also from the fact that they are not anything like sensitive enough to record sudden fluctuations of short duration. Plenty of such instruments will take twenty minutes, or even half an hour, to get anywhere near the freezing point when buried in a bucketful of snow. How is it possible for such to record the lowest temperatures which, as a rule, last but a few minutes, and occasionally only moments? Then again I think that volumes of extremely cold air have no lateral motion, but descend perpendicularly like a summer shower upon very limited areas. Indeed I can believe myself that there are descending columns of cold air on very calm evenings which would resemble the pillar of smoke from a chimney, that retains its shape scores of feet above the liberating point. If this is so, no wonder that one tree is taken and the other left, although both may appear to be growing under the same conditions. *J. C. Spyers.*

CANFORD MANOR, DORSET.—When a man of close upon seventy summers looks you straight in the face, and, with an air of gravity becoming the occasion, tells you he never remembers anything like it, you may be sure the state of the elements is pretty severe. My informant, it is true, has not been far travelled, still I think his assertion is not far wide of the mark. The force and violence of the snowdrift on the 18th inst. has seldom been equalled in any part of the kingdom during the present generation. Even in this sheltered, low-lying district, the keenness of the storm was of the most penetrating description. The average snowfall on Thursday, the 19th, was 11 inches. The following figures, which indicate the number of degrees below freezing-point, will show the unprecedented severity of the frost for this district:—January, 13, 12°; 14th, 15°; 15th, 25°; 16th, 23°; 17th, 27°; 18th, 10°; 19th, 27°; 20th, 12°; 21st, 29°; 22d, 18°; 23d, 30°; 24th, 21°. As I write to-night (25th, 6 P.M.), the mercury has fallen to 14°, or 18° of frost. *W. Hinds.*

CHELSEA BOTANIC GARDEN. — Thermometer down to 8° F. on the mornings of January 14 and January 17; down to 12° F. on the morning of January 20. *T. Moore.*

COMBE ABBEY, COVENTRY.—This is a storm in earnest; the glass has gone down to and below zero on several nights. Our boilers are doing well, and every house is well heated and comfortable so far. I do not remember our early Peach-house flowering so early before; other years I felt satisfied to have a few blossoms out on Christmas Day, but this year these were out eight days previous to that day. The house is now in fine flower, and there are many sets. The bees are busily at work, partly on the blossoms and partly on some food we place near the hive; evidently they are proud of their quarters, and I only wish I could bring in every hive in the apiary. During this severe weather I take considerable interest in feeding small birds—poor things, cold and hunger have made them very tame. I lay down crushed Oats, barley-meal, &c., for blackbirds, chaffinches, sparrows, &c., and meaty bones for robins and tomtits. At feeding times a whistle-call will bring quite a flock. Wood-pigeons are making free with our green stuff, and they are quite welcome, for as soon as thaw comes these will all rot. Our highways and byways are filled up 3 and 4 feet deep of snow, which men are cutting, to allow vehicular traffic. *Wm. Miller.*

DUNECHT, ABERDEENSHIRE.—The severe weather commenced here on Dec. 13, and has continued without abatement. During that time snow has fallen at intervals to the depth of 29 inches, and the frost has been of such intensity as has rarely been experienced in this part of the country. Dec. 27th, 32° of frost; Jan. 13th, 24°; 14th, 33°; 15th, 24°; 16th, 31°; 17th, 42°; 18th, 38°; 19th, 24°. *James F. Smith, Jan.* 25.

FALLOWFIELD, MANCHESTER.—The reports you published last Saturday indicate pretty clearly the intensely cold period through which we are passing. There at present seems to be no signs of its going, as to-day it has been bitterly cold—15° of frost being registered at noon, and 19° at 3 P.M. We also to-day have been suffering much inconvenience on account of the dense fog, making travelling, and, in fact, breathing very trying and painful. I send you the lowest readings we have taken for the last twenty days. On Jan. 6 and 7 we had cold north-east winds, with a clear young moon. On the morning of the 7th we registered 4° of frost. Since the 7th our thermometer outside has never been above, nor, in fact, up to 32°. On Sunday last, the 23d, our glass stood at 30°—just 2° of frost. We were in hopes that a thaw might set in; it, however, soon changed, and since then it has been as severe as ever. Our readings are as follows:—On the morning of the 8th, 16° of frost, with dense fog; 9th, 14°; 10th, 15°; 11th, 12°; 12th, 26°; 13th, 23°; 14th, 30°—at 10 A.M. there were 26°, at noon 22°, at 4 P.M. 23°—a dreadful day. In our immediate neighbourhood the glass went below zero. 15th, 29°; 16th, 27°—at noon 26° of frost were registered; 17th, 28°; 18th, 10°—on this day the north-east wind and driving snow were fearful. 19th, 10°; again a bitter cold day, north-east winds. 20th, 27°; 21st, 23°; 22d, 27°; 23d, 9°; 24th, 23°, and to-day (25th) we registered this morning 21° of frost. Such a continuance of intense cold I never remember. To find the glass morning after morning standing at 2°, 3°, and 4° Fahr., and glass structures to keep up to 50° and 60° at the same time, has been very difficult, and at times almost as much as we could do. Coupled with this has been the fear of a coal and coke famine, fearing every day we may be run out of these absolute necessities; now, however, we seem to be past the worst of this dilemma, but we are face to face with another, for our authorities threaten, unless the water is more carefully used, to put us on short allowance. As it happens that hundreds are completely frozen out of both gas and water, if our supply is stopped for any length of time, I fear we shall all soon be obliged to beg for a bucket or two from stand plugs in the streets. I find, on reference to notes I have by me, that in December, 1879, the longest spell of cold weather, which commenced on the 1st, kept on till the 13th, with just one break: the readings then were:—Dec. 1st, 16° frost; 2d, 21°; 3d, 18°; 4th, 17°; 5th, 22°; 6th, 19°; 7th, 25° (30° were registered in our neighbourhood); 8th, 15°; 9th, 15°; 10th, a thaw set in; on the 11th, 12°; 12th, 7°, with dense fog; 13th, 17°. In the December of 1878 I registered as follows:—Dec. 9th, 15°; 10th, 18°; 11th, 15°; 12th, 10°; 13th, 18°; 14th, 20°; 15th, heavy snow; 16th, snow, with slight frost; 17th, snow; 18th, thaw set in; 19th, 10°; 21st, 12°; 22d, rain and snow; 23d, 21°; 24th, 29°—a fearful cold day, and thick, heavy fog; 25th, Christmas Day, 28°; 26th, thaw. The following January was very cold throughout, but several times the glass rose above 32°, and a thaw set in: the frost during that month was not nearly so severe as that we are now passing through. I find, referring back, that on January 13, 1867, just 3 miles from here, I registered 29° of frost; all the day through there were from 22° to 27° of frost; the day following—the 14th—my notes are as follows:—1 A.M., 24°; 2 A.M., 26°; 8 P.M., 25°; 10 P.M., 29°. Again, on the day following (15th), soon after midnight, 29° of frost were registered; the glass, however, during this day ran up to 30°, so that we had for a part of the day only 2° of frost. It is rather remarkable that the greatest cold we have had here this winter should so nearly coincide with the readings taken on that occasion. To-day our barometer is still falling, having given way very slightly since Saturday. We do hope it may be an indication of its giving way, so that we may again have the pleasure of looking upon the ground and of exulting in a thaw. The effects of the weather I must leave to another notice; it has very much injured choice things that were in bud and just about opening their flowers. *W. Swan, Fallowfield, Jan.* 25.

GILLINGHAM HALL, NORFOLK.—When I wrote you last week I spoke of the terrific gale that was blowing; it was at its greatest force about 2 P.M., and had quite died away by midnight. Large trees were blown down in the park. The lead was blown off the ridge portion of the Hall roof, and snow drifted to a great depth. The frost continues night after night with more or less severity. The night of the 20th inst. was very severe, and on reading the thermometer at 1 o'clock on Friday morning it stood at 4°. The thermometer this morning fell to 3°, thus registering the greatest cold as yet, whilst at the rear of my cottage, which is situated some distance from the kitchen garden, the glass stood at zero. *J. Batters, Gr., January* 25.

GLAMIS CASTLE, FORFAR, N.B.—We have not been one night without frost since December 13, ranging from 1° to 25° up to the 14th of this month, when the thermometer registered 5° below zero, and on the 17th 6° below zero. On the latter morning the thermometer did not rise above zero till after 10 o'clock. Yesterday morning we were 1° below zero, and to-day we have 21° of frost with a fresh fall of snow, which I trust will alter the atmosphere. The above is the lowest temperature ever recorded here. *G. Johnston, Jan.* 19.

GORDON CASTLE, BANFF.—It may prove interesting to meteorologists to know that during the time the great snowstorm was raging in the south of England a perfect calm existed here, with a clear sky, which was accompanied by an intense hoar-frost. A thermometer ensconsed in an open latticed box, and 4 feet above ground, had the indicator at zero, being 15° lower than each of the two preceding winters. No such frost has been recorded here for many years. The nearest approach to it during the last thirty years was in Feb. 1855, when the thermometer fell to 4°, or 28° of frost. Several of the stems of some old Portugal Laurels in tubs had their stems split open sufficiently wide to allow the hand to go in sideways. The injuries arising from so severe a frost cannot now be estimated, but they will doubtless be numerous, even although the wood was generally well matured and hardened. *J. Webster, Jan.* 24.

HECKFIELD, HANTS.—As in most other parts of the kingdom, we are having very severe weather. Our lowest readings of the thermometer have been 8° on the 15th, 7° on the 17th, 9° on the 20th, and 5° on the 22d of the month. The snow lies several inches thick, and owing to this being the case there will, I think, be less injury to vegetation than was the case last winter. *W. Wildsmith.*

ISLE OF WIGHT.—The wintry wave which swept over the country last week broke with unusual severity upon the Isle of Wight. The drives, roads, &c., on the eastern extremities of the island are blocked by snow-drifts, varying in depth from 4 feet to 7 feet. We are now having severe frost, the thermometer registering 12°, or 20° of frost, last night (January 23). This will prove a severe trial to many exotics which have flourished in the island of late years, for according to the local papers such severe weather has not been experienced here since 1814. *Wm. Wilson, Priory Lodge, St. Helens, January* 24.

IWERNE MINSTER, SHAFTESBURY, DORSET.—Tuesday and Wednesday, January 18 and 19, will long be remembered in the records of Iwerne Minster and neighbourhood. Previous to the above dates we had had a succession of frosts, varying in intensity from 7° to 24°, but no snow, and the evening of Monday the 17th was calm and clear with 22° of frost but no signs of a storm. On Tuesday morning, however, we were aroused by the howling of the wind and the snow thick and sharp as ground-glass was whirling against our window panes, and being blown into every corner and crevice, and for the whole day it blew a perfect hurricane until the evening, when the wind ceased and we had 26° of frost. Early on Wednesday morning the storm again began and raged with all the fury of the previous day, the roads were blocked with from 3 to 10 feet of snow. Situated as we are here, halfway between Shaftesbury and Blandford, in a valley nearly surrounded by hills, we had more than our share of it, but strong and willing hands have been busy for the last few days clearing the roads, and already some good samaritans from Shaftesbury and Blandford have, at some risk of life and limb, brought a much needed supply of food and fuel to this small and poor village. Our sharpest frost was on Friday 21—we had 30°. *P. Davidson, Jan.* 26.

JARDINE HALL, LOCKERBIE, N.B.—The thermometer in the gardens here stood at 5° below zero on the 16th, 8° on the 17th, 2° on the 18th, and at zero on the 23d. The frost here is far more severe than the last two seasons, or for many years. In some places it is 2 feet into the ground, and the river is frozen entirely over for miles. *A. J., Jan.* 25.

KIMPTON HOO, WELWYN, HERTS.—Tuesday, the 18th, will be remembered by many in this locality. Snow fell without intermission from morning to night, and it drifted with such force that the strongest man had difficulty in standing against it. A large Elm tree near where I write was torn up by the roots, as was also a huge Fir in the pleasure grounds. The shrubs look worse now than they did last year. We have had from 12° to 34° of frost every night during the fortnight. The thermometer fell to 2° below zero on the 20th. *G. Merritt, Jan.* 25.

LIVERPOOL.—Weather here very severe; we have had a reliable thermometer down to 4° Fahr., or 28° of frost, and at Croxteth they have had 2°; a little milder to-day (January 22), with falling barometer, but we fear no decided change for milder weather. *Robt. P. Kerr & Sons.*

METHVEN CASTLE, PERTH.—I send you the readings of a few of the severest nights we have had here, and may remark in passing that we have not had so hard a frost for twenty years at least. Our altitude is about 280 feet above sea level. I have two thermometers out, one on a north wall 4 feet above the ground, and the other (quite open) 1 foot above the snow line. On Thursday, the 13th, the one on the wall fell to 3° above zero, and the one fully exposed to 9° below zero by 9 P.M., and by midnight fell fully another degree; on the 16th, on the wall, to 7° above, and the other to 3° below zero; and on the 17th (Monday) it fell to within ½° of zero, and the open one to 8° below it. The above readings are correctly taken, and may serve for comparison with other places in which the readers of the *Gardeners' Chronicle* may be interested. *Peter Whitton, Jan.* 20.

PENZANCE.—The weather since the 12th inst. has been very severe, a continuation of frost and snow, the like of which was never experienced before. My thermometer, which is 3½ feet from the ground and facing south, has been on two occasions as low as 20°. It has done great destruction amongst many half-hardy shrubs, &c., which we have growing out-of-doors, but as yet I am unable to say what the damage is like. On Sunday morning, the 23d inst., my thermometer registered 21°; at mid-day it was a bright sun and the mercury stood at 83°, with a rapid thaw, and the stench coming from the acres of rotten Broccoli was fearful. Monday the reading was 31° during the night, and the market gardeners were cutting what Broccoli were fit. It is a good job the yield of Broccoli seed was good last summer, as from present appearance the crop of next season will be *nil.* Not only are the Broccoli injured, but I am told that tons of Potatos on the shelves are frosted, the extent of which cannot be known until they begin to plant, which in ordinary seasons would now be in full swing, whereas nothing has been done yet. *J. G. Mitchinson.*

POWDERHAM CASTLE, EXETER.—We have just passed through a very severe spell of frost and snow. I say passed through, because to-day the wind has

been S.E. most of the day, and ever since three o'clock this afternoon it has not ceased to rain, which, I trust, will take away the snow, though floods, no doubt, will be the consequence in low districts. Our minimum temperatures from January 13 have been:—13th, 15°; 14th, 12°; 15th, 7°; 16th, 11°; 17th, 10°; 18th, 12°; 19th, 17°; 20th, 1°; 21st, 15°; 22d, 3°; 23d, 11°; 24th, 21°; 25th, 10°; 26th, 8°. The snow measured on the average 14 inches. Little damage was done to choice trees and shrubs, having been shaken several times by poles, the wind not playing on many of our trees, as they are sheltered from the north by hills. Our thermometers are Negretti & Zambra's, 2 feet 6 inches from the ground. We have three in that position, all registering alike. The above depth of snow and severe frost is unprecedented in Devonshire in the remembrance of any one living here. There is no doubt we shall find the effects very disastrous. *D. C. Powell, Jan.* 26.

Redleaf, Penshurst, Kent. — Thermometer down to 3° F. on the morning of January 17. *John Cox.*

Shipley Hall Gardens, Derby.—I herewith hand you readings of the thermometers in these gardens for the week ending Saturday, January 22. At no period of the week did the glass rise above 24°. January 16, 29°; 17th, 28°; 18th, 29°; 19th, 13°; 20th, 22°; 21st, 21°; 22d, 24°. *W. Elphinstone, Jan.* 25.

Wroxham Hall, Norfolk.—We have had our full share of the severe weather in this part of the country, as you will see from the following record of the number of degrees of frost registered:—On January 14th, 25°; 15th, 27°; 16th, 25°; 17th, 26°; 18th, 2°, with a gale of wind from the S.E.; 19th, 7°; 20th, 7°; 21st, 27°; 22d, 20°; 23d, 4°; and to-day, 30°. The readings were taken about 7.30 A.M. each day. The roads are in a dreadful state—almost impassable, and bread is getting very scarce about here, from the impossibility of the people getting yeast from Norwich to bake with. In many places the snow is 3 feet deep. *Thomas Wynne, Jan.* 14.

## AN AMATEUR GARDENER'S EXPERIENCES.—VIII.

Two Suburban Gardens: a Contrast.—Dwellers near large towns, at all events those who live in the best suburbs, usually have a piece of ground attached to their houses which, though invariably called "the garden" rarely deserves the name. Generally "the garden" is but small in size, and is bordered on three sides by a low wall more or less grim. Beneath this wall is in most instances a narrow border, then a narrow walk running parallel, and the central space is devoted to a grass plot. This, as most of my readers know, is the usual style of garden belonging to the houses, detached or semi-detached, and built all of one pattern with which many of our newer streets and roads are filled. A friend of mine lives in such a house, and has such a garden. He imagines himself to be fond of gardening, so does his wife, and they both pass a certain amount of time in it every year; but I find it hard to believe that either of them has any real interest in a pursuit which properly and sensibly indulged in is not usually without pleasing results.

The limited routine of my friend's gardening operations is somewhat as follows. Some time about March, or if the weather is very cold it may not be earlier than April, the spade and rake are fetched from the cellar, where they have lain since the previous summer, covered with rust. The chief point I have remarked about these tools is that they are remarkably heavy, and not by any means pleasant to use; but their owner does not seem conscious of this, and so perhaps it doesn't matter. He commences operations by "digging" some vacant part of the border where there is room for the spade to penetrate the hard surface without manifestly destroying any plant, but after a few attempts have been made he finds the hard surface and the clayey subsoil so stubborn to deal with that he contents himself with just tickling the surface here and there, in the well-satisfied belief that he has done all that is necessary for the preparation of his border for seed sowing, and the needs of the summer campaign. Occasionally a street hawker calls at the house and sells a few plants; friends in the country also send some from time to time, and every spring a few seeds are sown, and so year by year the flower border gets filled after a fashion; but it is rare that anything lives in it more than one year: most of the introductions are still shorter lived. Even such hardy plants as Virginian Creeper and Clematis planted against the house and walls only exist—they never thrive and flourish; and consequently the garden has a perennial woe-begone and forlorn appearance—a condition much favoured by an ill-made walk badly kept, and a grass-plot which is rapidly becoming a bed of weeds and bare hard patches. There is no cultivating done in this garden, and enrichment of the soil is a thing unknown. I sometimes venture to offer my friend a little advice; but perhaps, because it is usually suggested by some very obvious fault which I desire to see avoided, it has so far been thrown away, and a garden plot, which might be so beautified as to be a source of pleasure, is now nothing but a plague and an eye-sore.

That the statement made in the last three lines is not overcharged is convincingly shown in the garden next to my friend's, separated from it by the dingy brick wall already mentioned, but separated from it still more by its great beauty all the year round, of which I will strive to give some idea in such a way as will, I hope, lead to some other gardens being made in some respects like it. Now, oddly enough, the gentlemen owning these two contiguous gardens are both retired professional men, neither of them much past the prime of life: but one of them is a gardener, and the other is not. The "gardener," when he took possession of his plot, knew how it had been prepared by the builder's contractor; knew that the border was a mass of undrained clay with a quantity of builder's rubbish overlying it, in places thinly covered over by a surfacing of poor soil; so the first thing he did was to excavate the clay for 2 feet or more, place the bricks and lime rubbish at the bottom, and then fill up with a mixture of good soil and half-rotted manure. The grass he well rolled and covered with sand, first scattering a sprinkling of fine grass seeds. The walk was loosened and a good coating of binding gravel applied and then frequently rolled. He thus started with a properly laid foundation on which to base future operations. Against the walls were planted a variety of hardy plants, the bulk of them being such as would be ornamental in winter and early spring. The borders in like manner, and some small beds cut in the grass, were judiciously filled with plants and bulbs, most of them showy and permanent, as will be seen later on. Annually a little rich compost is scattered over beds and border; this, the place affording no convenience for storing, is brought in when wanted from the neighbouring florist's. As opportunity offers the soil is lightly forked over. All through spring, summer, and autumn the fork is constantly being used to keep the surface open. Whenever a portion of the border is replanted it is first thoroughly dug and enriched. So, too, the grass plot is annually fertilised by a thin film of rich compost, in which bone-dust is a principal ingredient. Kept constantly mowed and rolled it is always pleasant to look at.

The first time I saw this garden was several years after the work described in the last paragraph had been done; the walls were covered; the borders glowed with plants in bloom; the grass was in fine order, and everything was as trim as possible. This must be borne in mind while reading the description which follows, in which I shall endeavour to give hurried glimpses of the garden as I saw it at various times of the year. We will start early in spring. As soon as the days are visibly lengthened and the sun has power enough to warm the soil and set vegetation moving, the delicately beautiful Snowdrop lifts its dainty head aloft, and ere long the variously-coloured Crocuses lend their company, and then the earliest-flowering kinds of Narcissus soon follow suit. A little later the spring-blooming Forget-me-Not contributed its turquoise blossoms, along with those of Daisies—red, white, and pink; while patches of Wallflowers diffused sweetness and contributed their glow of colour. Silene and other hardy annuals (Nemophila insignis, Limnanthes, &c.) raised in early autumn and kept through the winter are much used in this pleasant garden; and along with them is seen the pleasant blue of Scilla sibirica, companied by Anemone fulgens—most gorgeous of spring flowers, gaily-coloured Tulips, Hyacinths of soberer hues, Dog's-tooth Violets, and a host of other early-blooming flowers, the bulbs of which, with timely forethought, were planted on a dry day late in the preceding October,

But the walls are no less interestingly tenanted. Against the house a lusty plant of Clematis montana is white over with its Anemone-like flowers. Garrya elliptica, with its curious yellowish-green catkins, has a place beside it, but its charms are for the season over, or nearly so, though earlier, they delighted all who saw them, as, with the leafless yellow jasmine and the precocious Forsythia, they yielded their flowers ere winter had gone, doubly precious for the absence of all others. Already the tenderly-beautiful leaves of the small-leaved Virginian Creeper (variously known as Ampelopsis Veitchii and tricuspidata), are beginning to develope from the ruddy buds dotted along its stems, and ere long it will cover the space allotted with its prettily shaped full-grown foliage, quite close to the wall, as easy to grow, and quite as hardy, as the more common large-leaved kind, and much more beautiful, especially in autumn, when, if it has been fully exposed to light, it will glow with burning crimson and rich browns, as though exhibiting a concentration of all the glories of the richest sunsets it has witnessed through the short year of its existence.

The walls, so grim in the adjoining garden, are here bright and attractive with the glossy leaves of green and variegated Ivies planted at intervals, while the spaces between are variously occupied, some with summer and autumn-blooming Clematises, the downy grey shoots of which are being rapidly developed; others with Pyrus japonica, gay with flowers; and Pyracanthas and Cotoneasters (Simonsii and microphylla are both there), ruddy with berries still, which have been bright and cheerful all through the winter. Here and there is a well-trained Rose tree just starting into leaf—Gloire de Dijon, Général Jacqueminot, Aimée Vibert, and Cheshunt Hybrid being the chief favourites. Several sorts of Honeysuckle are also there. Already the odoriferous flowers of fragrantissima have perfumed the air ere the leaves are unfolded. Later on the common Woodbine and the Dutch Honeysuckle will do their part as dispensers of sweets. The white Jasmine has scarcely started into growth, but the red tips of the young buds show that its energies are awakening, and in due time its lovely white stars will diffuse their pleasant perfume.

The borders are already full of foliage, indeed were so in the depth of winter, for there are many tiny Conifers, perfect as pictures, some golden, others dark green, others again paler green, almost grey. Need I say these charming little plants are Retinosporas? Those in this garden are R. ericoides, R. leptoclada, R. obtusa (and its varieties, golden and silvery tinted, aurea and argentea), R. pisifera and R. plumosa. All are beautiful and cheap. Then there are several kinds of Aucuba, green-leaved, or spotted and blotched with gold; and there being also a vigorous male plant in the garden the female plants are mostly covered with ruddy berries, especially the small-leaved kind called vera. In the spaces between the trees are clumps of carefully selected herbaceous plants and bulbs which thrive best when left for years undisturbed, Daffodils of various kinds, Snowflakes and Irises in considerable numbers and variety; there are also in the front places Hepaticas, Polyanthuses, Primroses, Pansies, Violas, and many other common flowers.

When summer has fully set in the beds on the grass are carefully gone over and everything past its best is carefully lifted and placed in the border facing north, where a vacant space has been left for their use. The beds are then filled with plants purchased in the neighbourhood, and though formal bedding is not attempted well chosen bedding plants are freely used among the Retinosporas and other permanent plants, and soon the glow of Pelargoniums and Verbenas mingles with the soberer tints of Ageratum and Heliotrope. Spring sown flower seeds of the dwarfer kinds are now beginning to yield items of attraction, such things as Mignonette, Saponaria, the rosy Leptosiphon, blue Nemophila, and the showy Linum being chiefly used. But one of the most pleasing beds is that filled with Carnations raised from seed; that is always a feature in this garden—it costs but little and yields an abundance of lovely flowers.

For the autumn display Stocks and Asters are chiefly relied on. Plants of these are purchased and put out in the border wherever room can be found for them, and being done carefully the result is pleasing and the supply of flowers in the garden is

prolonged. Here, however, is the weak place in the routine of this garden, the lack of a reserve space where preparations for filling up blanks as they occur might be made.

It will be obvious that this pleasant attractive garden is not kept up without trouble and expense; but the trouble taken is the chief reason why it differs so much and so agreeably from the common-place sort of garden of which the one next door may be taken as a type. Here we have an intelligent amateur finding intense pleasure in his garden, and making it a bright, delightful spot in the midst of much that is dingy and unsightly. *Philanthes.*

## PLANT PORTRAITS.

ARNEBIA ECHIOIDES, *Garden*, August 28, 1880. —See *Gard. Chron.*, p. 689, vol. xi.

BERBERIS BUXIFOLIA, Lam., *Bot. Mag.*, t. 6505. —The B. dulcis of Sweet's *Flower Garden* and Paxton's *Magazine of Botany*. Chili.

BIGNONIA CAPREOLATA VAR. ATRO-SANGUINEA, *Bot. Mag.*, t. 6501.—A variety grown at Kew, with narrower leaf-lobes than the type, and with the lobes of the corolla ovate-triangular, acute. Southern United States.

CAMPANULA FRAGILIS, Cyrill, *Bot. Mag.*, t. 6504. —A beautiful herbaceous plant of procumbent habit, with stalked, roundish or ovate, deeply crenate leaves; flowers 1½ inch in diameter, sepals lanceolate without appendages. Corolla blue, nearly flat lobes, ovate acute. South Italy.

CHIONODOXA LUCILIÆ, *Garden*, July 3, 1880.—In this plate both the blue and the white varieties of this charming spring flowering bulb are illustrated (see also *Gard. Chron.*, p. 469, vol. xi.

CHRYSANTHEMUM FRUTESCENS VAR. ETOILE D'OR, *Floral Magazine*, t. 416.—The Star of Gold figured in *Gard. Chron.*, p. 561, vol. xiii.

CRINUM PURPURASCENS, Herbert, *Bot. Mag.*, t. 6525.—A species from West Tropical Africa, remarkable for its dwarf slender habit, very numerous spreading narrow undulated leaves, and narrow petalled flowers. Messrs. Veitch.

CYPRIPEDIUM STONEI PLATYTÆNIUM, *Floral Mag.*, t. 414.—A lovely variety with sepals white with purplish bars, long narrow petals, yellowish, spotted with purple, and a flesh-coloured lip.

DRACONTIUM CARDERI, Hook. f., *Bot. Mag.*, t. 6523.—A species differing from those previously described in the smooth petiole and slender peduncle or scape, considerably exceeding the leaf-stalk in height. Native of the United States of Columbia. Introduced by Mr. Bull through his collector, Mr. Carder.

EPIPHYLLUM ACKERMANNI CRUENTUM, *Floral Mag.*, t. 413.—A very gorgeous Cactus, raised by Messrs. F. & A. Smith, West Dulwich.

HIBISCUS SCHIZOPETALUS, Hook. f., *Bot. Mag.*, t. 6524.—The singular Hibiscus with fringed petals figured in *Gard. Chron.* 1879, p. 282. Sir Joseph Hooker considers the plant as distinct from H. rosa sinensis. The capsule is long, with numerous small smooth seeds.

INDIGOFERA ANIL, Linn., *Bot. Mag.*, t. 6506.—The West Indian Indigo plant. Kew.

IXIOLIRION PALLASII, *Revue Horticole*, August 16, 1880.—See *Flore des Serres*, xxii., p. 9.

ODONTOGLOSSUM ODORATUM, Lindl., *Bot. Mag.*, t. 6502.—Panicles loose, many-flowered; flowers small, yellowish, spotted with red; sepals and petals narrow, lanceolate; lip hastate, middle lobe prolonged, lanceolate; column eared. Mexico.

POLYGONUM CUSPIDATUM, Sieb. and Zucc., *Bot. Mag.*, t. 6503.—A Japanese species, with cordate-ovate acuminate leaves, and axillary spikes of whitish flowers.

ROSA PISSARTI, *Revue Horticole*, August 16, 1880. —A species described as new by M. Carrière, and coming from the vicinity of the Caspian Sea. The branches are spreading or bent downwards, very spiny and glaucous, the leaves deep green, paler beneath; flowers in tufts, white, very abundant, fragrant; fruits tapering to each end, deep red. This is described as a magnificent species.

ROSE, COUNTESS OF OXFORD, *Journal des Roses*, July, 1880.

ROSE, LITTLE WHITE PET, *Floral Magazine*, t. 415.—A white "fairy" Rose—what more need be said in its praise? It is sent out by Messrs. E. G. Henderson, Pine-apple Place.

## APPLE FUNGUS.

ON dividing some Newton Pippins some days since, a few white radiating lines were observed on the inner wall of the carpels, while similar spots were found on the seeds. These were at first supposed to be an outgrowth of the subjacent tissue; but they remained perfectly white, while the cellular substance below acquired the usual foxy tinge on exposure to air. This induced a close examination, and under a common pocket lens they were at once regarded as an outgrowth of some mould. On examination under a compound microscope, they were found to consist of radiating threads with distinct articulations about as broad as long, forked towards the circumference, the terminal subglobose joints being echinulate, as in the genus Rhinotrichum, but without any appearance of external spores. But, on the contrary, some of the terminal or subterminal joints contained distinct globose bodies of two sizes, the one about $\frac{1}{4000}$ or $\frac{1}{5000}$ part of an inch in diameter, the other about $\frac{1}{1250}$, which, however, could not be measured accurately, as they were not squeezed out by pressure. On the application of iodine both assumed a dark brown tint, and in one case only a single spore was observed in the art of germination. A single thread, supposed to belong to some Penicillium, was attached, as in the subjoined figure (fig. 27). A similar formation of spores within the cells has been observed in Chionyphe,

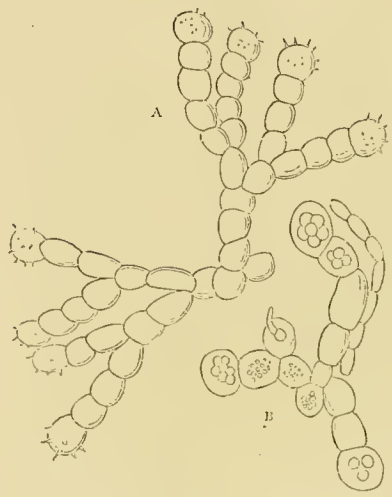


FIG. 27.—FUNGUS FROM THE CARPELS AND SEEDS OF APPLES.

A, The usual state. B, Some of the joints producing spores of two kinds, and one germinating, accompanied by a thread, as it is supposed, of some Penicillium.

and in the Yeast plant. In the spores of Hemileia, the pest of Coffee plantations, a similar development has been observed by Mr. Abbay within the spores themselves.

The matter is a very curious one, and it is hoped that some one will take it up for further examination. After the first observation the same appearances presented themselves in every Apple examined. It should be observed that the patches on the seeds retained after eight hours' exposure in parts these snow-white tints, while parts were stained by matter from the cuticle of the seed, and where the seeds pressed against the growth in the carpels the terminal joints of the parasite were similarly tinted.

The figure shows a group of threads in the usual condition, also a portion containing the larger and smaller bodies, with a thread, as it is supposed, of some Penicillium. *M. J. B.*

BRITISH MOSSES AND HEPATICS. — Under the auspices of the Botanical Record Club a new edition of the complete list of British Mosses and their varieties, with indications of their distribution throughout Great Britain, has been published by Mr. Bogue. The *London Catalogue of British Mosses*, as now emended, will be as indispensable to the student and collector of these plants as the corresponding catalogue of flowering plants has been for many years past. Five hundred and sixty-eight Mosses are enumerated, and 192 Hepaticæ.

## Home Correspondence.

The Gardeners' Royal Benevolent Institution.—I do not know the feelings of those unsuccessful candidates at the late election, who have been subscribers to this institution, but I do know that I felt a sense of disappointment when I opened my *Gardeners' Chronicle* of January 15, and, reading down the list of the names of the successful candidates, found there was one who had subscribed eight years, and two more for five years, who had failed in getting on the list, while there were two or three who had never subscribed a penny that had secured the pension. Of course I do not mean to infer that there is anything illegal in the way the election is conducted, but it strikes me that there is something wrong in the rules of a society that permits outsiders to reap the benefit of its funds, when there are others whose claims cannot be questioned. I am aware that these last have not complied with all the rules of the society, at the same time they had done something; yet they have to stand by and see others who have done nothing reap substantial benefits. But what hurts me most in connection with this matter is the fact that to a certain extent I have assisted to bring about such a result. On being appealed to for my support on behalf of a non-subscriber, without waiting to consider the effect I gave my word that I would do all I could on behalf of that applicant amongst my friends, and did so without giving the subject farther thought until it was too late, as it was a deserving case; but a quiet consideration of the claims of all soon convinced me that I had done wrong, and I am still of opinion that no one should solicit votes on behalf of a nonsubscriber while there are any applicants who have been subscribers, if for only a few years. If I had the revising of the rules I would prohibit the canvassing for votes altogether, for it is very plain that those who can command the most influence stand the best chance. Presuming that all the applicants were deserving, I think all must admit that those who had subscribed one-quarter or one-half of the time should stand before those who had not subscribed at all. *J. Clarke, Cothelstone.*

Lobelias.—I entirely agree with Mr. Burbidge in supposing that the Lobelia which he and I had sent to us as L. coronopifolia was L. triquetra. Our plants, I believe, came from the same source. My correspondent sent what was supposed to be L. coronopifolia with seedlings of the lovely Isotoma axillaris, which ought to be grown as a summer bedding plant in every garden. I had never seen the true L. coronopifolia, and did not know its picture in *Botanical Magazine*, and simply expressed my opinion of the plant in bloom before me. Before the year 1880 had waned away I had come to the conclusion that I was growing L. triquetra. I am not familiar with any species of Isotoma except I. axillaris. I see Messrs. Haage & Schmidt advertise a rose-coloured species under the name of I. petræa rosea. If I. longiflora is hardy enough to bed out, it would make a charming companion to I. axillaris. I have never grown Lobelia ramosa. *H. Harpur-Crewe, Drayton-Beauchamp Rectory, Tring, January 22.*

Primula cortusoides.—Considering the easy culture of this Primula and the beautiful deep lilac colour of its flowers, as also the fact that it can be had in flower throughout the winter and spring months, the wonder is that it is not more frequently and extensively grown in pots and pans—the effect is better when grown in masses—for the embellishment of conservatories, &c. A packet of seed sown any time during this or the next month (the earlier the plants are established and have completed their growth in the autumn the earlier and better can they be forced into flower in early winter) in a pan or shallow box in fine light soil, and placed in a little heat, when the seed will soon germinate; and so soon as the young plants appear through the soil they should be placed near the light, to prevent their becoming drawn, and when large enough to handle be pricked out in shallow boxes, 1½ inch from plant to plant, in finely sifted soil, composed of three parts light loam and one leaf-mould and sand, and again put into a close warm frame and shaded for a couple of hours for a few days, in the event of there being sunshine at the time, until they have taken hold of the soil, when they can have the full light of day and a little air when necessary. When the plants have made a good growth, and before they become crowded in the boxes they should be transferred to the pots and pans in which they are intended to flower, lifting them carefully out of the seedling boxes, with as much soil as will adhere to the roots, and potting them in soil a little rougher than that into which they had been transplanted from the seed-pan or box. As soon as the plants become established in their flowering pots and pans they should be supplied liberally with weak manure-water at the roots and ventilated freely during the summer months: the object being to insure good

consolidated and well ripened crowns by September, at which time water should be gradually withheld from them. The larger and firmer the crowns are before the plants lose their foliage, the better the prospect of a good floral display later on. We winter our plants in cold pits (the pots being turned on their side), and when we introduce them into heat we put an inverted flower-pot over each crown; by which means, in addition to the light being partly excluded from them, a more equable temperature is maintained around the crowns, which causes them to throw up their flower-spikes more freely and kindly than would be the case under different circumstances. In conclusion I would ask all those who have not grown this hardy Primula for winter flowering and decorative purposes to give it a trial, which will well repay them for any little attention they may have given them in their earlier stages of growth. *H. W. W.*

**Early Snowdrops.**—In your paper of January 22 I see, under the heading "Early Snowdrops," that some were in bloom at Chiswick in the open air on New Year's Day. In my garden, where they grow in quantities under the trees, there were plenty in bloom on December 27, 1880, and they have been out before Christmas Day in some years. Rhyl—our nearest point to the sea—is 12 miles away. Among other things, Primroses were in bloom here in December. *Arthur Mesham, Pontryffidd, Bodfari. Rhyll.*

—— I have two Snowdrops which bloom long before Mr. Melville's Early Dunrobin. The first, which was found by my friend, Lord Walsingham, on the Albanian mountains, north-east of Corfu, always blooms from the middle of October to the middle of November, which is almost immediately succeeded by the little Corfu variety, which goes on blooming till Christmas and the middle of January. Both appear to be mere forms of G. nivalis. *H. Harpur-Crewe.*

**White Czar and Other Violets.**—White Czar Violet produces as long footstalks as Victoria Regina; it requires high cultivation. Viola odoratissima (single dark blue) is undoubtedly the finest single Violet grown, producing immense flowers in profusion, throwing the flowers well above the foliage. Among double Violets Duchess of Edinburgh (cream-white, each petal bordered azure-blue), very large and double; Belle de Chatenay (large double white), Belle de Chatenay cœrulea plena, Marguerite de Savoie (large, deep blue, double), and Parmensis plena, (white, striped with rose, very fine), will certainly displace all the older varieties when better known. To grow Violets in perfection an eastern aspect, where the morning sun only shines upon them, is requisite, using abundance of leaf-mould and rotten dung on a good strong loam. Red-spider is their greatest enemy, but it can be kept down with the syringe. *Ebor.*

**Violets.**—In answer to Mr. Fish's query about Violets, p. 53, I may say that I have grown all he names, and a great many more—upwards of twenty varieties—and the stalk of White Czar is not nearly so long as that of the Blue Czar, nor is the flower at all equal to the old sort. The stalk of Double White is so short as to make it almost useless in bouquets. The stalk of Queen of Violets is somewhat longer, but the bloom never opens well with me. As to Blandyanum, when true it is very pretty, but constantly reverts to "King"; indeed, in my garden, the single blues and whites seem to go backwards and forwards according to the season; and one year, after sowing a packet of Czar seed of my own saving, the whole produce, without an exception, came white. The longest stalked Violet I have is one called Devoniensis, an old sort, small, but very dark and very sweet, and an abundant bloomer. Can Mr. Fish tell me anything about Belle de Chatenay and Marguerite de Savoie? I can't make much out of them. I dont think any Violet comes near to the "odorata" of New York, which I can always have in bloom three months before the Neapolitan, and quite as fine, and it has a stalk long enough for anything. *A. R., Bromley Common.*

**Potentilla reptans.**—I gathered a rather peculiar form of the common and ever-flowering Potentilla reptans the other day. It had a whorl of very small leaflets of about half an inch long, arranged immediately beneath its sepals. *W. Roberts, Chapel Street, Penzance.*

**Saxifraga lantoscana.**—I was much pleased in seeing a representation of this plant in the *Gardeners' Chronicle* of last week (fig. 21). It was to me like seeing the face of an old friend, having met with the plant so many times and in so many different places on the maritime range of Alps. Hundreds of immense tufts may be seen hanging, to all appearance, from the face of the bare rocks, dripping wet from the melting snow-fields above, and from each mass of rosettes of greyish silvery leaves proceed a dozen to twenty, or even more, of its large drooping panicles of white flowers. These constitute a sight not easily to be forgotten. When visiting the western portion of the maritime Alps I met with a superior form of S. lantoscana, the flower-stems of which were of a dull scarlet, while the blossoms were much purer in colour, being of snowy whiteness; the leaves, too, were more compact, broadly spathulate and distinctly recurved. There is another species of Saxifraga somewhat similar to the above; it is equally as handsome, though not so large a plant: I allude to S. cochlearis. *R. P.*

**Phormium tenax Veitchii.**—This plant must be quite hardy—here, at all events. I noticed a plant in a border in Mr. Mitchinson's garden, at Gulval, where, though surrounded by several inches of snow, its glorious golden stripes stood out extremely conspicuous in this excessively dull and dreary weather. Its style of growth reminded me very forcibly of our lovely native Iris—Iris Pseud-acorus. *Wm. Roberts, Chapel Street, Penzance.*

**Multiple Cones.**—I send you a photograph (fig. 28) of a very singular freak of Nature in a Scotch Fir, which was found by a poor woman gathering sticks in a small Fir plantation, known as "White Sheet," near thetown of Beauminster, and the property of Lieut.-Colonel Cox. The tree on which it grew appears to be a young and drawn weakling, from 25 to 30 feet high, and on the leading shoot at the top grew the mass of cones, ninety-six in number. Eighty-seven of

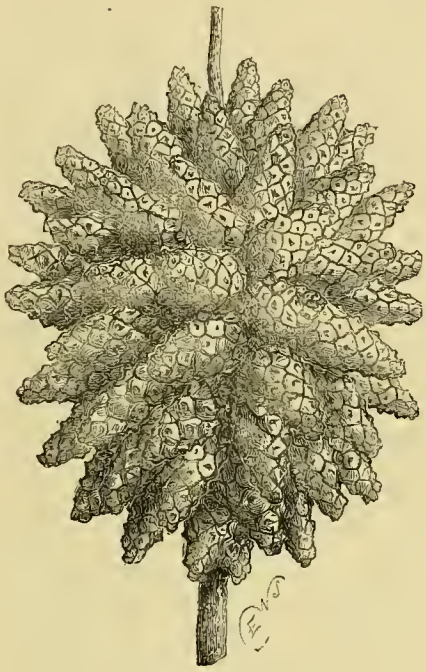

FIG. 28.—MULTIPLE FIR CONES.

them were fully developed and of uniform size; and the cluster measured in circumference 19 inches. *J. Mullins, Beauminster, Dorset.* [As many as 227 cones have been recorded. EDS.]

**Sawdust Manure.**—In wet heavy land I should have no hesitation in using sawdust that had been slept on and trodden by cattle, or that had been steeped in liquid manure, but I should be very chary of doing so in that of an opposite character, knowing as I do its tendency, when it lies dry, to generate fungus, which poisons the roots of everything it comes near. That mentioned by Mr. Earley, obtained from the London General Omnibus Company's yard, would probably be much trampled, and in an advanced stage of decomposition, and full of ammoniacal juices from the quantity of urine it had absorbed, in which condition there would be little risk of the evil adverted to above, and I can readily understand the excellent stimulating effect it would have on such free-rooting things as Hyacinths, Narcissi, &c., which would be able to absorb from it the food they require. The danger with sawdust and anything of a woody nature, like leaves or twigs, is in letting them lie quiet and dry, when they area long time rotting; but stirred about and disturbed, as soil is in a market garden, decomposition is hastened, and strawy and other matter which would be unsafe anywhere else, may there be used with impunity. In cases, too, where stiff clay has to be dealt with, such material is highly beneficial as by lying loose and hollow it aërates it and gives the plants a better chance to ramify and send their fibrils through. Sawdust, like cocoa-fibre, forms an excellent mulching, and is valuable for plunging pots in, as, being a nonconductor, it wards off frost and heat, and thus renders roots snug from the shelter it affords. As a manurial agent sawdust is almost worthless in itself, but being a powerful absorbent, no doubt it might be turned to good account to drink up some of the thick sewage and drainage from towns and cities, a good deal of which, as it is, is now going to waste. On farms I should think the best way to use it would be to spread it over the bottoms of yards before strawing down for the cattle, or to make a bed of it for manure, to be carted and laid on, to be all turned over together, as then it would prevent loss of the juices which are generally allowed to soak away into the earth. *J. S.*

—— Mr. Earley's testimony in reference to the value of sawdust as a manure reminds me of a once famous amateur Rose grower, who, on being complimented by a friend upon his success, at the same time expressing a desire to know the secret whereby such success was achieved, made the following reply:—"My success," he said, "is chiefly due to the particular kind of manure I use." His friend, feeling somewhat dissatisfied with the answer, further pressed him as to the nature of the manure employed, whereupon he replied, "With the exception of the preliminary preparation of the soil previous to planting I use nothing but a liberal top-dressing of straw annually." Imagine with what discredit this reply was received; "but," he added, "previous to the straw being applied to my Roses it is necessary that it should be prepared by my pigs, in order that it should effect the desired results. Thus it would seem, in the case of Mr. Earley's sawdust, which he procured from the Omnibus Company's yard, that its fertilising properties were wholly attributable to the preparing process to which it had been subjected in the stables of the Omnibus Company. I am also inclined to believe that this process, together with the fermentation, was alone the means whereby it was rendered innocuous. I wish, therefore, in offering these remarks, to express an opinion that sawdust in its natural state is not beneficial to vegetation, as some may naturally suppose upon reading Mr. Earley in its favour. On the contrary, I believe it to be detrimental to vegetable life in its raw state, and should not upon any consideration be used except under certain conditions conducive to an entire change, which change alone can render it suitable for manure. Even then I question if it would find much favour in the minds of gardeners, if the ordinary stable manure is at their command. *E. Morgan, The Butts, Harrow-on-the-Hill.* [Sawdust is of little or nomanurial value in itself, as has been proved by direct experiment at Rothamstead; but there can be no doubt of its usefulness as an absorbent of urine, and consequently as a useful medium for distributing that fertiliser. EDS.]

**The Barnack Beauty Apple.**—Apples amongst fruits and Potatos amongst vegetables may justly claim to be the most useful products of our gardens. For three years past our Apple crop may be said to have been a failure. I have, therefore, carefully noted what varieties do best and find that Barnack Beauty has a full crop every year. The variety coming next is Dutch Mignonne, which only missed a crop twice in eleven years. Barnack Beauty is a seedling raised at the neighbouring village of Barnack, hence its name. This Apple is not a Ribston in flavour, neither is it a Gloria Mundi in size, but is a happy medium between the two, being of medium size and a fine colour all over. It keeps until May, and answers well either for dessert or kitchen purposes. I am so pleased with the variety that I have this season planted it largely in our new orchard. *R. Gilbert, Burghley.*

**The Ready Method of Transplanting.**—For some years past I have watched the progress of plantations of ornamental trees and shrubs growing on a property lying between Tunbridge Wells and Hastings, and have been astonished at the growth of the trees and the rapid manner in which these plantations have been extended; the soil, a deep loam lying on sandstone, is doubtless suitable for the growth and health of these Conifers, &c., but the mode of planting has had much to do with their after-success. It has been the custom to trench the ground and leave it to be acted on by the winter's frost before planting, and every tree and shrub that has been planted has had its roots preserved, and when planted sand has been mixed with the earth and placed over the roots; sometimes, in the case of large trees, as much as a cartload of sand has been used, which not only allows the fibres to roam with ease, but preserves the moisture. I never saw Conifers grow so rapidly. Douglas' Pines I have measured after twelve years growth, and found them 30 feet in height, with the branches extending even more than this. The custom has been to plant out specimens around these selected Conifers and shrubs, and then by degrees to transplant all but the specimens. As no spade is ever used for removing trees on this property not a root is cut,

so that not only the specimens remain uninjured by the removal of those around them, but the trees which were used for sheltering them are all transplanted with their roots entire, *i.e.*, supposing they have been only planted from three to five years. I will instance the thinning-out of from fifty to sixty Spruce Firs which had been allowed to remain where they were planted four years; from being planted thickly they were only about 5 feet in height when they were removed the winter before last. I have measured these trees lately, and find that in the first year of their being transplanted they averaged 2 feet in growth, some more than this and some less. They made the same growth last year; every tree is a specimen, the laterals growing thickly in a most sturdy manner: in all probability every root was extracted with these trees. I watched the process of removal and timed the operation, which took exactly one minute for each tree. All that I am stating I vouch for, and will give any one requiring it permission to see these plantations and the implements used in extracting the trees, and also for their removal. Trees have been taken up and landed on the surface of the earth in a few minutes which have required one, two and three horses to draw to their destination. *Philodendron.*

**Exhibition Plant Groups.**—The writer on this subject at p. 82 has ventilated a subject of much importance, bearing, as it does, on the future prosperity of flower shows, so far as this can be influenced by encouraging a desirable improvement in their general appearance. He, however, omitted to say how this can be remedied; and my experience has been that the greatest fault lies with the judges, who ignore the arrangement, and persistently adhere in their decisions to the value of the plants so staged. Some years ago, when visiting the Richmond Horticultural Exhibition, I was much struck with a whole tent arranged in groups; and, thinking the idea an excellent one, I used my influence to introduce the prize in our own local exhibition, which has now been done two years. Determined to bring out this style of exhibition I arranged a table, with the result that my group was placed 3d—my competitors in both cases staging in the ordinary way, while mine was arranged and had the appearance of a miniature carpet-bed, so far as that idea could be done with plants in pots. The visitors were unanimous in their admiration of the style and novelty of the arrangement, just as I expected and as I believe would be the result, if flower-show managers and judges could be brought to the same mind. Last year our exhibition was much larger than usual, and the same prize was again offered with the identical result, mine being arranged differently, but according to the same idea, and being again placed 3d, while the 1st prize group was arranged on a centre table in pyramid form, gradually sloping down to the front, as so graphically described by your correspondent. The plants were all of a valuable description, many being large half and quarter specimens, of the value of from £5 to £10 each, and this no doubt caused the decision, while the general effect was entirely ignored—or perhaps not ignored, as value staged in the orthodox fashion seemed to be considered by the judges as the highest point of general effect. Now the real question to be decided is as follows:—Whether valuable plants arranged in the form of a pyramid are to have precedence of plants, irrespective of value, arranged in a natural, novel, and beautiful style? If there is to be progress in regard to flower shows the latter arrangement should be encouraged, and if valuable plants have no better recommendation in such a competition than their intrinsic value, they should in this case be placed last. I trust that these remarks will be taken by all those interested in the question in the spirit in which they are offered, that is, as an incentive to making our flower shows so attractive that they will receive the approval of the public taste *W. C., C.*

**Agapanthus umbellatus.**—Some of your correspondents doubt the hardiness of Agapanthus umbellatus, and it may interest them to know that it has survived out-of-doors for many years in the Pendrea Gardens, but I am not certain how it has fared this winter. *W. Roberts, Chapel Street, Penzance.*

**Japanese Chrysanthemum splendens.**—At no season of the year, not even excepting the last days of October, are Chrysanthemums more welcome than during the month of January. Those, therefore, who would possess a free-flowering late variety cannot do better than secure the subject of these remarks. The colour is a very decided orange-yellow, which rivets the eye at the first glance, so that even among scarlet or white Camellias the plant stands out conspicuous, and sustains its position, so to speak, in company with the gayest of colours. It is most useful for the adornment of staircases, not alone because of the effect it produces, but also because it seems to have the power of resisting abuse. Plants that stood for over a week without water on a staircase which was warmed with hot air, after a good watering and a syringing overhead are still comparatively fresh, when such things as Callas, Abutilons, &c., are all but dead. Perhaps we grow too many varieties that flower in November, and too few that flower in October and December. Who will strike out a new line in this direction? *Dorset.*

**Green *v.* Pale-coloured Peas and Beans.**—I am prepared to maintain that those who enjoy first-class Peas and Beans will seek after colour (green) as well as quality. If "W. W." had carefully read and quoted my remarks he would have found that I did not—as he says—summarily condemn the light-coloured Peas and Beans, but qualified the assertion in these words:—"I do not wish my readers to understand me that I condemn all light-coloured Peas and Beans—far from it, because I am well aware that some of them are of delicious flavour, but lack the colour I advocate." "W. W." lays great stress upon the word "generally," where I refer to pale-coloured Peas, &c., being mealy, and this I affirm to be the case in more instances than in the deep green ones, and he must know that the word he cavils at did not mean universal in the sense it was used. Then, again, he says with respect to "wrinkled Peas, green or white, both are 'much of a muchness' as regards flavour, and that all the difference there is exists in the imagination only," and that "all are green when cooked." I deny that it is so, as there is a marked difference in that particular; and green Peas and Beans will always take precedence over light-coloured varieties. *J. Gardner, Elsham, Brigg, Jan. 25.*

**Boilers and Stoking.**—We have had for a long time a discussion as to boilers, and the same thing seems to be cropping up again. Would it not be a good plan now to begin a discussion as to the best mode of using, *i.e.*, firing, those boilers? I am induced to propose that, because some little time ago, having taken my gardener to task for letting a number of plants get destroyed with the frost, he assured me that there was something wrong with the boiler—that he wanted a new boiler, for this one would not do its work. I told him it had lately been put in by a good man, and he had assured me that it was not only able to do its work for the present houses but for any other I might put up. I then went and looked at the fire; instead of a bright clear hot fire I found the front of the grate choked up with coal and quite black. I said, "This answers for the whole thing, and for the immense lot of coal you burn; you get up no heat in this way, and waste uselessly no end of coal." So I poked the heap along the furnace and soon had a clear fire. Will some of your practical correspondents describe the best method of firing? *J. R. H.*

**Seed Potatos.**—It is late to call attention to these, but it should be borne in mind that each succeeding frost keeps driving the others in, and unless unusual precautions are taken, walls, however thick they may be, must soon be frozen through, and Potatos will therefore be in great danger of becoming damaged and spoiled. To keep out the intruder from sheds there is nothing so effectual as a fire to warm up the air occasionally, and if doors and windows are barricaded with mats, shutters, or dry straw, Jack Frost may then struggle long and hard before he is able to effect an entry. Charcoal or coke fires may easily be started in any old iron pot or other vessel, and when clear stood inside; but if charcoal is used it should not be forgotten that the fumes from it are suffocating to any one confined in a close place where it is burnt. The covering of snow on pits has been a great protection to Potatos so stored, as it is a capital non-conductor, and so long as it lasts nothing better can be had, and it will be a good plan to scrape up all immediately around and pile it on over the mounds, which will render all safe beneath, as the natural warmth of the earth keeps rising up under. *J. S.*

**Potatos Turning Black.**—It is not easy to answer the query propounded by "A." (see p. 117) as to why some sorts of Potatos turn black in the flesh, while others do not; but there is good reason to believe that the rough usage received in course of lifting and transit has much to do with it. It would be of interest to learn whether any of the blackened Potatos were lifted by means of a machine, as it is very possible that such a method of taking up the crop would subject the tubers to many hard knocks and bruises. It is, however, not merely that the tubers complained of are so blackened, but that others coming from the same place, and perhaps subject to the same usage, are not so blackened. For this there seems no other explanation than that the flesh of some kinds is softer than others, and that it is so there can be little doubt. The White Regent is without doubt one of the softest fleshed tubers we have, but it also is one of the worst to show the blackening in question. It would be still farther interesting to learn whether the sorts of Potatos that are most subject to disease also show these black spots. There seems to be little doubt but that the softest fleshed kinds are those which are most affected by the disease, the Peronospora doubtless finding in the soft cellular tissue little obstruction. That there are other causes operating to produce this blackness than rough usage, I have a strong belief. I found, for instance, that some tubers of Climax, though apparently sound, proved very dark when cut—whether the product of the recent excessive low temperature, or of some moderate form of disease I cannot say, but the feature is quite singular. The tubers, though exposed to cold, were not frosted. *A. D.*

**Packing Cut Flowers.**—Noticing the remarks on this subject by "X." and "W. B. H.," induces me to say, that having occasion daily to send cut flowers, made up into button-holes, from Dublin to London during the last London season, we adopted the following plan:—A wooden box was made just large enough to hold the bouquets, in the bottom of which was placed cotton-wool slightly moistened. Then the bouquets were sprinkled overhead, and placed one over the other with a little cotton-wool placed between each. More cotton-wool was added, and the lid tied firmly down over all, and the thing was done. Now, surely, if the same end is gained by this simple plan, there is no need for inserting the stalks or tips of flowers in water, and afterwards drying or cutting them off altogether. As to the success of the wetting overhead system there is no doubt, as on making inquiry at the end of the season as to the condition of the flowers on arrival, I was pleased to learn that they all without exception arrived without a noticeable spot. The flowers used were generally Gardenias, Stephanotis, Lily of the Valley, Spiræa, &c., backed up, of course, with Maidenhair Ferns. *G. G., Mount Anville Park.*

**Christmas Roses.**—As I have grown Helleborus niger for eighteen years or more with the best possible success, perhaps the following may interest some of your readers, as I well know it is the opinion of gardeners in general that they should not be disturbed very often. Mr. Saul recommends that the plant should be but little disturbed, in which I beg to differ, as I move my plants twice a year as follows. In October, when the bedding plants are cleared off, I make a round bed, 12 feet in diameter, in the flower garden, which holds about fifty plants, and which are taken from their summer quarters with a ball of earth attached to them. They are simply taken up with a digging-fork, and slightly shaken to displace any loose soil; they are then planted in the above bed, and remain there until May, when they are taken up with a ball, and returned to their summer quarters, which are somewhat shady. They are planted between Gooseberry trees, and those in their turn are shaded by Apple trees, and, should the weather be very dry, they are watered for a few days, as I do not like the young foliage to flag. When the plants get too large they are cut in three, *i.e.*, in a triangle, which makes a rounder plant than when cut once. They are divided in May when planted in their summer quarters, and the foliage of the plants averages 18 inches to 2 feet in diameter, and very healthy. The plants treated as above flower better than any I have ever seen. Last year the fifty plants (early in March) had each from fifty to seventy blossoms, or about 3000 blossoms open at once (a sight worth seeing). They flowered late, owing to the severity of the winter; but in several mild seasons they have been very fine at Christmas. Plants not required for the bed are covered with hand-glasses, which brings them forward much earlier, with clean flowers and long foot-stalks. The above plants will be in blossom about a week after the present frost is over, as all in the bed are full of buds about 2 inches in length. I shall be most happy to show them to any one when they are in flower. *J. Brown, Great Doods, Reigate.*

—— The finest clumps of this beautiful winter flower I have ever seen were growing in a very warm situation in Mid-Kent, in soil composed chiefly of vegetable matter; the aspect was due south, and they were fully exposed to the sun. They had been growing there undisturbed for upwards of twenty years, and the flowers might be counted by the hundred at Christmas, and for several weeks after. We found the flowers very useful for indoor decoration, &c., as with care they last nearly a fortnight after being cut. I have always noticed it being very impatient of removal, and am of opinion that it requires the warmest situation it can have in this country, and a light soil, in which decayed leaf-mould, &c., predominates, as plants growing at the same place, but in a colder aspect and heavier soil, did not succeed half so well as the others. A better plan than lifting the clumps is to put a hand-light over them, which hastens their flowering considerably, and the flowers are also of purer colour. *W. H. Divers, Burghley.*

**Dendrobium nobile.**—I know but very few plants, stove or greenhouse, so obliging to the culti-

vator, and so fascinating in its own quiet beauty to its admirer, and one, moreover, that continues for so long a period in unfading bloom, as this fine old Indian Orchid. It may be brought into condition to flower at almost any season of the year; we have had it in bloom at different seasons from January to August, and this winter a specimen yielded to our wishes by opening its beautiful blossoms to cheer us at Christmas, having over 300 blossoms open at that time, and as pure and perfect now (January 19) as they were then. This same plant was in good condition for seven weeks, and was exhibited in a collection of stove and greenhouse plants on July 31, 1879, with 250 blooms open. It came on again in February, lasting through March in 1880, having at its best time nearly 400 blooms open At the present time it looks none the worse for the extra strain put upon it, but, on the contrary, seems to enjoy the treatment, for it is clothed with foliage throughout, and, I think, will again come on at the end of the coming summer. Any one wishing to possess a real gem in the way of an Orchid could not, I think, get a better than this, as it is very easy to grow, free to flower, and lasts at least six weeks in good condition. *N. Blandford, Gr. to Mrs. Haselfoot, Moor Hill, Southampton.*

**The Weather and the Heating of Glass Structures.**—The daily papers have been giving distressing accounts of the severity of the weather, and the destruction to life and shipping caused by the storm of the 18th, which in its fury seemed as if it would sweep all before it, and take away the roofs from glass structures, as I fear it did in some places, for here they heaved and sunk in a manner quite alarming. As to keeping up the temperature under such circumstances, even if it were desirable, it was a matter of impossibility. Such a time as we have experienced of late finds out the weak joints in the harness, and shows unmistakably the necessity of plenty of piping, if we would economise fuel; for, drive the fires as hard as one will, the cold outside asserts its power, and struggles for the mastery, if it does not prevail in the end. With well glazed houses, however, and good boilers, with plenty of pipe surface, we may bid the foe defiance, and sleep in peace, as we know, barring accidents, that we can keep him at arm's length. I pity those who have not proper weapons of defence, as they must be on the alert day and night, and always in fear of defeat. The cost of a few extra pipes is but a trivial affair, as they are cheap enough, and once placed they soon pay for themselves, as much less coal is required, and thus a great saving is effected annually, besides which the atmosphere is always more genial in houses where the water has not to be heated to a very high pitch. Any one may feel this the moment he enters the house, and plants, instead of being distressed, as they are when subjected to a continual rush of hot air, look comfortable and thrifty, and are sure to do well. Pipes for underground service should be distributed and not piled together along the front of a house, for although it is necessary and proper that the bulk should be near that part, others should be arranged near to the middle and back, and always down to the floor, from which, when wanted they can draw out the moisture. *J. S.*

**Gishurstine.**—Since you published your good opinion of Gishurstine (p. 17), I have received other very good reports; these, with those of the leading gardening papers, will shortly be extensively circulated in the gardening world. But before the power of Gishurstine to keep boots dry can be made generally known, the impending thaw may come, and an excellent opportunity of testing a waterproofing material thus be lost. I therefore beg the favour of your publishing the accompanying report, just received; the authority of the writer is so great, and the opinion so decided, that it ought to ensure Gishurstine being fairly tried. I may add that though Gishurstine was originally devised for thick country boots, it is now used also on ordinary walking boots, over upper leathers and soles, and even on ladies and children's boots, as it takes a good polish with blacking. It can be had from any nurseryman or seedsman. Report from Mr. A. F. Barron, Royal Horticultural Society, Chiswick Garden, W., Jan. 22, 1881:—"I write to thank you for bringing the 'Gishurstine' under my notice; I have tried it myself, and my foremen in the garden have tried it and found it excellent—far superior to anything we have ever used." *T. I. O. G. C.* [Our experience of Gishurstine during the last fortnight has more than confirmed our previous statement as to its good qualities. As Mark Tapley would say, it has "come out strong." EDS.]

**Palms from Seed.**—Referring to the note on this subject in your last issue, it may interest you to know that in June last I found several seedling plants of the Date Palm (Phœnix dactylifera) in an exposed part of the kitchen garden here. [How did they get there?] They grew well all the summer, and were apparently none the worse for the 7° of frost which we had in November. How the present weather has affected them I cannot yet say, as they are covered by several feet of snow. Some of your numerous correspondents may be able to inform me of the relative hardiness of this Palm, and if the germination of the seed outside is a common occurrence. *M. K. Dixon, The Gardens, Gleuleigh, near Hastings.* [Are you sure of your facts? EDS.]

**Plants for Furnishing.**—The embellishment of halls, staircases and sitting-rooms, to say nothing of the dinner-table, with choice plants, at this inclement season requires nothing short of a plant factory to keep things in anything like ship-shape order where the demand is large. As a matter of fact, the writer of these notes grows hundreds of plants for the above-mentioned purposes, and as a natural consequence discerns, by experience, some particular merit or adaptability in certain plants over others either for giving effect or for withstanding rough treatment. The conclusion is forced upon me that it is little short of wilful slaughter to expose choice plants to the wear and tear of furnishing during winterly weather. I have the painful evidence before me of two beautiful Aralias being permanently disfigured for the service of only one night on the dinner-table, and this is only one example. Of course it is open to any one to ask, But why use them? Without going into this part of the question I have no doubt many things could be grown for winter that would look equally well, although considered less choice and of less intrinsic value. I have two examples of Croton interruptus before me with stems 18 inches high from the rim of the pot, and with leaves ascending 6 inches above the extremity of the stem. The recurved habit of the plant, the curl of the leaf, its light wavy appearance and colour all tend to render it one of the grandest of dinner-table plants for a silver vase, and yet these plants have been grown from strong cuttings during the present season. Another fine plant is Curculigo recurvata, which has a Palm-like leaf, and, as the latter part of the name implies, is also of recurved habit. The leaves are a massive rich green, stately to the eye, and although the plant is a denizen of the stove, it is by no means a tender subject. Among Ferns Davallia Mooreana is the very best that can be grown for enlivening the appearance of a room. It is a rapid grower, and if the fronds are properly developed and gradually hardened it will stand in a room for several days without sustaining much injury. Of Orchids, Phajus grandifolius is a noble plant at this season of the year. Its massive flower-spikes towering above its leaves and its comparative hardiness is a commendation which few other choice plants coming into flower at this season possess. Yet another Orchid, Dendrobium nobile, of which there are several varieties, and which can be had in flower in the depth of winter, is a plant of transcendent merit, and one both plentiful and inexpensive. *Cultivator.*

**Herbaceous Borders.**—Interesting and inviting as these are at most seasons of the year, there is not much in them just now to attract notice except it be the Sternbergia lutea and the Christmas Roses, which have taken advantage of the mild weather previous to the late storm, and have unfolded their welcome blossoms in great numbers. The Hellebores especially were particularly fine, and having regard to their great value either for lifting for pots to help in the embellishment of greenhouses and conservatories, as well as supplying quantities of cut flowers, the wonder is that they are not more cultivated, especially when we consider the pains and expense many go to in forcing plants to get them to bloom at the same time of year these come in naturally, as they always do about Christmas-tide, be the winter as sharp as it will. All they want under such adverse conditions is just a handlight over them, or some other similar protection, and it will be found that, with just a glimmer of sun to warm up the air a bit, they will expand freely and yield a long and continuous succession. Here we have them on a border in a sheltered position having a south-west aspect, and right well they appear to like the situation, as they have increased in size to a great extent, and have crowns that yield from each clump between 200 and 300 blossoms. The freest in this respect is H. niger, but niger maximus is by far the finest of the two, as the individual flowers are much larger, with longer and stouter stems, and the foliage finer and more spreading. For pot work I like the smaller sort the best of the two, as it is altogether more compact, and if well and freely grown comes crowded with blooms. These under glass lose the objectionable tinge they have in the open, and after a time get to a pure white, as do also the larger form; and as they have such fleshy stems, and take up water so freely, they are very lasting when cut. The way they show to most advantage is in shallow bowls filled with green moss, where, with a leaf or two judiciously placed, they may be made to look almost as natural as they do in the borders. Although these Christmas Roses will grow in almost any soil, they succeed best in that which is light and sandy, and contains plenty of leaf-mould or refuse peat, as in a mixture of this kind their great roots can ramify freely. As these go to a considerable depth the ground should be broken up deeply, and, if beds are made, the plants planted at about 2 feet apart, which will give them room to spread properly and make plenty of foliage, on which their free blooming depends. *J. S.*

**The Birds and the Weather.**—Never during my experience have I known the feathered tribe suffer so severely as during the past week. A singular instance of the voracity of the blackbird came under my notice to-day—the severity of the weather and pangs of hunger having driven him to cannibalism. The screams of a bird drew my attention to the stump of a Laurel, where I saw what I at first supposed was a blackbird in the clutches of a weasel, but which on closer scrutiny it proved to be a fine yellow-beaked gentleman, devouring one of his own species, while still alive—the victim so famished by cold and starvation as to be unable to resist the onslaught. Robin redbreasts and blackbirds are to be found on their backs in all directions. I have also picked up the bullfinch, chaffinch, thrush, and lark—the latter frozen to death while sitting under what two or three heads are left unhidden of the taller members of the Brassica tribe. According to my calculation, the depth of snow in this locality averages quite 2 feet; the roads are quite impassable for miles around, and if we may believe the older inhabitants, such a fall of snow has not occurred in this part of the country for upwards of forty years. *P. Conway, Muntham Court, Worthing, January 21.*

**Nymphæa odorata rubra.**—This rare and beautiful plant is already in this country, and at present almost unattainable. I believe the true pink variety is only grown by one man, who as a favour parts with very small bits for a consideration of from 15 to 25 dols. The best variety is very superior to the Norwegian [A different species], the latter having a purplish tinge. I am under an impression that the soil has much to do with the change of colour. *Nuphar.*

**Summer Pruning.**—As the stream of correspondence on the subject of root-pruning seems to have dried up, I should be glad if you would insert this letter in your paper, in order to elicit some opinions on the subject of top-pruning in summer. My own unsuccessful experience is as follows:—Eight years ago I planted my garden with good healthy pyramids of Apples and Pears. Every summer in July they have been top-pruned. A plentiful crop of green shoots has followed, but no fruit. I pointed this out to my gardener, and asked him whether he thought the pruning and the absence of fruit had anything to do with each other, and he replied that it was the regular thing to do. I then said, "Suppose they were not to bear for the next ten years, would you still do it?" He said, "Yes, I would." I observe in works on gardening that summer pruning is generally recommended, but Mr. Knight, who is, I believe, looked on as an authority, says that the result of his long experience is, that when a shoot is shortened in summer it almost invariably makes wood-buds instead of fruit-buds. I should be glad to hear anything that your readers may say on the subject. *Hortensius.* [Your letter opens up an important discussion. The experience of many is no doubt very similar, but on the contrary we can point to many examples where summer pruning is practised with the greatest success. The first question that arises is, "How has Hortensius" "top-pruned" his trees "in summer"? If we take the greater portion of the so-called pruned and trained trees in the country, especially the pyramids, it will be found that there are far too many branches, they are mere bushes, the tips only exposed to light and air, and producing nothing but a plentiful supply of shoots whether pruned in summer or winter; no amount of pruning off of these shoots will ever induce these trees to bear fruit. The first step towards success is to keep the main branches of the tree thin, giving plenty of room for the admission of light and air, to and through the very centre of the tree. This free exposure will induce the development of fruit buds, and lessen the production of useless shoots. By the summer pruning or pinching of the growing shoots of a fruit tree the cultivator exercises a greater control over the regulation and proper distribution of its forces than by any other means. And next to full exposure to the influences of sun and air, this regulation or equalisation of the vital energy of all the component parts of the tree is perhaps the most important. According to the amount of foliage duly exposed and properly developed so the growth of the tree advances, and to have a tree fruitful the whole should be uniform or in a corresponding condition as to vigour, &c. If one part is growing stronger than the other unfruitfulness is the sure result, and it is here where so many

failures arise. That part which grows strong is allowed to grow stronger, or but little heed is taken for the repression of the strong or the encouragement of the weaker portions. A fruit tree having all its branches or parts of equal vigour, and freely exposed to the beneficial action of the sun, will be to a certainty fruitful. The difficulty is to secure this equality, especially with the larger or older trees. By judicious summer pruning a very great deal may be accomplished, and the way to prune judiciously is to note where any part may be growing very strong, and to check it by pinching the growing shoots or reducing its leaf-power in some way, and persistently. The tendency of all trees is for the upper part to grow strongest; therefore, as a general rule, it will be found expedient to check the upper parts of the tree first, then at about a week's interval another portion, and in another week's time the remaining lower and weaker parts. By stopping the upper portions first the lower have time to develope and to strengthen, and thus become of equal vigour. Pear trees managed in this way bear fruit on the lower branches and throughout with equal freedom. It requires a great amount of attention and much time to carry this out effectively, far more time than is usually bestowed, the common practice being to stop all the shoots on a tree at one and the same time, as if the object were to get quit of the shoots and nothing more. The time to commence summer pruning is generally in July, just as the shoots appear to have stopped growing, and we stop them at about the fifth leaf; any lateral that may be produced should be rubbed out at once. A great advantage in summer pruning is that of admitting light and air to the lower buds, which thereby are developed into fruit-buds. EDS.]

## Reports of Societies.

**Meteorological**: *Jan.* 19.—The annual general meeting of this Society was held at the Institution of Civil Engineers, Mr. G. J. Symons, F.R.S., President, in the chair. The report of the Council for the year 1880, which was read by the Secretary, refers to subjects of considerable importance, and affords substantial evidence of the interest taken in meteorology by the scientific and general public. Amongst these may be mentioned the great success of the new climatological stations, as shown by their increased number and by the regularity and care with which the observations have been made and recorded, and the returns forwarded to the Society. The Council also advert to the number of new and improved instruments exhibited at the meeting held in March last, to the increase in the number of Fellows, fifty-two having been elected during the year; and, finally, the numerous papers which have been sent to the Society from various parts of the world, embracing records of the climate of several important localities, respecting which but little has hitherto been known in this country.

After a vote of thanks had been passed to the Council for their services during the year, and to the Institution of Civil Engineers for allowing free use of their rooms, the President delivered his address, in which he traced the history of the English Meteorological Society from 1823 to 1880. The earliest English effort at forming an English Meteorological Society, or, at any rate, securing observations made with comparable instruments recorded upon a uniform system, was made in 1723 by Dr. James Juring, who was then secretary to the Royal Society. In the *Philosophical Transactions* for that year will be found a Latin address by Dr. Juring, in which he anticipates nearly all the conditions which are now considered essential for comparable observations. This appeal did not lead to much being done, and in 1744 another attempt was made by Mr. Roger Pickering, F.R.S., who read before the Royal Society a paper entitled "Scheme of a Diary of the Weather, together with Drafts and Descriptions of Machines Subservient Thereunto." The Meteorological Society of the Palatinate was established in 1780, under the auspices of the Elector, Charles Theodore, who not only gave it the support of his public patronage, but entered with spirit and ability into its pursuits, and furnished it with the means of defraying the expense of instruments of the best construction, which were gratuitously distributed to all parts of Europe, and even to America. One of the first acts of the Association was to write to all the principal universities, scientific academies, and colleges, soliciting their co-operation, and offering to present them with all the necessary instruments, properly verified by standards, and free of expense. The offer was accepted by thirty societies, and the list of distinguished men who undertook to make the observations shows the importance which was attached to the plan, and the zeal with which it was promoted in every part of the Continent. In 1823 the first meeting of the Meteorological Society of London was held, and was attended by Luke Howard, Thomas Forster, Dr. Birkbeck, and others. After 1824 the society languished, but it was never regularly dissolved. Owing to several letters and articles which appeared in *Loudon's Magazine of Natural History*, a meeting was held on November 15, 1836, at which the society was revived, Mr. W. H. White appointed secretary, and regular meetings resumed. Application was made to the Royal Society for permission to compare the instruments of the Society with the Royal Society's standards, and leave was granted on March 13, 1838. A volume of *Transactions* was published in 1839, and this, among other articles, contains one entitled, "Remarks on the Present State of Meteorological Science, by John Ruskin." The cost of the publication of this volume exhausted the funds of the Society, but in 1841 Mr. Gutch undertook personally the pecuniary risk of a new publication, entitled the *Quarterly Journal of Meteorology*; but this does not appear to have been very successful, owing to the high rates of postage. Shortly after this the Society practically came to an end. On April 3, 1850, a meeting of some friends of the science was convened by Dr. Lecat Hartwell, when the British Meteorological Society was established, and Mr. S. C. Whitbread elected President. The first general meeting of the members was not held till March 25, 1851; but in the meanwhile several important steps had been taken by the Council. Annual reports were published from 1851 to 1861, and since then five volumes of the *Proceedings* and six volumes of the *Quarterly Journal* have been published. Up to 1858 absolutely nothing had been done towards forming a library, but in 1862 a catalogue was published containing about 200 titles. In 1876 a new catalogue was issued, which extends to eighty pages, and contains over 1200 entries. On January 27, 1866, the Society obtained a Royal Charter of Incorporation, and has since been known as "The Meteorological Society." On April 4, 1872, the Council resolved upon taking a room for an office, and for the protection of the library, and appointed Mr. W. Marriott as their assistant secretary. The work has now become so great that the Society has been obliged to take an additional room, and to engage three computers. The subsequent eight years have been characterised by great progress. A series of second-order stations has been organised, which are systematically inspected, and at which strictly comparable observations are made. On January 1, 1880, another and larger series of stations—called climatological—was started, at which the observations are less onerous than those at the second-order stations, but at which they are required to be equally accurate. Observations on natural periodical phenomena are also made at many places, and discussed yearly by the Rev. T. A. Preston. At the request of the Society a conference has been appointed, consisting of delegates from several other societies, to prepare accurate instructions respecting the erection of lightning conductors.

**Royal Manchester Botanical and Horticultural**: *Jan.* 24.—The fifty-third annual general meeting of the proprietors of the Royal Botanical and Horticultural Society of Manchester was held in the Mayor's Parlour, Town Hall; Dr. John Watts, Chairman of the Council, presiding.

In moving the adoption of the report and statement of accounts (which have already been published), the Chairman said that in his opinion the object of the Society, which was to foster and to stimulate a taste for horticulture and floriculture, was never better served than during the past year. He was glad to be able to say that their efforts during the past year had been appreciated by the public amongst whom they worked. Their three Town Hall shows, instead of (as was uniformly the case at the Old Town Hall) costing them money, had added £68 13*s.* to their funds, making the balance from the minor shows £128 9*s.* 9*d.* The grand Whitsuntide display realised £804 13*s.* 1*d.*, making the total profits from the shows £1032 12*s.* 10*d.* Instead of the shows being held at a loss, they had now so brought up the taste of the people that they were willing to pay the expenses of these grand exhibitions. The sum carried over to next year was £28 9*s.* 3*d.* It was necessary to explain that their subscriptions, including life members' subscriptions, had fallen off by £80. This was not wonderful. Within a mile of the gardens there were 300 empty houses, and he had no doubt that one-half of these were tenanted by people who had been their subscribers. The Council had spent on improvements to the Curator's house the sum of £254 13*s.* They would all be glad to add to the comfort of the Curator and his family, for he (Dr. Watts) was bound to say that Mr. Findlay was the genius behind the machine from whom most of the good suggestions came which it was the Society's pleasure and profit to carry it out, and it was their duty to make those who had to work out those results as comfortable as possible. They spent in general repairs and the cost of new soil £84 more than in the previous year, and their Whitsuntide receipts, although they left them a grand balance, were £185 less than in the former year. These items made a total of £603 13*s.*, and in his opinion they had done exceedingly well to carry over a balance at all. In the suggested arrangements for the coming year they proposed to hold three Town Hall shows—one in March, another in April, and another in November; they proposed to try the Tulips again in May, the Carnation show would be held in August, and they intended to have, as usual, their Feast of Flora in Whitsunweek. Overtopping all would be the grand International Show in August. This would absorb the cottagers' show. Altogether they proposed to hold six shows this year, and possibly at the end of the year they might again get up an exhibition of Dahlias. With regard to the proposed International Show, he believed they had promises towards the expenses of the show amounting to about £2000. There was, therefore, no great fear of their suffering a loss. The prize list amounted to £1660, and in addition to those offered by the Society they had a lot of volunteers coming forward and offering prizes also. The prizes altogether, exclusive of the medals, amounted at the present time to £1861. This ought to excite interest both among amateurs and professionals, and he believed the Society would come out well in the end. They knew that man proposed and that God disposed, yet they had confidence, and they would work with the belief that the result of this year's efforts would leave them money sufficient to encourage them to try and rebuild the long range of glass-houses, which had stood for fifty years, and which certainly could not stand much longer.

The motion for the adoption of the report was seconded by Mr. J. Broome, and agreed to. Votes of thanks were given to the members of the Council for their valuable services, and to Mr. T. W. Tatton, of Wythenshawe; Sir J. D. Hooker, of Kew; Mr. Speed, Chatsworth; Mr. D. Percival, Southport; and Mr. B. S. Williams, London, for presents of plants and seeds received during the year.

Mr. Bruce Findlay stated with reference to the forthcoming International Exhibition that the fund now reached £2000, and they hoped to obtain £2000 more; and the Mayor remarked that it was to him an especial pleasure to be mayor during the present year, because he should be able when the exhibition took place to discharge the hospitalities of the office to any distinguished visitors that might come to the city.

## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
FOR THE WEEK ENDING WEDNESDAY, JAN. 26, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 20 | 29.67 | —0.07 | 26.0 | 16.5 | 9.5 | 20.6 | —16.6 | 15.0 | 78 | S.W.; S.S.W. | 0.00 |
| 21 | 30.04 | +0.29 | 28.2 | 9.2 | 19.0 | 20.5 | —16.8 | 14.8 | 77 | E.; N.N.E. | 0.00 |
| 22 | 30.00 | +0.25 | 32.0 | 17.5 | 14.5 | 25.0 | —12.4 | 20.5 | 81 | W.; W.S.W. | 0.00 |
| 23 | 30.05 | +0.30 | 35.0 | 30.2 | 4.8 | 32.5 | —5.1 | 20.4 | 81 | W. | 0.00 |
| 24 | 30.06 | +0.31 | 28.1 | 24.0 | 4.1 | 25.9 | —11.8 | 23.5 | 99 | E. | 0.00 |
| 25 | 29.78 | +0.03 | 30.6 | 18.6 | 12.0 | 24.4 | —13.4 | 20.5 | 82 | E. | 0.00 |
| 26 | 29.35 | —0.40 | 34.7 | 15.0 | 19.7 | 25.2 | —12.7 | 23.4 | 93 | E.; E.N.E. | 0.10 |
| Mean | 29.85 | +0.10 | 30.7 | 18.7 | 11.9 | 24.9 | —12.7 | 19.7 | 83 | Var. | sum 0.10 |

JAN. 20.—The day was generally misty and dull; the sun's place visible occasionally.
— 21.—A bright cold morning. A very fine day. Warm in the sun's rays.
— 22.—A little snow fell; the day misty and dull. The temperature of 32° took place a little before midnight.
— 23.—Fine, but dull. A few particles of snow fell. Heavy sky. A gentle thaw.
— 24.—Foggy, dull, cold day.
— 25.—Fine day; sky bright and clear at times. Bitterly cold at night,
— 26.—A very cold morning; the temperature 15°; at 9 A.M., 19°; 3 P.M., 26°. The day uniformly dull; misty; the barometer reading decreasing quickly. Rain began to fall at 8 o'clock P.M., when the temperature had risen to 32°; and the maximum temperature for the day, 24°.7, took place at midnight, the barometer then reaching 29°.13; and rain since 8 P.M. was one-tenth of an inch, and still falling.

LONDON: *Atmospheric Pressure.*—During the week ending January 22, in the vicinity of London, the readings of the barometer at the level of the sea increased from 29.78 inches at 9 A.M. of the 16th to 29.89 inches by midnight of the same day, decreased to 29.13 inches during the afternoon of the 18th, then turned to increase, and was 30.32 inches at midnight on the 21st, and 30.16 inches at the end of the week. The mean reading at the level of the sea was 29.76 inches, being 0.06 inch lower than that of the preceding week, and 0.17 inch below the average for the week.

*Temperature.*—The highest reading in the week was 32°, on Saturday, the 22d. On the 20th the highest reading attained was 26°. The mean of the seven high day temperatures was 28°.8. The lowest reading in the week took place on Friday morning, the 21st, and was 9°.2; on the 17th it was 15°, and on the 16th was 16°. The mean of the seven low temperatures was 18°. The greatest range of temperature in one day was 19°, on the 21st; the next in order was 15°, on the 17th; the smallest range was 3°.4, on the 19th, and the next in order was 4°.1, on the 18th; the mean of the seven daily ranges was 10°.8.

The mean daily temperatures were all low. On the 16th it was 21°.6; 17th, 22°.6; 18th, 28°.2; 19th, 27°.1; 20th, 20°.6; 21st, 20°.5; and the 22d, 25°; the departures below their respective averages being 15°.1, 14°.2, 8°.7, 9°.9, 16°.6, 16°.8, and 12°.4.

The mean temperature of the week was 23°.7, being

5° lower than that of last week, and 13°.4 of lower temperature than the average of the same week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, was 83°, on the 21st; the next in order was 67°, on the 17th; on the 22d the highest reading attained was 29°, whilst that of the air this day was 32°; but the latter reading took place at about midnight. The mean of the seven readings was 44°.3.

*Rain.*—There was no actual rain in the week, but the fall of snow was equivalent to a depth of rain of 1°.3 inch.

The weather during the week was for the mest part gloomy and dull. On Tuesday there was a very heavy gale from the east accompanied by snow, which by 3 o'clock was 4 inches, and by midnight 15 inches in depth in places where it had not drifted. The snow, which consisted of minute particles, driven before the wind, entered dwelling-houses through any small crevice in windows, doors, &c., to an unprecedented extent. The traffic on all the main lines out of London, with one exception only, was blocked, and in the case of some, to the south of London, at an early hour of the day. The snowdrifts formed so rapidly that it was useless to attempt to remove them. The weather on this day was the worst I have known about London, and was different in character from any experienced during the present century.

ENGLAND: *Temperature.*—During the week ending Saturday, January 22, the highest temperatures of the air were 43° at Truro, 38°.8 at Plymouth, 36°.4 at Brighton; at Blackheath, Wolverhampton, Nottingham, and Bradford the temperature never exceeded 32°. The mean from all stations was 34°.2.

The low temperatures in the week were very remarkable; the lowest of all was at Cambridge, which was —2° (2° below zero); at Wrottesley, near Wolverhampton, it was 4°.3; at Nottingham, 6°; at Blackheath, 9°.2; at Leicester, 9°.8; at Bristol, 10°.5; at Sunderland, 11°; and at Brighton, Liverpool, and Birmingham it was 11°.4. At both Bradford and Leeds the lowest temperature in the week was 15°. The mean from all stations was 10°.3.

The range of temperature in the week was the greatest at Cambridge, being 37°.2; the next in order was 29°, at both Truro and Hull. The mean from all stations was 23°.9.

The mean of the seven high day temperatures was the highest at Truro, 35°.1; at Plymouth, 32°.8; and at all other stations below 32°; at Wrottesley it was 27°.1 only. The mean from all stations was 29°.7.

The mean of the seven low night temperatures was the smallest at Nottingham, 11°.3, and the highest at Leeds, 20°.6. The mean from all stations was 16°.9.

The mean daily range of temperature was the greatest at Cambridge, 16°.9; and the least at Liverpool, 9°.6. The mean from all stations was 12°.8.

The mean temperature of the week is very remarkable—at Truro, where it is highest, not exceeding 27°; and it was below 20° at both Wrottesley and Nottingham. The mean from all stations was 23°.1.

*Rain.*—A little fell on the 16th at Truro; with this exception no rain fell. *Snow* fell everywhere, but in very different quantities at the various stations; at those stations north of 53° very little fell, whilst at stations south of this parallel the fall was heavy, and heavier proceeding southwards; at Blackeath it fell to the depth of 15 inches, at Brighton to 19 inches, and even to greater.

SCOTLAND: *Temperature.*—During the week ending January 22 the highest temperatures were 36° at Dundee and Paisley, and 35°.8 at Aberdeen; the general mean was 34°.

The lowest temperatures of the air were 1°.5 at Glasgow, 1° at Paisley; but the lowest at Greenock was 15°. The general mean was 6°.4.

The mean temperature of the air for the week was greatest at Greenock, 24°.7, and the least at Glasgow, 14°.1; and the general mean was 21°.7.

*Rain.*—No rain fell at Leith; at Aberdeen 1.53 inch was recorded; the general average was 0.61 inch.

JAMES GLAISHER, F.R.S.

## Obituary.

WE are informed of the death, on the 13th inst., at Tetbury, of Mr. PETER BASSETT, in the eighty-fourth year of his age. Mr. Bassett was for thirty-six years gardener at Westonbirt, to R. S. Holford, Esq., from whose service he retired in 1866.

—— We regret to announce the death, in his forty-fifth year, of Mr. PETER JAMES PERRY, of the Banbury Nursery, Seed, and Horticultural Building Establishment, which took place on the 23d inst., after a very short illness. Mr. Perry was the second son of the late Mr. Thomas Perry, the well-known nurseryman, and entered the business at the age of nineteen which he has so successfully carried on for the last twenty-six years. He was a member of the Royal Agricultural Society of England, and a warm supporter of numerous other agricultural societies.

## Enquiries.

*He that questioneth much shall learn much.*—BACON.

LILY OF THE VALLEY.—Can any of your readers tell me why a batch of Lily of the Valley put into a house on October 27, in a temperature of from 55° to 60° by night and 70° by day, has made no attempt to grow, while another batch, taken from the same border on December 11, and put into the same house close to the others, have grown to the height of 2 to 3 inches, and produced some blooms ready for opening? *H. B. S. S.* [Probably the first batch of roots were immature. EDS.]

## Answers to Correspondents.

AIR VESSELS: *Belgian Subscriber.* Are you certain of your facts? Supposing your statement to be true, which we doubt, the cell membrane is capable of stretching. You would not surely doubt that the fluids may pass up between the wood cells and air vessels.

AMATEURS: *Sigma.* We cannot answer your inquiry better than by quoting the substance of a former reply to a similar question. As used in reference to country shows, the term "Amateur" is understood to apply to a person who manages his garden himself, or with more or less assistance from a jobbing gardener or garden labourer, and who does not systematically derive pecuniary advantage from the pursuit—who does not sell what he produces, unless it be now and then some speciality. "Gardeners," properly so called, are either nursery gardeners, market gardeners, or gentlemen's gardeners, the latter being employed by private individuals to undertake and carry out for them the management of their gardens. "Cottagers" are understood to be cottage residents whose income is derived from daily labour other than gardening, and who themselves, or with the aid of any of the members of their own family, manage the gardens attached to their cottages, or the allotment plots rented by them. No definition can be expected to be of absolutely universal application; but any exceptional cases should be dealt with equitably on their merits, as they arise, by the managing committee.

BOOKS: *S. O.* We do not know of any books answering the description you give.

BOUVARDIAS: *Reader.* They grow freely in light rich soil inclining to be peaty; the young plants should be started in a nice growing temperature, not too hot, and gradually hardened off.

CARBON ASSIMILATION: *Belgian Subscriber.* Perhaps they do, we do not know.

COLZA OIL BARREL: *H. R. M.* We do not see any reason why you should not use it in the way described. It can do no harm to the plants.

CORNUS MAS. AUREA ELEGANTISSIMA: *Reader.* This is a hardy deciduous shrub of great beauty. Plant it out in a good situation in well enriched garden soil.

ERYTHRINA CRISTA-GALLI: *Reader.* The plant is easily grown in an ordinary greenhouse. The stems should be cut down in spring, and the plants started in gentle heat, and afterwards gradually inured to the greenhouse temperature. Pot in rich, well-drained loamy soil, and feed with liquid manure while the buds are growing. The plants thrive well in the South of England, planted deeply at the foot of a south wall, in good garden soil, and protected by mulching, being cut down annually like a herbaceous plant. Under pot culture, repot in spring, when the young shoots have grown an inch or two, disrooting so as to get them into moderate-sized pots, and afterwards shift on according to the size required. Several stems may be grown from the same crown.

JASMINUM GRANDIFLORUM: *Reader.* Rich light soil and ordinary greenhouse culture.

KIDNEY BEANS: *R. L.* From the spindly nature of the plant, it is possible that their collapse is due to inherent weakness in the seeds. We cannot suggest any other explanation. Some allowance must be made for weak seeds this season.

NAMES OF PLANTS: *J. F. R.* Ophiopogon japonicus—a Japanese plant, quite hardy, and sometimes used on the Continent as an edging. It was introduced into Kew Gardens nearly 100 years ago.—*A. O. Walker.* 1, Odontoglossum gloriosum; 2, O. cirrhosum.—*J. T.* 1, Nephrolepis exaltata; 2, Asplenium bulbiferum; 3, Asplenium viviparum; 4. Æschynanthus speciosus; 5, Ardisia crenulata; 6, Calanthe Veitchii. — *John Clarkson.* Sericographis Ghiesbreghtiana.—*J. Douglas.* Oncidium abortivum. — *H. J. R.* 1, Polystichum angulare proliferum; 2, Nephrolepis tuberosa; 3, Polystichum capense; 4, Nephrolepis davallioides.—*P. W.* We do not undertake to name garden varieties—which, indeed, we could not from poor undeveloped buds such as you send. No. 5 is Davallia bullata; 6, Selaginella pubescens. Send better specimens of the others.

NOTICE TO QUIT: *A. B. C., Kent.* You have clearly become a yearly tenant, and your landlord must give you six months' notice to leave, such notice to expire on the same quarter-day as that on which your tenancy commenced. In your case the landlord must give you notice next Christmas to leave the premises by June 24, 1882.

ORCHIDS FROM SEED: *Baker.* Sow the seeds on chopped sphagnum kept moist and in heat. If they germinate, which is doubtful, it will be many years before the plants attain to flowering size.

PINES: *Orchardville.* The "extra glass" will obscure the light too much, and do more harm than good. Your best plan would be to go a step farther, and convert the said "extra glass" into a proper Pine-pit.

SEED POTATOS: *H. O.* We have no experience, but we should suppose that if thawed in cold water, and they remain sound, they might be used without detriment, though certainly not from choice. Of course if they are at all disorganised when thawed, they are useless.

TEMPERATURE AND RAINFALL: *J. Louden.* Consult Mr. Glaisher's statistics, published in our colums every week.

WEEDS ON WALKS: *J. B.* To destroy these vitriol—that is, sulphuric acid—may be used if you desire it. It should be applied in the proportion of about one part, by measure, of the acid to thirty parts of water, and should be put on with a rose watering-pot, carefully, the operator walking backwards, so as to avoid contact with the acid. It is destructive to the live edgings, such as Box, and also to one's clothes, if spilled over them. Carbolic acid, one ounce to the gallon of water, may be used in the same way.

WHOLESALE SEEDSMEN: *G. Randall.* We cannot undertake to advise you in such a matter. Consult our advertising columns.

## CATALOGUES RECEIVED.

JAMES COCKER & SONS, 82, Union Street, Aberdeen—Vegetable and Flower Seeds, Horticultural Implements, &c.

GEORGE E. ELLIOTT, 97, Bradford Road, Huddersfield—Vegetable and Flower Seeds.

BEN. REID & CO., Guild Street, Aberdeen — Vegetable, Flower, and Farm Seeds.

REUBEN FOWLER, Mowbray Vale Nurseries, Bedale—Vegetable and Flower Seeds, and Amateurs' Guide.

CORNELIUS COOPER, 17, East Street, Plymouth—Amateurs' Manual for the Garden and Farm.

ROBERT H. POYNTER, Castle Gate, Taunton—Kitchen Garden and Flower Seeds.

WILLIAM M. PILLINGER, Chepstow — Vegetable, Flower, and Agricultural Seeds.

FREDERICK GEE, Biggleswade, Beds. — Vegetable, Flower, and Agricultural Seeds.

WILLIAM RUMSEY, Joyning's Nurseries, Waltham Cross, N.—Select Vegetable, Flower, and Farm Seeds, Potatos, &c.

FRIEDR. ROEMER, Quedlinburg—Seeds and Plants.

S. DIXON & CO., 34, Moorgate Street, London, E.C.—Seeds for the Vegetable and Flower Garden.

JOHN CATTELL, Westerham, Kent — Kitchen Garden, Floricultural, and Agricultural Seeds.

WILLIAM THOMPSON, Tavern Street, Ipswich — A Choice Collection of Flower Seeds.

W. P. LAIRD & SINCLAIR, Dundee—Vegetable and Flower Seeds, Agricultural Seeds, &c.

JOHN G. HILL, Yeovil, Somerset—Vegetable, Flower, and Agricultural Seeds.

C. POCOCK, Wincanton, Somerset—Choice Seeds for the Garden and the Farm.

HANS NIEMAND, Harborne Road, Edgbaston, Birmingham—Horticultural Price List.

COMMUNICATIONS RECEIVED:—J. D. (thanks).—C. N.—N. G.—B. S. W.—J. H.—D. L.—W. S.—P. J.—J. D.—J. Steele.—F. W. M.—D. T. F.—W. G S.—H. E.—W. D.—B. F.—G. N.—H. E.—W. B. H.—J. V. & S.—G. D.—John Kyrle.—Ad. Sm. (with thanks)—G. E.—D. L.—W. E. G.—J. R.—S. W.—J. S. (too late for this week.—J. W. & Co.—Ellwanger & Barry.—W E.—W. M.—G. H.

## Markets.

*COVENT GARDEN, January 27.*

The only feature of this week has been the attack by the frost upon the majority of the goods reaching us, large quantities realising little or nothing. We have never experienced such a bad demand during a severe frost, most articles which usually realise high prices being little asked for. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0-42 0 | Ferns, in variety, doz. | 4 0-18 0 |
| Begonias, per doz. | 6 0-12 0 | Ficus elasticus, each | 1 6- 7 6 |
| Cineraria, per doz. | 10 0-12 0 | Foliage Plants, various, each | 2 0-10 6 |
| Cyclamen, per doz. | 12 0-18 0 | Genista, per doz. | 12 0-18 0 |
| Cyperus, per dozen | 6 0-12 0 | Hyacinths, per doz. | 8 0-12 0 |
| Dracæna terminalis | 30 0-60 0 | — Roman, doz. | 12 0- .. |
| — viridis, per doz. | 12 0-24 0 | Lily of the Valley, per pot | 2 0- 4 0 |
| Epiphyllum, per dozen | 18 0-30 0 | Myrtles, per doz. | 6 0-12 0 |
| Erica gracilis, dozen | 9 0-18 0 | Palms in var., each | 2 6-21 0 |
| — caffra, per doz. | 8 0-12 0 | Poinsettia, per doz. | 9 0-18 0 |
| — hyemalis | 12 0-36 0 | Primula, single, per dozen | 5 0- 6 0 |
| Euonymus, various, per dozen | 6 0-18 0 | Solanums, per dozen | 6 0-18 0 |
| Evergreens, in var., per dozen | 4 0-18 0 | Tulips, 12 pots | 6 0- 9 0 |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3- 0 6 | Marguerites, 12 b'ms. | 0 4- 0 9 |
| Arum Lilies, 12 blms. | 6 0- 9 0 | Mignonette, 12 bun. | 4 0- 9 0 |
| Azalea, 12 sprays .. | 1 0- 2 0 | Narcissus, Paper-White, 12 sprays.. | 1 0- 2 6 |
| Bouvardias, per bun. | 1 0- 3 0 | Pelargoniums, 12 sprays .. .. | 1 6- 2 0 |
| Camellias, per dozen | 1 0- 4 0 | — zonal, 12 sprays | 0 9- 1 0 |
| Carnations, 12 blms. | 1 0- 2 0 | Poinsettia, 12 blooms | 3 0- 6 0 |
| Chrysanthemums, 12 blooms .. .. | 2 0- 4 0 | Primula, double, per bunch .. .. | 1 0- 1 6 |
| Cyclamen, 12 blms.. | 0 3- 0 6 | — single, 12 sprs. | 0 6- 1 0 |
| Epiphyllum, 12 blms. | 0 6- 1 0 | Roses (indoor), doz. | 2 0- 6 0 |
| Eucharis, per doz. .. | 4 0- 9 0 | — yellow Fr., doz. | 2 0- 4 0 |
| Euphorbia, 12 sprays | 3 0- 5 0 | — red French, doz. | 3 0- 4 0 |
| Gardenias, 12 blms.. | 15 0-30 0 | — Christmas, 12 bl. | 1 0- 2 6 |
| Heliotropes, 12 sp. .. | 0 6- 1 0 | Stephanotis, 12 spr... | 12 0-18 0 |
| Hyacinth, Roman, 12 sprays .. .. | 1 6- 2 0 | Tropæolum, 12 bun. | 1 0- 3 0 |
| Lapageria, white, 12 blooms .. .. | 4 0- 6 0 | Tuberoses, per dozen | 4 0- 8 0 |
| — red, 12 blooms.. | 1 0- 3 0 | Violets, 12 bunches.. | 1 6- 2 6 |
| Lilac, Fr., per bunch | 8 0-12 0 | — Neapolitan, Fr., per bunch .. .. | 5 0- 7 0 |
| Lily of the Valley, 12 sprays .. .. | 1 0- 3 0 | — Czar, Fr., bunch | 2 6- 3 0 |

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve .. | 2 0- 5 0 | Lemons, per 100 .. | 4 0- 6 0 |
| Cobs, per lb. .. | 2 0- 2 6 | Pears, per dozen .. | 1 6- 5 0 |
| Grapes, per lb. .. | 3 0- 8 0 | Pine-apples, per lb. | 1 0- 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. .. .. | 3 0- 6 0 | Lettuces, Cabbage, per doz. .. .. | 0 6- 1 6 |
| Asparag., Fr., bndl. | 25 0- .. | — Cos, each .. | 0 6- 1 0 |
| — Sprue, per bund. | 1 6- 2 0 | Mint, green, bunch.. | 1 6- .. |
| Beet, per doz. .. | 1 6- 2 6 | Mushrooms, p. baskt. | 1 6- 2 0 |
| Cabbages, per doz. .. | 1 0- 2 0 | Onions, per bushel.. | 5 0- .. |
| Carrots, per bunch.. | 0 4- 0 6 | — Spring, per bun. | 0 6- .. |
| Cauliflowers, English, each .. .. | 0 3- 0 6 | Parsley, per bunch.. | 0 4- .. |
| Celery, per bundle .. | 1 6- 2 0 | Radishes, per bun... | 0 2- .. |
| Chilis, per 100 .. | 3 0- .. | Rhubarb, per bund. | 1 0- .. |
| Cucumbers, each .. | 1 6- 2 0 | Seakale, per basket | 2 6- .. |
| Endive, per doz. .. | 2 0- 3 0 | Small salading, pun. | 0 4- .. |
| Garlic, per lb. .. | 1 0- .. | Spinach, per bushel | 4 0- .. |
| Herbs, per bunch .. | 0 2- 0 4 | Tomatos, per lb. .. | 0 9- 1 0 |
| Horse Radish, p. bun. | 4 0- .. | Turnips, new, bunch. | 0 4- .. |

POTATOS:—Kent Regents, 80s to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

## SEEDS.

LONDON: *Jan.* 26.—The demand for field seeds continues inactive, and until the weather changes no business of importance can be expected. New English red Clover seed offers less freely, and for the few choice parcels coming forward more money is asked. Quotations in America rule strong. For Alsike the tendency is upwards. There is no change in Trefoil; fine white on the spot is scarce. Rye grasses keep steady. Owing to navigation being impeded, spring Tares are in short supply, and realise advanced rates. Canary and Hemp seed are now remarkably cheap. There is an increased inquiry for oatmeal, Lentils, Haricots, Peas, and other similar cheap articles of food. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CORN.

At Mark Lane on Monday sales of home-grown Wheat proceeded slowly, but the better sorts of produce were held at full prices. There was scarcely any variation in the prices of foreign Wheat. Good Barley was very firm; medium sorts were in fair demand at full currencies, and grinding was in moderate request at full quotations. The malt trade was quiet and without important feature. The trade in Oats was firm at extreme rates. For Indian Corn business was quiet, with no material alteration. Beans and Peas were firm, and flour was in slow request, at late rates.—On Wednesday there was not much doing at market. The finer samples of Wheat moved off at full prices. Barley was steady, and in malt no change took place. Oats were firm, as also was Maize. Beans, Peas and flour changed hands slowly on former terms.—Average prices of corn for the week ending January 22:—Wheat, 42s. 4d.; Barley, 32s. 7d.; Oats, 20s. 4d. For the corresponding period last year:—Wheat, 45s. 7d.; Barley, 37s. 3d.; Oats, 20s. 10d.

## POTATOS.

The Borough and Spitalfields markets reports state that scarcely anything fresh reached market; business was quiet, and prices steady as follows:—Scotch Champions, 75s. to 85s. per ton; Scotch Regents, 80s. to 100s.; Essex kidneys, 80s. to 90s.; Essex Champions, 70s. to 80s. per ton; Belgian kidneys, 3s. 9d. per bag; German reds, 3s. 6d. to 4s. 9d.—Last week's imports into London consisted of 552 bags from Ghent, 37 St. Malo, and 241 from St. Nazaire.

## COALS.

The following are the prices current at market during the week:—Walls End—Original Hartlepool, 20s. 6d. and 23s.; Haswell, 20s. 6d.; Hetton, 20s. 6d.; Hetton Lyons, 19s.; Hawthorns, 19s. 3d.; South Hetton, 20s. 6d.; Tunstall, 19s.; Caradoc, 20s. 6d.; Radford Navigation, 17s. 6d.

**Government Stock.**—The closing prices of Consols on Monday were, for delivery, 98½ to 98⅝, and 98 9/16 to 98 11/16 for the account; the same figures were recorded at the close on Tuesday and Wednesday. On Thursday the final transactions were at, for delivery, 98⅜ to 98¾, and 98 11/16 to 98 13/16 for the account.


THE COTTAGE POULTRY HOUSE, TENANT'S FIXTURE,

Of improved construction, can be erected in a few minutes, with Roosting House, Covered Run, Nests, Perches, &c., complete, 12 feet long 4 feet wide. Price £6 10s., carriage paid. Write for Illustrated Catalogue, containing useful Treatise on Poultry Management, free by post.

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HORTICULTURAL BUILDER,

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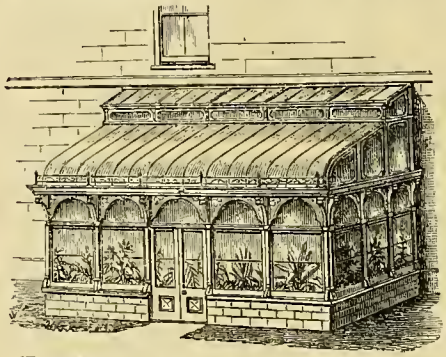
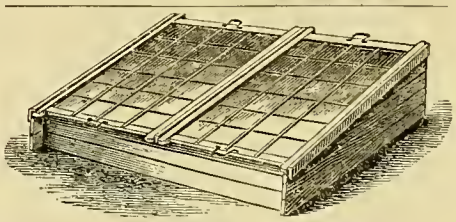
Special DESIGNS and ESTIMATES given for Ornamental CONSERVATORIES, without charge, and for all Horticultural Work of all kinds.



GARDEN BOXES and LIGHTS are generally kept in Stock, and WOODEN HOUSES suitable for Store-houses, Tool-houses, &c.

Illustrated Sheets sent, post-free, on application.



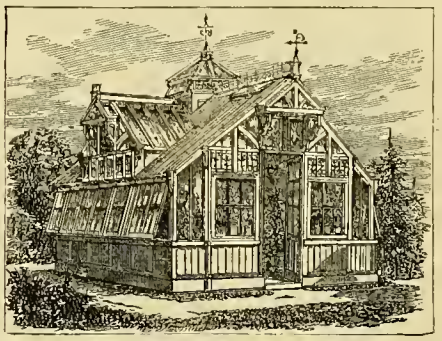
Cucumber Frames.

R. HALLIDAY AND CO. desire to draw special attention to their Cucumber Frames, of which they always have a large stock, ready glazed and painted. They are made of the best materials, and can be put together and taken apart in a few minutes by any one.

| Prices, delivered to any station in England. | £ | s. | d. |
|---|---|---|---|
| 2-light frame, 8 feet by 6 feet .. .. .. | 3 | 10 | 0 |
| 3-light frame, 12 feet by 6 feet .. .. .. | 5 | 5 | 0 |
| 6-light frame, 24 feet by 6 feet .. .. .. | 10 | 0 | 0 |

The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.

R. HALLIDAY AND CO., Hothouse Builders and Engineers, Royal Horticultural Works, Middleton, Manchester.



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HORTICULTURAL WORKS, BANBURY.

We are prepared to deliver, within fifty miles, our New Style of

GREENHOUSES,

at the following exceptionally low prices:—

| | | | | |
|---|---|---|---|---|
| Size, 15 feet by 10 feet .. | .. | .. | .. | £21 0 0 |
| ,, 20 feet by 10 feet .. | .. | .. | .. | 27 0 0 |
| ,, 25 feet by 11 feet .. | .. | .. | .. | 31 0 0 |

Lean-to, Tenant's Fixtures, require no Brickwork.

If Brickwork be found for front and ends a reduction will be made in proportion.

Half-span and Quarter-span Houses at an increase of 10 per Cent. Front Stage and all Ventilating Movements included in these charges.

All descriptions of Hot-water Work, Boilers and Fittings, at exceptionally low prices.

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WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers, FISHER, CLARK AND CO., Boston.

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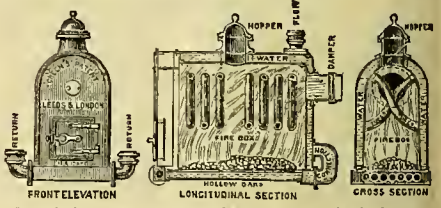
With WATERWAY BACKS and WELDED BOILERS, Specially adapted for Heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

*They are the neatest, cheapest, most effective and durable of any extant.*

The Tubular ones are remarkable for their great Heating Power, Slow Combustion, and the length of time the Fire will Burn without requiring attention.

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Are not liable to Spontaneous Combustion
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Prices on application.
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FRIGI DOMO.—Is the best material for the Protection of Plants from Cold Winds and Frosts. A perfect Non-Conductor of Heat, keeping, wherever it is applied, an even temperature. "It proves a great saving in the way of artificial heat." "It lasts twice as long as mats."
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RAFFIA FIBRE.—CUBA BAST.—We beg to offer to the Trade Raffia direct from Madagascar, at wholesale price. We can offer Cuba Bast, of the first quality only, at 28s. per cwt., in bales of 1 cwt. each.
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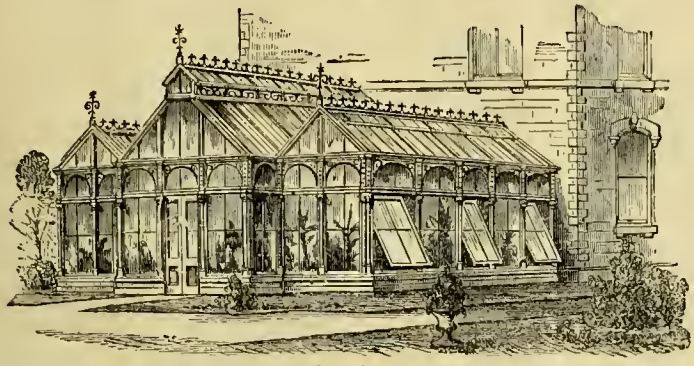

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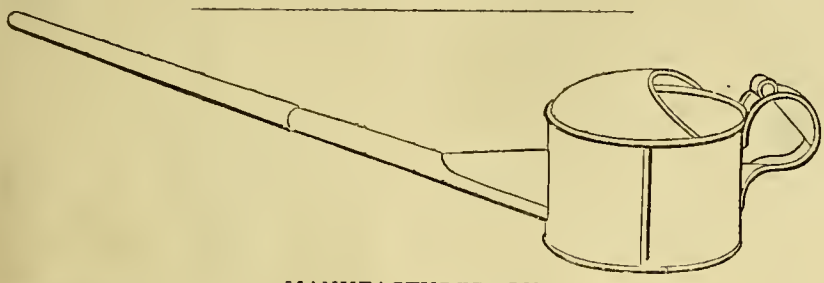

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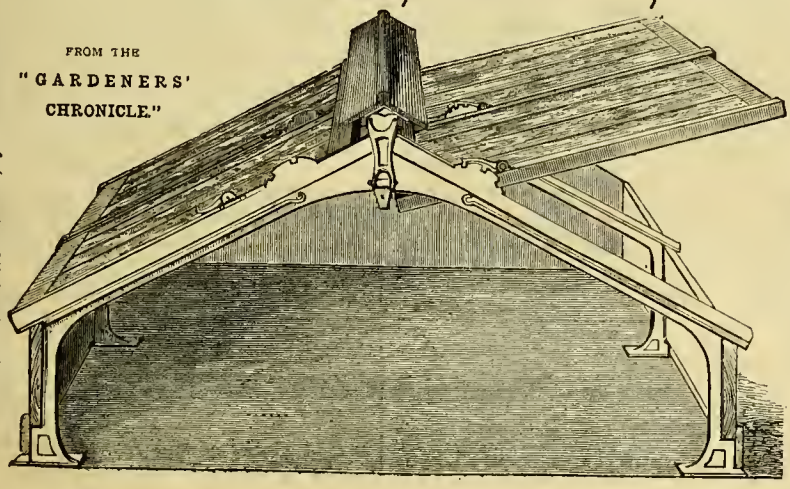
FROM THE "GARDENERS' CHRONICLE."



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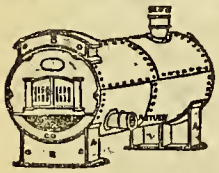

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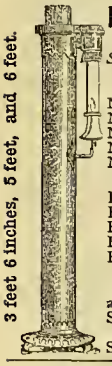


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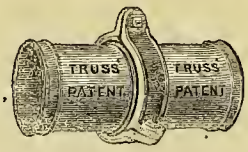


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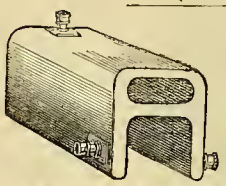

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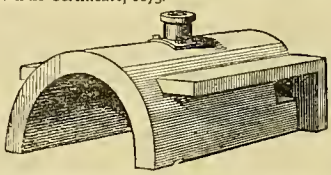

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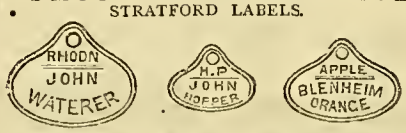


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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, January 29, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co, Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 371.—Vol. XV. { New Series. } SATURDAY, FEBRUARY 5, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. { Post Free, 5½d.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific, at 1 P.M.; ANNUAL GENERAL MEETING at 3 P.M., on TUESDAY NEXT, February 8.
N.B.—At this Meeting Candidates for Fellowship will be elected.

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ARRANGEMENTS for 1881:—
EXHIBITIONS OF SPRING FLOWERS, Wednesdays, March 30 and April 27.
SUMMER EXHIBITIONS, Wednesdays, May 25 and July 6.
EVENING FÊTE and SPECIAL EXHIBITION, Wednesday, June 22.

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Mangel Wurzel Seed.
JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

DREADNOUGHT CUCUMBER.—We have grown this variety very extensively for Market, and still find it the best paying sort, and is certainly the finest Black Spine Cucumber grown, making 20 per cent. more than Tender and True, which is the best smooth sort. 1s. per packet (7 Seeds); cheaper in large quantities.
POPE AND SONS, 120, 121, 122, Market Hall, Birmingham.

## SALES BY AUCTION.

**Monday Next.**
6000 LILIUM AURATUM.

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, 6000 fine Bulbs of LILIUM AURATUM, just arrived from Japan; consignments direct of double TUBEROSES, from America, and AMARYLLIS from Mexico; a splendid assortment of English-grown LILIES; gigantic Bulbs of L. HUMBOLDTII, PARVUM, PARDALINUM, and WASHINGTONIANUM—the finest ever imported; the new L. PARRYI; an importation of choice Californian Bulbs, including BUTTERFLY TULIPS (Calochortis), MARIPOSA LILY, the GOLDEN STAR TULIP, and others, in large lots of twenty and fifty bulbs, and a variety of HARDY ROOTS and BULBS.
Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Established Orchids and Plants from Ghent.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, February 14, about 200 lots of ESTABLISHED ORCHIDS, the property of a private gentleman, together with a consignment from Ghent of CAMELLIAS, AZALEAS, PALMS, DRACÆNAS, &c.
Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Thornton Heath, S.E.**
By order of the Executrix.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Sion Nursery, Thornton Heath, S.E., on THURSDAY, February 17, at 12 o'Clock, without Reserve, by order of the Executrix of the late Mr. A. Henderson (the Estate having been disposed of), the whole of the Trade Erections, including 13 well-built GREENHOUSES, containing about 12,000 feet super. of Glass and Woodwork, 5 PITS, 3400 feet of HOT-WATER PIPING, 6 BOILERS, 150,000 BRICKS, &c.
May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytenstone, E.

SALE THIS DAY AT HALF-PAST TWELVE O'CLOCK.
**Roses, Fruit Trees, Bulbs, &c.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 5, at half-past 12 o'Clock precisely, choice named Standard and Dwarf ROSES, including Hybrid Perpetuals, Noisette, Moss, and others; also Pyramid and Dwarf-trained FRUIT TREES, all first-rate sorts; HARDY HERBACEOUS PLANTS, choice LILIUMS, GLADIOLI, TIGRIDIAS, and other BULBS for spring planting. A few lots of English-grown CAMELLIAS and AZALEAS, RUSTIC GARDEN WORK, &c.
On view the morning of Sale, and Catalogues had.

**8000 Lilium auratum, just received from Japan**
in very fine condition.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 7, at half-past 12 o'Clock precisely, an importation of 8000 LILIUM AURATUM, just received from Japan in very fine condition. Also 800 good imported bulbs of LILIUM KRAMERI; 200 fine clumps of JAPANESE IRIS, just received direct from Japan; 80 plants of ARAUCARIA EXCELSA, &c.
On view morning of Sale, and Catalogues had.

**Odontoglossum Alexandræ.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 7, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, St. Alban's, about 2000 ODONTOGLOSSUM ALEXANDRÆ, just received per steamship "Nile." The importation is in splendid condition and from the best locality.
On view the morning of Sale, and Catalogues had.

**Periodical Sale of Poultry and Pigeons.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, February 8, at half-past 12 o'Clock precisely. First-class PIGEONS, comprising Black and Dun Carriers, White Pouters, including many Prize Birds, from Mr. M. G. Hale; Pouters, from Mr. M. H. Gill; Red and Yellow Jacobins, Runts, &c. Also choice POULTRY, consisting of Silver-spangled Hamburghs, from Miss E. Browne; White Dorkings, Partridge Cochins, Black Spanish, Dark Brahmas, and a great variety of Prize Poultry and Pigeons, from the yards and lofts of well-known Breeders and Exhibitors; GALVANISED WIRE NETTING, &c.
On view morning of Sale, and Catalogues had.

**Choice Imported Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 9, at half-past 12 o'Clock precisely, by direction of Messrs. Shuttleworth, Carder & Co., Orchid and New Plant Importers, 191, Clapham Park Road, Clapham, S.W., a grand importation of ODONTOGLOSSUM (Alexandræ), from the districts from which the best varieties come; CATTLEYA TRIANÆ, species from Ibague, in extraordinary fine masses; grand masses of MASDEVALLIA HARRYANA, and ODONTOGLOSSUM GLORIOSUM. Dried Flowers will be shown.
On view morning of Sale, and Catalogues had.

**Odontoglossum Alexandræ, and other large and**
valuable Importations of ORCHIDS.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 10, at half-past 12 o'Clock precisely, an extra large importation of ODONTOGLOSSUM ALEXANDRÆ, from the very best localities; the pieces are large and in extra health. Also a quantity of splendid masses of LÆLIA ANCEPS and ALBIDA, CYMBIDIUM EBURNEUM, CATTLEYA MENDELII, C. CITRINA, CHYSIS AUREA, MASDEVALLIA TOVARENSIS, PHAJUS TUBERCULOSUS, and the new PHAJUS HUMBLOTI, and other ORCHIDS.
May be viewed the morning of Sale, and Catalogues had.

**Great Sale of Lilium auratum.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 14, at half-past 12 o'Clock precisely, many thousand Bulbs of LILIUM AURATUM and other rare LILIES from Japan, just received in fine condition.
May be viewed the morning of Sale, and Catalogues had.

**The Collection of Coleoptera, formed by the late**
J. ASPINALE TURNER, Esq., of Manchester.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, February 11, at half-past 12 o'Clock precisely, the well-known and valuable collection of COLEOPTERA, formed by the late J. Aspinale Turner, Esq., of Manchester, including many fine species, together with the Mahogany Cabinets; also the fine collection of LEPIDOPTERA formed by the late J. Hunter, Esq.
On view after 2 o'Clock the day prior and morning of Sale, and Catalogues had.

**Established Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 17, at half-past 12 o'Clock precisely, the COLLECTION of ESTABLISHED ORCHIDS formed by the late C. Leach, Esq., of Clapham Park, S.W.
On view the morning of Sale, and Catalogues had.

**Scientific Instruments.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, February 18, at half-past 12 o'Clock precisely, MICROSCOPES, TELESCOPES, BAROMETERS, COMPASSES, SEXTANTS, THEODOLITE, ELECTRICAL, and TELEGRAPHIC APPARATUS, CAMERAS, and LENSES; PHOTOGRAPHS, a few BOOKS, DISSOLVING VIEW LANTERNS and SLIDES, and MISCELLANEOUS PROPERTY.
May be viewed after 2 o'Clock the day prior, and morning of Sale, and Catalogues had.

**The Natural History, Ethnological, Geological, and**
other COLLECTIONS of the late E. W. Cooke, Esq., R.A., F.R.S.

MR. J. C. STEVENS has been favoured with instructions to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, February 25, at half-past 12 o'Clock precisely, by order of the Executor, the COLLECTIONS of OBJECTS of NATURAL HISTORY, ETHNOLOGY, ARCHÆOLOGY, GEOLOGY, &c.; also LODDIGES' BOTANICAL CABINET, a rare and valuable work; also a fine collection of CASTS from Antique Gems, and other CURIOSITIES collected by the late E. W. Cooke, Esq., R.A., F.R.S.
On view after 2 o'Clock the day prior, and morning of Sale, and Catalogues had.

**The renowned Collection of Orchids of**
JOHN DAY, Esq., of TOTTENHAM.

MR. J. C. STEVENS has received instructions from J. Day, Esq., to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without the slightest reserve, during the ensuing spring months, his entire COLLECTION of ORCHIDS. This Collection, which is one of the finest in the country, contains well-grown specimens of almost every species and variety worth growing. The following are the days of Sale:—

| | |
|---|---|
| THURSDAY, March 31 | THURSDAY, May 5 |
| FRIDAY, April 1 | MONDAY, May 23 |
| TUESDAY, April 12 | TUESDAY, May 24 |
| WEDNESDAY, April 13 | THURSDAY, June 9 |
| WEDNESDAY, May 4 | FRIDAY, June 10 |

Further particulars will appear prior to each Sale, and Catalogues will be ready about ten days before. The plants will be on view on the morning of each Sale, but cannot be viewed on the premises without a special order from Mr. J. C. STEVENS. To avoid any risk to the plants, they will be brought to King Street on the afternoon prior to each Sale, and when necessary the rooms will be heated.

**Brox Nursery, Chertsey, Surrey.**
NOTICE OF SALE.

In the High Court of Justice, Chancery Division, in the matter of the Estate of George Gray the Younger, deceased.—Gray *v.* Gray.

MR. R. WATERER (of the Firm of R. & J. Waterer & Son), the person appointed by Vice-Chancellor Sir C. Hall (the Judge to whose Court this action is attached), will SELL by AUCTION, upon the Premises, in FEBRUARY, the whole of the valuable and well-grown NURSERY STOCK, comprising about 150 lots of Mixed Ornamental Shrubs, including many fine Specimen Plants, well furnished and well-rooted; 2000 Standard and Dwarf Roses, 40,000 Green and Variegated Hollies, 1 to 4 feet; 1000 Kalmia latifolia, 4000 Rhododendron ponticum, 1 to 2 feet; 10,000 do., 3 to 6 inches; 2800 Rhododendrons, to name; 300 fine do., 3 to 4 feet, well set for bloom; 200 Golden Yew, 1 to 2 feet; 3000 common do., 3500 Portugal Laurel, 6 inches to 2 feet; 10,500 common Laurel, 1 to 3 feet; 6000 caucasica do., 1 to 2 feet; 3000 Aucuba japonica, 6 inches to 2 feet (bushy plants); 500 mascula do., 3000 Cedrus Deodara, 2 to 5 feet; 5000 Wellingtonia gigantea, 1 to 4 feet; 2000 austriaca and Laricio, 2000 Silver Fir, 500 Picea Nordmanniana, 1 to 3 feet; 1500 Weymouth Pine, 3 to 5 feet; 500 Abies Douglasii, 3 to 6 feet; 2500 orientalis, 1 to 3 feet; 600 Menziesii, 2 to 5 feet; 3000 Retinospora ericoides, leptoclada, plumosa nana, 6 to 18 inches; several thousand Forest Trees, Scarlet Chestnut, common Horse Chestnut, Poplar, Mountain Ash, Sycamore, common Purple Beech, Spruce, from 3 to 14 feet; fine Weeping Ash and Willow, 7 to 8 feet; 2000 Fruit Stocks, consisting of Pears, Crabs, Mussel and Common Plums, a quantity of clean-grown Fruit Trees, of the most choice sorts, and true to name, comprising 3000 Standard and Pyramid Apples, Pears, Plums, and Cherries, 15,000 Maiden Apples and Pears (very strong); 2000 Paul's Double Scarlet Thorn, 2000 Berberis, japonica, Aquifolia and Darwinii; 500 Clematis in pots, to name; 300 Ivies of sorts, 3000 Deutzia gracilis, and a variety of other Stock, all well grown, well rooted, and in good condition for removal; also a very valuable powerful 6-yr. old Bay CART-HORSE, PONY, and Village CART; Two nearly New Crosskill CARTS, one with Springs and patent Axletrees; capital HARNESS, and other effects.
May be viewed seven days prior to the Sale, and Catalogues had upon the Premises; of Messrs. HEATHFIELD AND SON, Solicitors, 44, Lincoln's Inn Fields, London; of J. A. REDHEAD, Esq., Solicitor, 5, Mark Lane, London, and Chertsey; and of Messrs. R. AND J. WATERER AND SON, Auctioneers and Valuers, Chertsey, Surrey.

WANTED, to RENT or PURCHASE, a small FLORIST BUSINESS in the neighbourhood of London. Address, giving all particulars.
D. W., *Gardeners' Chronicle* Office, W.C.

**To Florists, Gardeners, and others.—Suit Growers.**

FOR DISPOSAL, Convenient PREMISES, three-quarters of an Acre, with Glasshouses and Cottage. Situate 1½ mile from Swiss Cottage. Lease fifteen years. Ground rent £16 10s.
Further particulars of Mr. HERBERT DRAKE, Florists' Agent, 34, Finchley Road, St. John's Wood, N.W.

FOR IMMEDIATE SALE, an old-established improving SEED BUSINESS. Returns about £2000 a year. One-third cost. Genuine concern. Open to every investigation. Satisfactory reasons for leaving.
Particulars of Mr. COOKMAN, 14, Henrietta Street, Covent Garden, W.C.

**Fifty Nurseries, Market Gardens, Florist and Seed**
BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 98, Gracechurch Street, E.C.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

## ORCHIDS IN FLOWER.

**SOME OF THE ORCHID HOUSES AT**

*Mr. WILLIAM BULL'S*

**are now Quite Pictures.**

*Probably such a gay and charming display of ORCHID FLOWERS is unequalled, and the like has never before been seen at this dull season of the year. Of*

ODONTOGLOSSUM CRISPUM (ALEXANDRÆ) alone there are upwards of a hundred spikes in flower and bud, and among new and rare ORCHIDS in flower may be mentioned

LÆLIA ALBIDA GEMMA—this is unique and simply magnificent.

ODONTOGLOSSUM CRISTATELLUM, CHESTERTONI, BLANDUM, ANDERSONIANUM, CIRRHOSUM BELLUM, and TRIPUDIANS XANTHOGLOSSUM.

CYPRIPEDIUM PURPURATUM (not BARBATUM PURPURATUM, but the true species from Hong Kong).

AERIDES HUTTONI (four spikes).

*Mr. WILLIAM BULL will be pleased to show his Orchids to any one interested in this beautiful class of plants.*

**ESTABLISHMENT FOR NEW AND RARE PLANTS**
KING'S ROAD, CHELSEA, LONDON, S.W.

CHOICE NEW FLOWER SEEDS for Spring, 1881. Post-free, with Instructions for Cultivation.

ASTER, DANIELS' VICTORIA.—The most beautiful Aster in cultivation. Flowers large, beautifully imbricated and perfectly double; splendid. Twelve superb varieties, 3s.; mixed seed, 6d. and 1s. per packet.
DANIELS BROS., The Queen's Seedsmen, Norwich.

BALSAM, DANIELS' CAMELLIA-FLOWERED.—Remarkably fine and double, with large brilliantly coloured flowers. Six beautiful varieties, 3s. 6d.; mixed seed, 1s. 6d. per packet.
DANIELS BROS., The Queen's Seedsmen, Norwich.

COCKSCOMB, DANIELS' GIANT PRIZE.—Magnificent strain from combs 36 inches by 12 inches, and of the richest velvety crimson colour. Per packet, 2s. 6d.
DANIELS BROS., The Queen's Seedsmen, Norwich.

PANSY, DANIELS' PRIZE BLOTCHED—A superb strain of fine varieties with large, beautifully spotted flowers; highly commended. Per packet, 1s. 6d. and 2s. 6d.
DANIELS BROS., The Queen's Seedsmen, Norwich.

PETUNIA HYBRIDA GRANDIFLORA.—A new and distinct class of large-flowered beautiful varieties, producing blooms of immense size and of the most charming colours. Choicest mixed, per packet, 1s. 6d. and 2s. 6d.
DANIELS BROS., The Queen's Seedsmen, Norwich.

PHLOX DRUMMONDI GRANDIFLORA.—A new class of splendid varieties. Flowers large and brilliant with white centres; much superior to the old Phlox Drummondi. Eight splendid varieties, 2s. 6d.; mixed seed, per packet, 6d. and 1s.
DANIELS BROS., The Queen's Seedsmen, Norwich.

STOCK, DANIELS' LARGE-FLOWERED TEN-WEEK.—The finest Ten-week Stock in cultivation, flowers large, brilliant, perfectly double, and deliciously fragrant; should be in every garden. Twelve beautiful varieties, 3s.; mixed seed, per packet, 6d. and 1s.
DANIELS BROS., The Queen's Seedsmen, Norwich.

ZINNIA ELEGANS, NEW DOUBLE.—A very fine class of beautiful varieties with handsome, perfectly double flowers of the most splendid colours. Twelve brilliant varieties, 2s. 6d.; choicest mixed, 6d. and 1s. per packet.
DANIELS BROS., The Queen's Seedsmen, Norwich.

YEWS, splendid this season, from 4½ to 6 feet, 12os. per 100; also some good ones from 4½ to 6 feet, first-class for hedges at once, well-rooted and furnished. HOLLIES, Green and Variegated, good young plants; a quantity for Sale.
JOSEPH SPOONER, Goldworth, Woking.

STRAWBERRIES IN POTS. Crop at once.
Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.
H. CANNELL, Swanley, Kent.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" " ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUIOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUJA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**To the Trade.**
HOME-GROWN GARDEN and FIELD SEEDS.
H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
Seed Growing Establishment, Wisbech.

RASPBERRY CANES and STRAWBERRY PLANTS.
For Sale, in large or small quantities, the undermentioned very best varieties:—

| RASPBERRIES. | STRAWBERRIES. |
|---|---|
| Carter's Prolific. | President. |
| Northumberland Fillbasket. | Sir Joseph Paxton. |
| Red Antwerp | Aigburth. |
| Semper Fidelis. | Elton Pine. |
| Fastolf. | Eleanor. |

Apply to JOSIAH H. BATH, Manor Farm, North Cray, Kent.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Gold Medal Begonias.**
LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 5s. and 2s. 6d. each. All first quality. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

ABIES DOUGLASII, about 1 foot, transplanted, 7s. 6d. per 100, 68s. per 1000; CUPRESSUS LAWSONIANA, about 14 inches, twice transplanted, 8s. 6d. per 100, 75s. per 1000; PINUS LARICIO, stocky, transplanted, 7s. 6d. per 1000; PINUS RIGIDA, for planting in swampy places, 5s. 1000.
JAS. HATHERALL, Weybridge Station.

*J. CHEAL & SONS'*
SEED CATALOGUE
and Cultural Guide, 1881,
Comprising complete List and Descriptions of all the most useful known varieties of VEGETABLE and FLOWER SEEDS, and many Novelties, including:—
CUCUMBER, Cheal's Prolific.
" Crawley Rival.

TESTIMONIALS.
*From* Lord DE BLAQUIERE, *Springfield, Crawley.*
"Lord De Blaquière has much pleasure in expressing his admiration of Messrs. Cheal & Sons' show of their Prolific Cucumber, which appears a wonderful cropper. The specimen given to him was well flavoured."
Mr. JAMES BENNETT, for ten years Gardener to the late Baron Hambro, of Milton Abbey, Dorsetshire, and now Gardener and General Manager to P. Saillard, Esq., Tilgate Forest Lodge, Crawley, "can strongly recommend the two new Cucumbers, Cheal's Prolific and Crawley Rival, as two of the best in cultivation for general purposes, for quantity and quality combined."
CUCUMBER, White Duke of Edinburgh.
" West Indian Gherkin.
MELONS, Crawley Paragon. First-class Certificate, Crystal Palace.
" Shepherd's Perfection.
PEA, Day's Early Sunrise.
POTATO, The Mexican. The best quality and hardiest constitution yet introduced. Brought by Captain Mayne Reid from the wild stock of Mexico. It has a constitution sufficiently hardy to withstand the disease, which is proved after four years' growth in this country. For cropping and quality it is unequalled.
NOVELTY LIST, with full Descriptions and Illustrations, post-free.
Complete SEED CATALOGUE and CULTURAL GUIDE, containing fifty-four pages of most Useful Information and Illustrations, upwards of 100 varieties of Vegetables and Flowers, with elegant Coloured Lithograph Cover. Price 6d., post-free 7d. Gratis to Purchasers.
J. CHEAL AND SONS, Lowfield Nurseries, Crawley, Sussex.

SELECTED GIANT BRUSSELS SPROUTS.
Lowndes' True Aigburth Stock.
Grows 3 feet high, and is completely covered from top to bottom with large compact sprouts. It has received special commendations at Liverpool and Manchester exhibitions, and is without doubt the very finest Brussels Sprouts ever offered.
*From* R. C. RODGERS, *Nurseryman, Staple, near Wingham, February* 7, 1880.—"Thanks for your Catalogue. I was thinking of sending for some Lowndes' True Aigburth Giant Brussels Sprouts Seed, like last year's; it was without doubt the best I ever grew or saw. I gave plants to several friends, and they likewise praised it highly."
*From* Mr. JAMES LAWSON, 10, *Rectory Buildings, Sunderland, February* 6, 1880.—"I had from you last year two packets of Brussels Sprouts, Selected Giant, Aigburth Stock; they have been the best that I have ever grown. I would like to grow a quantity of it this year."
**Per Packet, 1s. Price to the Trade on application.**
JAMES TYNAN,
68, GREAT GEORGE STREET, LIVERPOOL.

WILLIAMS' for ORCHIDS either for the Cool-house, Mexican, for East India-house, either in Specimens or small plants. The largest Collection of Specimens suitable for Exhibition in the Trade.

WILLIAMS' for ANÆCTOCHILI and GOODYERAS. This interesting class of plants has for some years been much neglected, a fine Collection may, however, be seen here.

WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

BUYERS wishing to avail themselves of a CHEAP OFFER of various TREES and SHRUBS should refer to large Advertisement appearing in this Paper on the 8th of last month, or see T. L. MAYOS' reduced LIST.
Highfield Nursery, Hereford.

RASPBERRY CANES.—100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30s. per 1000; samples of 100 for 4s., free in London, no charge of rail. Also 100,000 FASTOLF, price 10s. per 1000; samples of 200 for 2s. 6d. free on rail, sent to any station in Great Britain. Payments to accompany order. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to
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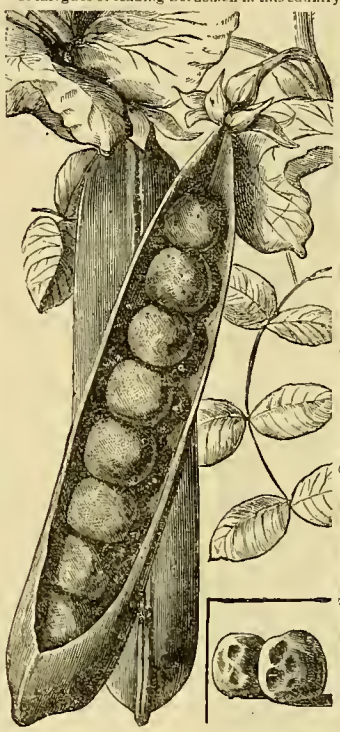

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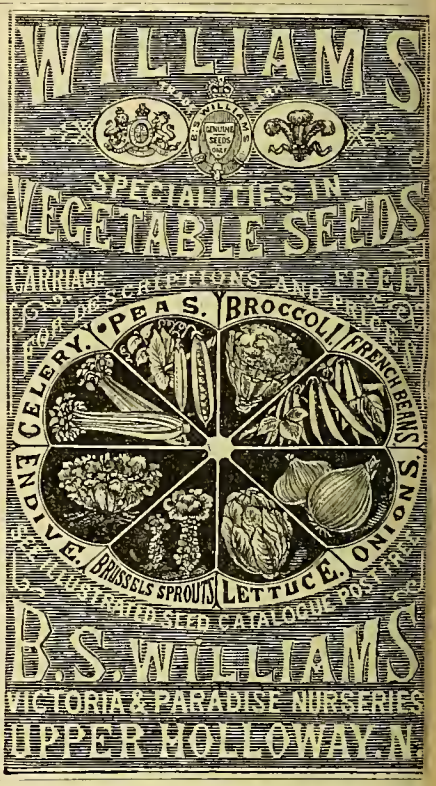


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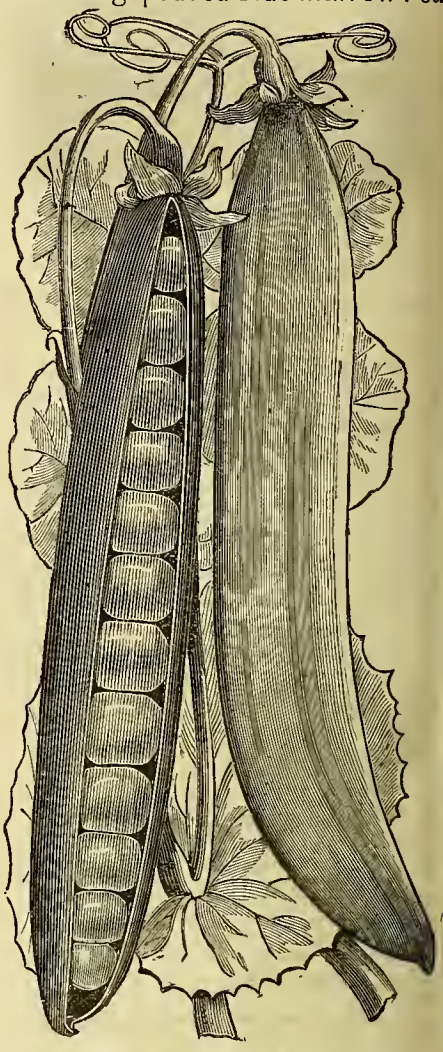

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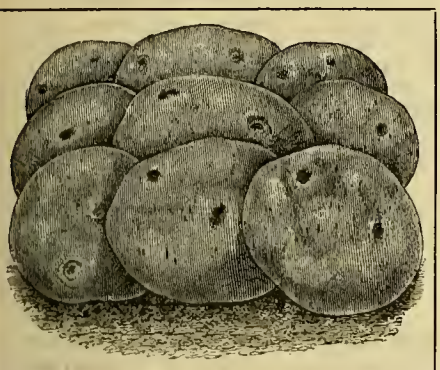

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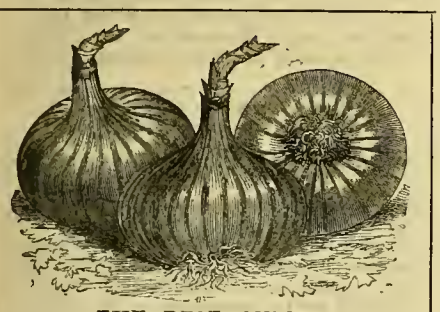

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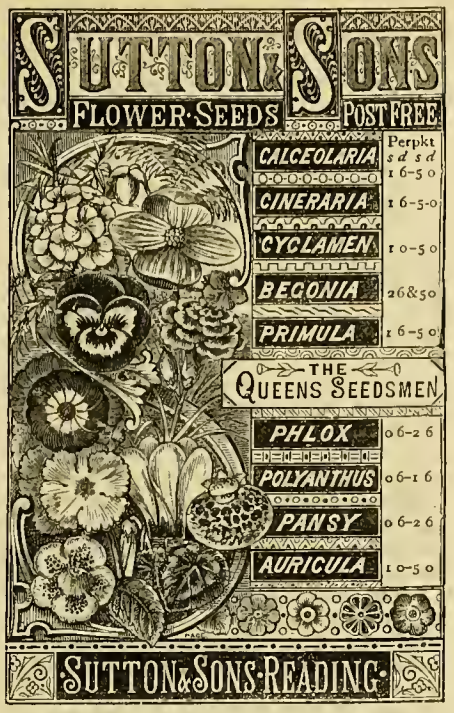


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THE
# Gardeners' Chronicle.
*SATURDAY, FEBRUARY* 5, 1881.


## FLOWER LORE: FEBRUARY.

Of the many symptoms that, with the return of February, winter's reign may be considered already on the wane, nothing is, perhaps, more evident than the signs of renewed life which Nature now displays. Although February with its cold and ungenial rains may not always be a very smiling harbinger of spring, yet in his train appear various flowers, which are all the more charming from their coming at a season which has but little to enliven it. Foremost among these is the Snowdrop which has been popularly named the "Fair Maid of February," from its white blossom opening about Candlemas Day, when young girls dressed in white walked in procession on the Feast of Purification. According to the old English proverb—

> "The Snowdrop in purest white array
> First rears her head on Candlemas Day."

The term Snowdrop, in its usually accepted sense of a drop of snow, is inconsistent, for, as Dr. Prior points out in his *Popular Names of British Plants*, a dry powdery substance like snow cannot form a drop. The reference, as he states, is to the large pendants or drops which were worn by the ladies in the sixteenth and seventeenth centuries, both as earrings and hangings to their brooches, and which were so often represented by the Dutch and Italian painters of that period. In Sussex it is considered highly unlucky to take the first Snowdrop of the year into a house, and Mrs. Latham, in her *West Sussex Superstitions* (*Folk Lore Record*, i. 52), tells us that, one day hearing a child violently scolded for bringing into the house a single Snowdrop, which the mother called a "death-token," she asked why this pretty flower had so bad a name, and was informed that "it looked for all the world like a corpse in its shroud, and that it always kept itself quite close to the earth, seeming to belong more to the dead than to the living."

Almost as great a favourite as the Snowdrop is the early Primrose, which, however severe the winter may be, seldom fails to delight the eye with its delicately-coloured flower. Amid, too, the din and jar of the busy streets of London, the pleasant cry of "Come, buy my pretty Primroses," falls cheerfully on the ear during the present month. Its name has much puzzled the etymologists, and various explanations have been given as to its meaning. It is probably, however, derived from "Pryme rolles," the term it bears in old books and manuscripts. The *Grete Herball* says: "It is called Pryme Rolles of pryme tyme, because it beareth the first flowre in pryme tyme." An extensive folk-lore has clustered round this plant, which is not confined to this country. Thus, like the Snowdrop, ill-luck attaches to the first Primrose brought into a house; the reason assigned in Sussex for this superstition being that, in days gone by, this flower was used for strewing on graves and dressing corpses. In Worcestershire it is deemed the height of imprudence in springtime

to take less than a handful of Primroses into a farmer's house, as infringement of this rule is supposed to bring inevitable destruction on his broods of young ducks and chickens. According, also, to an East Norfolk notion, if a less number of Primroses than thirteen be carried indoors, then so many eggs only will each hen hatch that year. At Cockfield, Suffolk, it is said there are no Primroses, and that they do not thrive when planted, although they are very numerous in all the surrounding villages. According to the village legend they once were plentiful, but when Cockfield was depopulated by the plague they also caught the infection and died; nor have they flourished since that time. Soane, in his *Curiosities of Literature* (iii. 155) says, too, that in the whole parish of Bishopstone, near Swindon, a Primrose has never been seen to grow, although in the neighbouring parishes they abound.

In Germany the Primrose is popularly called the "key-flower," a term which refers to its legendary connection with hidden gold. One myth, for instance, relates how Bertha entices some favoured child by exquisite Primroses to a doorway overgrown with flowers. This is the door to an enchanted castle. As soon as the "key-flower" touches it the door at once opens, and the favoured one passes to a room with vessels covered over with Primroses, in which are contained treasures of gold and silver. On securing one of these treasures, the child is admonished to carefully replace the Primroses over the vessels, or else she will for ever be followed by a black dog. This superstition, as Mr. Conway has shown, survives in our own country in one of the names of the Cowslip—"Fairy Cups"—*i.e.*, a "cup holding fairy gifts." Curious to say, most animals reject the Primrose as food, excepting the pig. It is not, too, much in request with us either in medicine or cookery, although Tusser mentions it among "seeds and herbs for the kitchen;" and in some cookery-books one may occasionally find a recipe for Primrose-pudding. Lyte also says—"The Cowslips, Primroses, and Oxlips are now used daily amongst other pot-herbes; but in physicke there is no great account made of them." Amongst other items of folk-lore associated with this favourite plant may be mentioned its being regarded as an emblem of early youth. Thus, Shakespeare in the *Winter's Tale* (iv. 3) makes Perdita say—

> "Pale Primroses,
> That die unmarried ere they can behold
> Bright Phœbus in his strength."

He also represents it as a general flower for youth; and in *Cymbeline* (iv. 2), Arviragus, pathetically speaking of Fidele, says—

> "Thou shalt not lack
> The flower that's like thy face, pale Primrose."

It may be remembered, too, that Spenser connects the Primrose with death, in some touching lines in which a husband laments the death of a young wife:—

> "Mine was the Primrose in the lowly shade!
> Oh! that so fair a flower so soon should fade,
> And the rough untimely tempest fade away."

Another flower which, although of humble growth, often brightens up our gardens at this dull season, is the Hepatica, or Noble Liverwort. It is also called Liverleaf, its various names having reference to the liver, which it is supposed to resemble. Another of its names is "Herb Trinity" from having three leaflets combined into one leaf. It is known by the Canadians as the "Snow-flower," as it appears soon after the snow has melted from the earth. The round-leaved Cyclamen frequently, too, salutes the early months of the year. It has been nicknamed "Sow-bread," and "Swine-bread," because the swine eat it greedily in countries where it is plentiful. For the same reason the French call it *pain du porceau*, and one of the Italian names is "ground-bread."

The Crocus with its bright blossoms is now hailed with delight, and its association with St. Valentine's Day is well known:—

> "The Crocus blows before the swine
> At vernal dawn of St. Valentine."

According to classical mythology it derives its name from a beautiful youth named Crocus, who was consumed by the ardour of his love for Smilax, and afterwards metamorphosed into the plant which still bears his name. Others suppose it to be derived from Coriscus, a city and mountain of Cilicia. It is one of the flowers of which Homer has composed the couch of Jove and Juno. It appears to have been first cultivated in our gardens during the reign of Elizabeth, as Gerard observes that this "pleasant plant that bringeth forth yellow flowers, was sent unto me from Robinus of Paris." The Austrian peasants have a curious notion that it must only be plucked by healthy young girls or strong men, as it has a tendency to draw away the strength.

Again, another flower that blooms during this month is the Candytuft, or Candy-mustard, which has been nicknamed Ever-flowering, because it remains in blossom nearly the whole year. Indeed, owing to its braving with such apparent negligence the various changes of the season the Persian ladies in their floral language adopted this flower as the representative of indifference. The English name Candytuft originated from the circumstance of the first species of this plant having been brought from the Isle of Candy, or Crete, "from whence," says Gerarde, "I received seed, by the liberality of the Right Hon. the Lord Edward Zouche, at his return into England from those partes, with many other rare seeds, whleh do flourish in my garden." In days gone by the seeds of the Candytuft were eaten with meat, as we now eat mustard, with the exception that they were not pounded. Dioscorides speaks of their efficacy in relieving the chest from phlegm. It is worthy of note that the French have made one of the species the emblem of architecture, because its flowers are disposed in sequence from the bottom of the stalk to the top, which has been thought to bear a resemblance to the pretty open columns of one of the most delicate orders of architecture.

Then, too, there is the Shepherd's Purse, or Pouch, a plant which has a variety of nicknames attached to it. This name seems to have been assigned to it on account of the number of little purse-like silicles that it displays. It has also been called the Pick-purse, from its robbing the farmer by stealing the goodness of the land. Amongst its other names may be mentioned that of Poor Man's Parmacetty, a well-known remedy for bruises; the joke being on the Latin word *bursa*, a purse, which to a poor man is always the best remedy for his bruises. Another term applied to this plant is Clappede-pouch, which means clap or rattle pouch—a name that has reference to the licenced begging of lepers, who were in the habit of standing at the cross-ways with a bell and a clapper. "Separated from all the world," says a German writer, quoted by Dr. Prior, "without house or home, the lepers were obliged to dwell in a solitary hut by the roadside, attracting the attention of passers by with a bell or clapper, and receiving their alms in a cup or bason at the end of a long pole." Hence the lepers were called "Rattle-pouches," a term which was extended to the plant in allusion to the little purses which it hangs out by the wayside.

In woods and sheltered places the Violet sends forth its welcome blossom early in February, a flower which from the earliest times has been much in requisition. Thus it was held in such high estimation with the ancients that one of the prizes of the floral games consisted of a golden Violet. It is said, too, that Proserpine was gathering Violets as well as the Narcissus when she was seized by Pluto. Passing, however, to modern times we find it the subject of an extensive folk-lore. Thus, like the Primrose, it has been associated with early death. This may have arisen, says Mr. Ellacombe in his *Plant Lore of Shakespeare*, (1878, p. 248) "from a sort of pity for flowers that were only allowed to see the opening year, and were cut off before the first beauty of summer had come, and so were looked upon as apt emblems of those who enjoyed the bright springtide of life no more." In *Pericles*, Marina (iv. 1.) carries Violets to hang as a chaplet on the grave; and in *Hamlet* (v. 1.) it is the wish of Laertes that Violets may spring from the grave of Ophelia:—

> "Lay her in the earth,
> And from her fair and unprotected flesh
> May Violets spring."

Like, also, the Primrose, it is said in the North of England that if one takes for the first time less than a handful into a house, the owner's chickens will die. Formerly there was a curious superstition that if Roses and Violets flourished in autumn, there would be some epidemic in the ensuing year. The Violet, it may be remembered became identified with the Bonapartists during Napoleon I.'s exile at Elba. His adherents, in allusion to the time he was expected to return to France, toasted his health under the name of Caporal Violette, or "the flower that returns with the spring." At the funeral of the late ex-Emperor of the French, one of the chief topics of conversation was the wearing of buttonhole bouquets of Violets by the visitors to Chislehurst. The following paragraph from the *Graphic*, which appeared at the time, is curious:—"The little modest Violet has been at a high premium during the past fortnight. At Chislehurst the usual penny bunch was eagerly bought at sixpence or a shilling by the French visitors, all equally anxious to wear the emblem of the Napoleonic dynasty."

Referring to the Violet's use in folk-medicine, it appears that as early as the time of Pliny a liniment of Violet roots and vinegar was considered an efficacious cure for gout. The Romans made a kind of wine from the Violet, and the Turks employ this flower for making sherbet. In Silesia it is said to cure ague if one chews the first seen in the new year. Once more, long before the cold of winter has subsided the bright blossoms of the Mezereon greet our eyes, of which Cowper thus speaks:—

> "Mezereon, too,
> Though leafless, well attired, and thick beset,
> With blushing leaves investing every spray."

Its name is derived by Mene from a Persian word signifying a "destroyer of life," but by others from the Arabic term for a dwarf Olive—a name adopted by the herbalists from the writings of the Arabian physicians. One of the common names for it in England is the "Spurge Olive." [Daphne Laureola rather?] It has been much used for toothache, and a yellow dye has been obtained from its branches. In Sweden its berries are frequently given to kill wild animals

## New Garden Plants.

Odontoglossum Marriottianum, *n. hyb. nat.**

The position of a garden botanist has innumerable difficulties, and one of the most perplexing ones is the increase of the number of undoubted hybrids, which partly honestly bear indications of descent on their flowers when others deceive you about their origin. And then you are expected to name, to describe, to reveal such mysterious travellers! I have before me one of the most difficult things I ever had, just fit to make me despair, either of myself, or of Nature, or of both. A very fine thing it is. I was imported with a mass of Odontoglossum cirrhosum by Mr. G. Marriott, Exotic Nursery, Fore Street, Edmonton, who justly may feel proud of

* *Odontoglossum Marriottianum*, n. hyb. nat.—Pseudobulb oblongo-ligulato demum sulcato diphyllo; foliis lineari-lanceolati acuminatis; racemo plurifloro (panicula?) grandifloro; sepali lineari-lanceis undulatis tortis; tepalis multo latioribus cuneat oblongis undulatis acutis; labello unguiculato oblongo lobulat denticulato crispulo, carinula lineari in basi, carina sublatio antice acuta utrinque apposita contigua, carinulis parvul pluribus circumstantibus; columna utrinque sub fovea angulata alis laceris. *H. G. Rchb. f.*

having flowered this novel beauty the first. My feelings, however, are very mixed at the sight, and after having often considered it for more than a month, I feel as ignorant as before. I cannot guess its descent. *Je n'y vois que du feu.* If you consider the shape of the bulb and leaf you must immediately think of Odontoglossum Hallii. The bulb is far too long and narrow for O. crispum, or even cirrhosum. If you see the spread twisted sepals and the spread, wavy, broader petals with the *tournure* of those of Odontoglossum Hallii you feel quite sure. But the pandurate, wavy lip bears nearly the keels of Odontoglossum crispum, and those very constant narrow brown stripes at the very base, and a few very small spots on the borders of the base. The strong column is light ochre-coloured with brown streaks, and with lacerated wings; while the large flower is white, with purple middle lines of sepals outside, and numerous small scattered light purple inside of sepals and petals. The lip has a yellow disc at the base and the front of the column is yellow, with brown lines. How would a hybrid between Odontoglossum Hallii and crispum come between masses of Odontoglossum cirrhosum? *H. G. Rchb. f.*

Cypripedium calophyllum (barbatum × venustum), *hyb. art.*

One of the oldest artificial hybrids, having been gained at the Royal Exotic Nursery a long time ago. Accidentally it never was described, and now it comes from a second source—from Mr. B. S. Williams.

The triangular odd sepal is that of Cypripedium barbatum, and has even more green nerves; but outside there is some little purple tint. Petals far more those of the same species than of C. venustum, having great bristles on the margin, and wart-like in great abundance. The inferior sepal is that of Cypripedium venustum. The lip would be that of Cypripedium barbatum, if it was not less slender. The staminode is nearly that of Cypripedium barbatum, but the two teeth outside are more developed. Colours of petals and lip nearly as in Cypripedium barbatum. If all the leaves prove to be as large as that one kindly sent (0.25 m. : 0.65 m.) then the plant might be very desirable for its large leaves with dark tessellations. None of Mr. R. Warner's Cypripedia of lost origin have such numerous nerves or odd sepals. *H. G. Rchb. f.*

Oncidium phylloglossum, *n. sp.**

A nice Cyrtochiloid Oncidium, very near Oncidium ventilabrum, but with a very distinct lip. The flowers are shining, light horse-chestnut brown, the sepals and petals bordered with light yellow, the odd sepal and the petals being unusually wavy. The curious lip has yellow borders at the very base and a white top. The calli are light yellow. The column is bent backwards in an angular way and greenish. None of the various flowers kindly sent at two periods had any wings. It was introduced from the United States of Columbia by Mr. W. Bull. *H. G. Rchb. f.*

Acanthophippium Curtisii, *n. sp.*†

How many years have passed since the last species of this striking genus appeared on the scene! At last comes another, an introduction of Messrs. J. Veitch & Sons, from the Malayan Archipelago. The flowers have the shape of the Acanthophippium bicolor, Lindl. The pedicelled ovary is purple. The perigone except the lip is light rose, with numerous purple spots and flush. Nail of lip yellow, keels yellowish, laciniæ white with purple. Column white. The five keels between the side laciniæ are an excellent mark of distinction from the two comparable species, Acanthophippium bicolor and A. sylhetense, the two Lindleyan ones. *H. G. Rchb. f.*

Lælia anceps Hilliana, *n. var.*

The specimens I have seen of Lælia anceps had only a blunt acute lip (the common genuine plant) instead of an acuminate one, as in var. Barkeriana, Lindl. Some flowers of L. anceps Dawsoniana, and most of the first ones sent to Europe, kindly presented me by my oldest and excellent English Orchidic correspondent, Mr. Stuart Low, show some obscure tendency to a certain bilobation of the middle lacinia. Now I have two dried flowers at hand, just sent by Mr. Frederic Sander, which have the anterior lacinia remarkably bilobed-emarginate. There is, in lieu of the habitual sulphur disk, a very deep orange one of unusual extent, whole coloured in the one flower, with two dark purple dashes in the other. Mr. Bull's lovely rosea had numerous dark purple streaks on a sulphur ground. As to the question about other colours, the lip would appear to have rose borders. As to the sepals and petals, they have been light rose or white. Adding the distinct colours to the peculiarity of the lip I venture to propose a new variety, since it would be incorrect to apply any one of the well-known names, and therefore I name it with pleasure Hilliana, according to Mr. F. Sanders' wish, since C. G. Hill, Esq., Arnot Hill, Nottingham, is one of our most ardent Orchidists. *H. G. Rchb. f.*

* *Oncidium phylloglossum*, n. sp.—(Cyrtochilum labello elongato ex appendiculato): pseudobulbis obloogo pyriformibus ancipitibus utrinque obscure 2—3 costatis, diphyllis; foliis cuneato lanceolatis acutis; paniculæ ramis fractiflexis abbreviatis; bracteis parvis; sepalo impari unguiculato; lamina transverse triangula crispula denticulata; sepalis lateralibus oblongis acutis, basi bene cuneatis undulatis; tepalis brevius latius unguiculatis hastato triangulis acutis energetice undulatis denticulatis; labello basi utrinque rhombeo triangulo; antice late ligulate obtuse acuto; callo disci a basi usque in basin, laciniæ anticæ obtriangulo retuso parte superiori cuneata utrinque angulata et quinquangulata; antice lamellis geminis utrinque incumbentibus apiculo interjecto; columna gracilenta angulata superne retrorsum flexa aptera. Ex N. Grenada. Introd. col. Bull. *H. G. Rchb. f.*

† *Acanthophippium Curtisii*, n. sp. — Pseudobulbo columnari; racemo paucifloro; sepalis lateralibus in saccum obtusum liberum; ovarii pedicellati tertiam æquantem extensis; sepalo impari oblongo obtuse acuto, sepalis lateralibus latioribus, supra saccum antice connatis, labelli ungue crasso lineari laciniis lateralibus semioblongis, postico latere emarginatis, apice apiculatis, lacinia mediana porrecta subcuneata ovata obtuse acuta, carinis inter lacinias laterales elevatis quinis, omnibus medio argutis. *H. G. Rchb. f.*

## HORÆ HORTULANÆ.

No. II.—On Leaves.

Was it out of some mere spirit of contradiction, or from a hopeful longing for the coming spring, that, when I looked out this morning upon a white world, and gazed on the gaunt skeletons of Beech and Lilac, and on what appeared to be tumbled, broken heaps of snow, but which I knew to be Yews and Laurels, my mind would dwell on leaves? I let my fancy bring up before my inner eye the green bravery for which the earth, in her own good time, will change her now sad livery of brown and white; and as I mused the pleasures of hope were not unmixed with memories of pain. One scene above all others would come up again and again before me. I seemed to see a long border by the side of a broad gravel path, and along the edge of the path for the breadth of a foot or more the bed was gleaming with the yellow glory of the vernal Crocus. And I also seemed to see the same border a few days later, all its glory gone, and in place of its golden belt a thick ugly stubble of close shorn leaves.

I dare say the reader has often seen the like himself, and seeing has shuddered at such a barbaric sacrifice to the false god of tidiness. Such a sight is a sure token that the garden is in the hands of one who is a gardener only in name. Our language is sadly in want of a new term to save us from the wrong of using the grand old name of gardener when we wish to speak of men who, though they are entrusted with the charge of gardens, and may be often diligent, honest, and in a certain way successful, have no real love for flowers, and none of the true gardener's instincts. The fashionable Roman of the times of the Empire, whom the pride of a luxurious life had utterly estranged from Nature, used to call his gardener a *topiarius*, or "object-maker," because his chief duty was to clip trees and shrubs into fantastic images of animals, ships, and other objects. In like manner, many of our fashionable modern gardeners seem to me to be "object-makers." To them a flowering herb or shrub is not a living being with a beauty of its own, bred out of a long ancestral struggle for existence, and therefore seen at its best amid its natural surroundings, a living being, with habits, feelings, longings, to satisfy which its life is one long endeavour, and which unsatisfied must bring shortcomings, and in the end death. They look on foliage and flowers as mere objects, with certain turns of shape and certain shades of colour—mere lifeless units, to be put in or taken up where and when they please, according as they need material to work into their carpet beds, or build up into their glaring particoloured knots. Like their Roman forbears, the weapons they mostly love are the shears and the knife. And the enemies against which they fight with stubbornness and zeal are leaves.

Were I a modern gardening Gideon, on whom had been laid some hard cultural task, I would choose my band of workers, not by sending them to the waterside, but by turning them into a garden where the flowers had just ended their bloom, giving each a barrow, a pruning knife, a rake, and a pair of shears. I know that many would come back with their barrows loaded with leaves and fragments of plants; all these I would turn away—I would have none of them. The men I should choose would be those who had found plenty to do, and yet had brought back their barrows empty, having carried nothing away; I should feel that they had respect for leaves.

Would I had the art to paint in bright and lasting colours the busy scenes carried on day by day in each of the tiny green-curtained chambers which fill the spaces of the fibrous network of a leaf! Were I a head gardener I would make all my young men repeat aloud at daybreak every day some such sentence as this—"All the labour of the plant by which out of air, water, and a pinch of divers salts scattered in the soil, it builds up leaf and stem and roots, and puts together material for seed or bud or bulb, is wrought, and wrought only, by the green cells which give greenness to leaf and branch or stem." For no one indeed can be a true gardener who does not carry always in his mind's eye a vivid picture of the works on which green leaves are labouring from the moment they peep forth as pale buds to the time when the busy worm buries their withered remnants beneath the soil.

We have all watched a germinating seed. When the time of quickening comes, a colourless rootlet bursts through the protecting case and burrows into the soil. Then follows the escape of the two* seed-leaves or cotyledons, jealously guarding between their folded stalks the tender tip of the infant stem. At first the seed-leaves may be colourless like the rootlets. So long as this is the case the plant, in spite of waxing in size, grows every minute less in substance. It cannot create new material; it can only re-arrange the old stuff garnered in the seed, and in re-arranging spends some of it, becoming thereby so much the poorer in actual solid substance, though it may gain in weight by gathering to itself water. The plant so far is not a plant, but a soft-wooded animal feeding and living on the food stored up in the seed.

By-and-bye, generally indeed very soon, the seed-leaves become flushed with a lively green, and that is a sure token that the work of creation has begun. Mr. Darwin in his latest work,† which, like all his others, is a marvellous pattern of how a multitude of minute observations may be orderly wrought up into a clear and irresistible argument, has disclosed to us the twists and turns by which the seed leaves bend to catch every passing ray of light. For the green cells, though through them creation takes place, are not in themselves creative; they are but instruments and machines for the creative vivifying energy of sun light: mere machines, and yet necessary machines, for without them the light is impotent.

What it is exactly which these green cells do is at present hid from us. We cannot as yet penetrate far into their mysteries. But we have abundant evidence that while the colourless rootlets have the power of drawing water and various salts from the soil—while the fantastically carved but colourless tubes, vessels and fibres of the stem and branches have power to carry air and fluids up and down the plant—and though perhaps the sap as it flows along its accustomed courses may work out divers changes in itself, it is only where the protoplasm of the living cell is studded with grains and clumps of chlorophyll that the dead useless carbonic acid is unburnt and built up into the combustible, energy-holding and so far living starch. On this starch the protoplasm fattens, and, growing strong, builds up new cells. To this starch we may ultimately trace all the strength and substance of the plant or tree. The creation takes place in the chlorophyll-holding cell; there and there alone does sunlight bury itself as hidden power. But after creation comes distribution, and the crude power as it is scattered over the plant is shaped in divers places to diverse ends. Here it is seen as young soft watery protoplasm, busily adding cell to cell, there as tough combustible wood, there as sugar-laden sap, and yet again once more as starch, garnered for future use in tuber or in bulb. It was said of old of an animal that the blood is the life thereof. We may say of the plant that the green cells of the green leaves are the blood thereof. As the food which an animal takes remains a burden only till it be transmuted into blood, so the material which the roots bring to the plant is mere dead food till the cunning toil of a chlorophyll-holding cell has passed into it the quickening sunbeam. Take away from a plant even so much as a single green leaf and you rob it of so much of its very life-blood.

The gardener who has once firmly laid hold of this cardinal truth, this "law and the prophets" of vegetable life, that the substance of every part of a plant, root, runner and stem, bud, tuber, and bulb, gorgeous

* I am of course speaking of dicotyledonous plants.
† *On the Movements of Plants.*

petal, flaming bract, the very seed itself, nay, even the body of the fleeting things which give fragrance to the flower and flavour to the swollen bud—was first wrought in the workshop of the green cell of a leaf (or other green part) will henceforward hold in due reverence every leaf which grows. When he sees the tall "grass" springing up high and loose from the flowered Crocus corm, his eye will be gladdened, not vexed; he will see in the waving leaves the beauty of usefulness, recognising that their vigour is the measure of the future corm, and so of next year's flowers. And when, under his patient care, some potted plant puts forth leaves of that dark lustrous green which tells that the workshops of the cells are crowded with busy workmen, he is filled with hope, knowing that with continued care the green of the leaf as it passes away will be born again into the purple or gold of some brilliant flower. He early learns, it is true, that in the mysterious ordering of a plant's ways, the produce of the workshop is often used to open up new workshops instead of being transmuted into the blossoms which he desires: the plant by very reason of the vigour of its growth goes to leaf and not to flower; but even then his knowledge will console him with the reflection that the end is only postponed, not lost. The natural, the necessary goal of a plant's life is a seed. To that it must come in the end, however long it may tarry in the way. Leaves, branches, stems, bulbs, rhizomes, and even the floral envelopes themselves, are mere preparatory steps, mere means of gathering material for, and of condensing that material into the essence of a seed. So long as the forces of the plants find vent in the simpler task of budding leaves, the more intricate and arduous duty of weaving the tangled knot of atoms which we call an ovule may, perhaps, be deferred; but the plant is a gainer in the end, for every speck of green on which the sunlight plays is potentially a contribution to some future flower; the area of green foliage is the measure of the bloom to come. Some day, perhaps, when the knowledge of vegetable life lingers less than it does now, the gardener may come to have such mastery over the inner working of a plant as to make it labour for leaf or for flower as he lists, securing first of all such ample foliage as he wishes, and then bidding that foliage convert all further increase into bloom. That, indeed, is the end of the gardener's art. But though the beginnings of such power are already in our skilled men's hands, the day of full fruition, when the pruning-knife shall be finally laid on the shelf, seems as yet far distant. Meanwhile, we shall do well to remember that the cutting and slashing by which we now too often strive to encourage bloom, is at once a robbery to the plant and a reproach to ourselves. One thing, at least, is in every one's power. We can, if we like, all of us take care that the leaves of the plants we love shall have free scope to broaden out to do their work, and not be torn or trampled, or needlessly cut down, because we happen to be careless or lazy, or because we think we can better Nature's beauty by grotesque fancies of our own. *Dietes.*

*(To be continued.)*

## AYTON CASTLE,

The seat of William Mitchell Innes, Esq., is situated in Berwickshire, about 9 miles north of the town of Berwick, on the high road leading from London to Edinburgh, and is allowed to be one of the most beautifully situated mansions in Scotland. It stands about 300 feet above the level of the sea, on the north bank of the River Eye, which runs through a large portion of the estate, passing through a very lovely, finely wooded valley. On the southern slope stands the parish church, a very handsome building, wholly or nearly rebuilt a few years ago by Mr. Mitchell Innes. From the top of the Castle the views are both extensive and varied. Looking north, the country has a finely undulated surface, highly cultivated. To the south and west rises a softly contoured richly-wooded range of hills, rising in some parts to an altitude of 700 feet. To the south of these stands Foulden House, the seat of John Wilkie, Esq., a place long celebrated for its grand old trees; and away in the distance to the west is seen Hume Castle, on the summit of a hill, 898 feet above the sea level, once the seat of the Earls of Hume, now one of the chief objects of antiquarian interest in Berwickshire. In the same direction, about 2 miles distant, is Peelwalls, the beautiful seat of John Allan, Esq.; and to the east are the remains of two camps, of unknown origin. Here broken pieces of armour and urns have been found; and towards the north are vestiges of three encampments, supposed to have been either Danish or Pictish. To the east the eye takes in a large surface of the German Ocean. To the south are had glimpses of the Holy Island, Fearn Isles, &c. The sea coast here presents a high and rocky shore, celebrated in the annals of smuggling.

History mentions the Castle of Ayton, founded by the Norman Baron de Vesci, and taken by the Earl of Surrey in 1498. A modern house was erected upon its site, but was consumed by fire in 1834. On its site again the present mansion has been built since. It is an erection of great magnificence, in the old castellated style of architecture, and most elaborately furnished. The park here is of large extent, with many trees of great dimensions. In 1879 shrubs suffered severely at this place from the frost (38°). Scarcely one of any description escaped injury, and many hundreds were killed outright. Hollies, &c., from 30 to 40 feet in height, were killed, and others so much injured that they are past recovery. Standard Roses and Araucarias were all killed, some of the latter fine trees. In the pinetum here I found some very fine specimens of Pinus nobilis, 60 feet; Wellingtonia gigantea, 30 feet, extra; Picea Nordmanniana, 40 feet; and some grand old examples of Pinus austriaca, &c.

The kitchen garden is over 3½ acres in extent, with a pretty sharp declivity to the south, walled in on three sides, open to the south, showing the pinetum. As a rule, all sorts of hardy fruits do well here, and are had very early. The glasshouses are rather extensive, and have all been erected within the last four years by Mr. Lowe with all the latest improvements. One of Cannell's boilers, along with others, is placed here, and has done its work most satisfactorily.

The houses stand at the top of the kitchen garden, on the uppermost of three terraces. Each of these is about 80 feet wide, and in front of each is a handsome balustered wall, with a flight of six steps down to each divison, 10 feet wide. These are laid out as flower gardens, and have a very pretty appearance indeed. Entering from the west the first is a Peach-house, 42 by 12 feet, mixed house, very fine crop. No. 2, vinery, 32 by 15 feet, mixed house, principally Black Hambugh; very fine crop all over the house. No. 3, span-roofed conservatory, 42 by 32 feet, with octagon end. The roof is supported by six pillars festooned so well with Passiflora cœrulea that not a vestige of the pillars is to be seen. Other finely-grown climbers here are Tacsonia Van Volxemi, Mandevilla suaveolens, Trachelospermum jasminoides, Lapagerias alba and rosea. The paths are laid with Minton's tiles of a very pretty pattern; there is also a very handsome fountain in the centre. Altogether this is a very elegant erection. No. 4, vinery, 31 by 15 feet, Muscat-house; extra fine both in bunch and berry here. No. 5, late Peach-house, 42 by 12 feet, very fine trees; varieties—Late Admirable, Barrington, and Walburton Admirable. From the latter fruits have been gathered weighing 8 oz. No. 6, Fern-house, 30 by 12 feet; Stephanotis floribunda and Allamanda Schottii covering the roof and flowering most profusely. In this house I found the following Ferns very superior:—Adiantum farleyense and Lowii, Pteris tricolor, Microlepia hirta cristata, and anthriscifolia; Gymnogramma nivea and Lancheana. No. 7, span-roofed greenhouse, 30 by 12 feet, containing a fine collection of plants, mostly in a small state for table decoration and for supplying the conservatory. No. 8, span-roofed greenhouse, 35 by 20 feet. There is a very nice collection of plants here, which are used for similar purposes to the foregoing. No. 9, Melon-house, span-roofed, 30 by 12 feet, fine crop of the following:—Royal Ascot, Colston Basset Seedling. No. 10, Melon-pit, 60 by 7 feet, and used for housing bedding plants during winter. No. 11, pit, 60 by 7 feet; No. 12, Mushroom-house, 30 by 12 feet.

The potting-shed is a most commodious erection, 24 by 12 feet, with obscured glass roof, containing all the appliances for stowage of pots, repotting plants, &c. Mr. Richardson, the head gardener here, gives evidence of both skill and attention being given to everything under his care. *John Downie.*

The Three F's.—I remember, some fifty years since, a lady telling me with dismay that a cook coming to be hired demanded the three F's. "What are they?" said the lady. "Oh, fat, fur, and feathers, ma'am, of course." I believe the phrase came from the kitchen. *P. P., in "Notes and Queries."*

## COLLEGE ROAD NURSERIES, CHELTENHAM.

These nurseries are occupied by Messrs. Heath & Sons, who for many years past carried on a most extensive and successful business as plant growers, which was extended from time to time with success, and comprised the culture of hard-wooded plants generally. Among these, Azaleas, Heaths, Epacris, Ixoras, were always conspicuous, including well-trained specimens of no ordinary size. This, to a great extent, has been abandoned, so as to supply the present great demand for cut flowers and table plants, and to these the proprietors of these nurseries now almost exclusively turn their attention, save and except the growing of such plants as have fine and graceful foliage, and which so materially assist in all floral and furnishing decorations.

The nurseries are pleasantly situate in the fashionable town of Cheltenham, so long in repute for its chalybeate springs, and are close to the noted college of that town, and about an equal distance of one mile from the Midland and Great Western Railways. They are fronted by conservatories on the one side, and the usual requisite offices of such an establishment on the other. A long straight walk or drive running through the centre is lined on either side with plant-houses of all descriptions, suitably fitted up for growing plants. The first collection of plants brought under my notice here was one of named Cinerarias, of which there was an extensive collection of nice dwarf, healthy and vigorous plants; they comprise all the leading kinds in commerce, and are made a speciality, for which these nurseries have long been famous. They are grown in pits and frames, and form the largest named collection I have yet seen. The next speciality to which my guide drew attention was Carnation The Bride, which is grown by the houseful, its pure white blooms, which are produced in abundance, being found to be most useful in a cut state; many hundreds of plants in various sized pots are found in the houses and frames. Associated with these is the new variety, of Mr. Heath's raising, called Dr. Abercombie. Prince of Orange is largely grown; also a good collection of tree varieties.

Next, in a long lean-to house of eastern aspect, was a fine batch of white Japanese Chrysanthemums, remarkable for purity of bloom and lateness of flowering. This variety, which is called Quilled White by way of distinction, I was informed, had been for years grown on a large scale, and is believed to exist only in these nurseries. Of this variety alone some 800 plants in 12-inch pots have been grown this season, and on the day of my visit (December 30) there was apparent a fine display, which had been going on for weeks past, while in the bouquet-room a large quantity were ready for executing orders, and upon the plants there was still an almost endless number of buds to expand, which, judging by their appearance, would furnish quantities of bloom until the end of January. This plant has produced a sport, yet unnamed, with flowers of a clear primrose-yellow and lighter beneath; as it is a late flower, and the demand for yellow flowers is great, it will, no doubt, be invaluable for general purposes.

Maidenhair Ferns next came under notice, the principal varieties grown of these favourites being Adiantum farleyense, A. gracillimum, and A. cuneatum, the two latter being grown extensively and in successional batches for cutting. A house of these had just been started to form the first batch, and was expected to be in readiness for the Easter decorations; these are grown principally in large 32-sized pots. A. farleyense was represented by a nice healthy batch of young plants. Another Fern which is grown in quantity is Pteris scaberula; this is planted out *en masse* on the front stage of several of the houses, with about six inches of soil for the roots to ramble in. This Fern is well adapted for small bouquet-making, and being hardily grown it withstands the cold with impunity; now and again the rhizomes make their way through the crevices of the sides and under portions of the stage, and the young fronds soon appearing the whole is wrapt in abundant foliage. As soon as all the fronds which are of use are collected, the plant is allowed a rest, and is again started into growth and cleared of old fronds so as to allow the new ones to grow up clean and shapely.

Poinsettias, of which upwards of 7000 plants are grown, filled one house 60 feet long by 12 feet wide. These are grown in three batches, the first of which

comes in early in December, and continues until Christmas, the other two following in turn. The plants of the first batch after the heads have been cut are placed under the stage for a short rest, and are again started into active growth, and come in flower for Easter, when their heads of bracts, which as a natural consequence are small, are found most acceptable. Gardenias also receive special attention. These are in specimen form, one mass of flower-buds, and a most clean creditable lot; a fine batch of young plants is growing vigorously.

Camellias, principally white-flowered kinds, are extensively cultivated, as may be illustrated by the fact that upwards of 2000 blooms were last year collected from one single specimen, and it is by no means deficient in its bearing qualities for this season, having had nearly 200 blooms collected from it; this is the old Double White, which forms a dense symmetrical specimen some 15 feet high, and fully the same distance through. This tree is considerably smaller than it was some two years ago, having been at that time struck by lightning, which destroyed some fine limbs, the only wonder being that the entire plant was not destroyed. These specimens are permanently planted out in the houses. In one large house, planted some two years ago, the plants are making fine progress. On the wall of another house a fine plant of Lady Hume's Blush was making a good display of blooms, together with other equally good kinds, besides many hundreds of smaller plants in 48 and 32 sized pots.

The Nile Lily or Richardia aethiopica forms another item of importance, and is grown in quantity. A good idea may be formed of the vigour of these plants when I say that the major portion of them would measure on the average at the base of the stems from 9 to 12 inches in circumference. Azaleas for early forcing are of the highest importance, all the best known kinds for that purpose being largely used. In the large Azalea-house, which is 120 feet long and about 15 feet wide, Rose Maréchal Niel has been planted down the centre, and trained to the roof on either side, and, to use the words of my guide, it produces flowers like tea-cups. Another set of houses, called the south range, is devoted to the forcing of Roses, and there Niphetos and Maréchal Niel which are the principal occupants, had quantities of buds apparent. Double Chinese Primulas are grown abundantly, and are represented by a batch of several hundreds in fine healthy condition; and last among specialities, but certainly not least, is the Amazon Lily, Eucharis amazonica, of which there was by far the finest display I have ever witnessed—upwards of 360 spikes, averaging six blooms on a spike, in one house alone, notwithstanding the continuous day by day cutting operations, which never cease so long as a single bloom remains. This is especially noteworthy, as in a nursery of this kind it is a difficult matter to find any great display at any one season, owing to the methodical manner in which one batch follows another, and to the continual cutting and plucking of the blooms as soon as open.

Pelargoniums Wonderful, Madame Baltet, and Madame Thibaut are the three principal varieties of these grown for winter work. Orchids are but sparingly represented as a collection, only a few of the better kinds being grown. Among those in flower were good forms of Odontoglossum Alexandræ, O. Roezlii, Calanthes in variety, and among these a pure white form of C. vestita lutea; Dendrobium nobile and its variety elegans were in flower in batches, and a remarkably fine lot of plants in another house was taking their period of rest. Lælia albida was good, as also were the apple-scented Epidendrum, E. alatum, and Cymbidium Mastersii, white and good; a fine variety of Oncidium crispum and Zygopetalum Mackayi majus were also flowering in the Lapageria-house. Some fine Lapagerias planted out were showing abundance of bloom. Notable among these were L. alba and a form of L. rosea with deeply coloured flowers, and which during the season had thrown no less than fourteen double blooms; this plant has all the free-flowering qualities of the typical species, but the foliage is smaller and less coriaceous. Bouvardias were past, still convincing proofs were remaining to show that no lack of skill and judgment had been exercised in growing them. In the stoves a variety of Palms, grown principally for decoration, were to be seen. Among these I noted Cocos flexuosa, C. Romanzoffiana, and C. Weddelliana. The two former are fine noble examples, some 15 feet high, with fronds rising erect and gracefully recurved at the summit, and having long linear acute pendent leaflets. Areca lutescens is likewise well represented. Pancratium fragrans is here to be seen in the form of extraordinarily fine specimens, as is also Imatophyllum miniatum, this latter having several dozen spikes of flowers rising from amidst its abundant foliage. Todea superba is represented by a magnificent specimen 4 feet 6 inches in diameter. A nice batch of young seedlings represents Clianthus Dampieri.

Among greenhouse Rhododendrons R. Veitchii and Countess of Haddington, with R. Edgworthii, are the best of the large-flowered section. These three are in grand specimen form, the former being fully 4 feet 6 inches in height and 3 feet through, and having fully fifty flower-heads upon it. These when expanded will be a sight worth witnessing. R. Princess Royal and R. jasminiflorum are also grown, the latter a fine plant. Francoa ramosa, a hardy perennial, is found to be most useful, and grown largely in pots. The Christmas Rose (Helleborus niger) is forced gently in quantity. Among other plants for early forcing may be mentioned Lily of the Valley, Hyacinths, Spiræa (Astilbe) japonica. A goodly collection of Crotons have their share of attention, and among these occurs a new variety named C. Heathii elegans, with leaves of a dark olive-green, crimson at the base, while the young leaves are of a bright canary-yellow.

A new ornamental ground has, during the last few years, been laid out with a variety of beds for effective spring and summer bedding; these at the present time consist principally of Tulips, of which several thousands are annually planted, and consequently a fine display is guaranteed for spring. The border on either side of the main walk through this ground is planted with a variety of bedding Violas, and fronted with Aubrietia purpurea; fine beds of Anemone japonica and its variety Honorine Jobert were also noticeable. In some large beds Mr. Heath has some good examples of old-fashioned hardy perennials, of which he is especially fond; among these I noted huge specimens of Tritoma Uvaria major, Anchusa italica, Iberis corifolia, herbaceous Phloxes, and many others. Besides this, the home nursery, there is another of considerable extent, in which are grown forest trees and shrubs of all descriptions, together with all the best Roses in cultivation, and fruit trees likewise. *J.*

## ARCTIC FLORA.

Mr. H. Chichester Hart has recently published in the *Journal of Botany* a very interesting summary of his observations on the flora of the Arctic regions extending from lat. 68° 42′ to the northernmost land reached by the British Polar Expedition of 1875—viz., Cape Columbia, in lat. 83° 8′. In all 130 species were collected, Saxifraga oppositifolia being the most northerly plant (83° 8′), closely followed by Papaver nudicaule and Alopecurus alpinus (83° 4′), these three plants being gathered north of the eighty-third parallel, in the most northern land yet visited by man. The Alpine Willow extends southward from 82° 50′. Saxifraga cæspitosa is the most generally distributed plant, although it does not flower so freely as S. oppositifolia. Alopecurus alpinus appears to be equally abundant, varying in height from 4 to 18 inches. The great interest attaching to this communication will justify us in making the following extracts:—

"Those botanists who have gained their experience in our own temperate regions, or even on the European Alps, cannot easily form an idea of the peculiar conditions of an Arctic flora. It is only on the low ground of the more southerly parts of Greenland visited, as at Egedesminde, Disco, Rittenbank, and Proven, that the surface is uniformly covered with vegetation for any extent, and this consists of small-tufted perennials of low matted growth, through which the Arctic Willows and Ericaceæ trail and extend their branches, the first alone rarely rising under the shelter of a cliff to a height of 3 or 4 feet. Through this brownish green carpet, which is about the hue of an Irish mountain bog, conspicuous and beautiful blossoms of Rhododendron, Azalea, Diapensia, Pyrola, and other ericaceous plants, are lavishly scattered; while the cream-coloured Dryas, the snowy-white Cerastium and Stellaria, the pink Silene, and the gorgeous red-purple Saxifraga, often form luxuriant sheets of colour, the latter being comparable to our Scotch Heather, though richer in its effects. True blue flowers, as Veronica alpina, rarely occur; true reds are never met with, and most of all is felt the absence of a green sward, such as the eyes are accustomed to at home. As we advance further north the vegetation (except, perhaps, that of Lichens) rapidly diminishes, both in variety and growth; and after leaving Upernavik ground covered with herbage is rarely met with, and only at low levels. Foulke Fiord, a few valleys along Hayes' Sound, and Discovery Bay, were much the richest stations explored; yet even in these favoured spots the plant-bearing surface is very limited indeed, patchy, and easily distinguished at a distance; a consolation arising from this is, that the probability of any species escaping observation is reduced to a minimum." . . .

"An important characteristic in Arctic plant life is the almost entire absence of seedlings, Kœnigia islandica at Disco being the only annual observed; seeds, however, if ripened elsewhere, do germinate under the influence of an Arctic sun, though they will not, I believe, ripen; hence it is no doubt possible that some plants may have been introduced by currents of air or water, or by the agency of birds or other migratory animals." . . .

"Though seeds of the indigenous plants do not germinate in the higher Arctic regions, ripe seeds brought hither will do so. Dr. Ninis planted seeds under a shelter of glass ashore in Discovery Bay; when the sun was strong and at its greatest altitude in the daytime, this protection raised the inside temperature a degree or two, but at most times the inside and outside temperatures were uniform, or nearly so, and constantly as low as 33° Fahr.; the seeds planted were Peas, Beans, Celery, Wheat, Mustard and Cress—all of these germinated and grew. Nor is the excessive cold of the winter months in these regions, involving as it does upwards of 100° of frost, fatal to the vitality of mature seeds; Wheat which had been left at Polaris Bay by Hall's Expedition of 1871, and which had been thoroughly and entirely exposed to the weather for four successive winters and summers, germinated when sown in Discovery Bay; while the Beans and Peas we experimented upon had experienced, upon the ship's upper deck, the whole severity of our winter, with a minimum temperature of 71° Fahr." . . .

"Besides the difficulties due to the climate, there are others in the way of plant growth; lemmings swarm here, and subsist entirely on vegetable matter, which is also the support of numbers of hares, musk oxen, ptarmigan, and brent geese. Individuals of these watched or dissected by me led to the following conclusions:—The musk ox will eat almost any herbage, but seemed especially fond of Carex fuliginosa and Salix arctica; the brent goose prefers shoots and heads of Ranunculus nivalis, Eriophorum capitatum, and Cerastium alpinum; Saxifraga cæspitosa was the favourite food of hares; everything else was rejected by a leveret which I kept in confinement; ptarmigans appear to subsist entirely upon Willow tops (Salix arctica); the reindeer will reject everything for Stellaria longipes, while the seed tops of Drabas and Poppies form the chief food of the snow bunting; Saxifraga oppositifolia and Drabas support hosts of lemmings, and the former is no doubt eaten by all in the early part of the season, being the first to form fresh growth." . . .

"The commonest plants in Discovery Bay were Saxifraga oppositifolia, S. cæspitosa, and Dryas integrifolia, and their flowers were also most abundant, the former covering many square yards with its magnificent sheets of red-purple; the ground that it grows on and the plant, except the flowers, being scarcely visible. I have never seen any wild plant to compare with this Saxifrage for a rich display of colour. Its flowers occur of every shade of pink and purple, varying in hue at different periods of the season, and it remains in blow from the earliest spring to the latest summer.

"The thawing of the snow is the signal for growth to commence, and after that all plants alike have to take their chance of being submerged and swamped for a time. Vesicaria and Hesperis seemed alone to demand a comparatively dry situation throughout; on the other hand, some Sedges, Cotton Sedges, and other plants which we are accustomed to regard as marsh plants, have to subsist on soil as dry and hard as iron during most part of the summer." . . .

"On guano soil or organic matter, as around old Esquimaux settlements at Hayes' Sound, about aukeries and below bird-cliffs, as at Cape York and Foulke Fiord, certain plants are most at home, as all Saxifragas (except S. oppositifolia), and especially S. cernua, Stellaria longipes, Lychnis affinis, Ranunculus sulphureus, Alopecurus alpinus, Cerastium alpinum, Salix arctica, and most Mosses, especially Splachna. On the other hand, the species which seem to take first to freshly-formed glacial mud, free from organic matter, are Papaver nudicaule (especially the form P. alpinum), Drabas, Braya alpina, Saxifraga oppositifolia, Carex fuliginosa, Phippsia algida, Dryas, Potentilla nivea, Lychnis apetala, Poas, and Festucas, Eriophora, and most Lichens, may be included as growing upon inorganic rock." . . .

"The more northern the latitude, the more stunted most species of course become; some, however, lose but

little of their dimensions, as Dryas, Saxifraga oppositifolia, S. cæspitosa, Carex fuliginosa, C. stans, and Stellaria longipes; those which dwarf most are Lychnis affinis, Alopecurus alpinus, Saxifraga cernua, S. nivalis, Cerastium alpinum, Papaver nudicaule, &c. Samples of the same plant gathered early and late in the season also vary very considerably, and in an unusual manner: owing to the shortness of the allotted time, all plants strive to get through their life-stages as rapidly as possible, coming into flower with the utmost haste; thus an early-gathered specimen of Arenaria verna with hardly any leaves or stems, but in full flower, is very unlike the same plant two months later with its far-trailing branches and matted foliage; Potentilla nivea will flower, too, when about an inch in height, later on reaching a stature of 8 or 10 inches, and bearing numerous flowers. The most stunted plants seem to be those which suffer most from being shifted about with moving mud, as Poppy, Cerastium, and Saxifraga cernua; these may often be met with travelling down a hill-side ready to cling to any support. Another check to the natural growth of many plants is that all, even marsh plants, such as Eriophora, Carices, &c., must be prepared for a thorough baking and drying before the end of the season, though it opens with a wide-spread deluge."

## THE KEW ARBORETUM.

### THE MAPLES.—V.

ACER SPICATUM, *Lam.;* A. pennsylvanicum, *Du Roi*; A. montanum, *Ait.;* A. parviflorum, *Ehr.;* A. rugosum, Hort. Gray, *Manual of Botany*, p. 119; Emmerson, *Trees and Shrubs of Massachusetts*, vol. i., p. 567; Koch, *Dendrologie*, theil i., p. 522.—Fig.: Loudon, *Encycloped. of Trees and Shrubs*, pp. 80, 81, 97.

Mountain Maple. Rich woods, Maine to Wisconsin, and northwards along the Alleghanies to Virginia and Kentucky.

This species usually forms a tall shrub, but sometimes attains a height of 20 ft. The coarsely serrated leaves are three- (or slightly five-) lobed, pubescent beneath, the lobes being taper-pointed. The fruits have small divergent reddish wings, which contrast well with the foliage, and add a good deal to the beauty of the bushes in autumn. The youngest shoots are a fresh light green shaded with yellowish-purple, those of the previous year being of a light purplish hue blotched with green below. The branches and trunk are a light clear grey, rough at the base. In autumn the decaying leaves assume a reddish-yellow tint. Introduced to this country in 1750.

Du Roi in his *Harbesche Wilde Baumzucht* mentions a variety of this with variegated leaves; this seems to have disappeared from gardens. Koch says that he has neither seen it, nor heard anything of it.

*Var.* UKURUNDENSIS, *Maximowicz* (fig. 29), Flora Amurensis, p. 65; Koch, *Dendrologie*, theil i., p. 523.

Hilly woods of Eastern Mandschuria, Saghalien, Central and Northern Nippon. Leaves 7-lobed, hoary beneath; raceme very dense, compound. Judging from specimens in the Kew Herbarium collected by Maximowicz, this differs a good deal from the American type. According to its author, it ranges in size from a tree 30 feet high, with a handsome rounded crown, to a slender, sparingly-branched shrub, about 15 feet high. The old bark is bright brownish-grey, full of narrow fissures. The samaræ are pale yellowish. So far I have found no record of this form being introduced to cultivation.

ACER GRANDIDENTATUM, *Nutt.;* Torr. and Gray, *Flora of North America*, vol. i., p. 247.

Headwaters of the Columbia River, cañons of the Wasatch Mountains, and Southern Utah to Ash Creek, Arizona. Wood resembling that of the Sugar Maple. A small tree: Sargent, *Catalogue of the Forest Trees of North America*, p. 13.

Leaves slightly cordate or truncate at the base, rather deeply 3-lobed, the sinuses broad and rounded; lobes slightly acute, with a few sinuous indentations. Corymb nearly sessile, few-flowered, the pedicels long and nodding; fruit glabrous, with small diverging wings.

I cannot find that this very distinct species has yet been introduced to this country or even to Europe. The rather coriaceous greyish-green leaves are broader than long; they measure from 2 to 2½ inches in length by 3 to 4 inches in breadth; the petioles are from 1½ to 2½ inches long.

ACER RUBRUM, *L.; A. Drummondi*, Hook. and Arn.; Gray, *Manual of Botany*, p. 119; Koch, *Dendrologie*, theil i., p. 542.—Figs.: Emmerson, *Trees and Shrubs of Massachusetts*, vol. i., p. 551; Loudon, *Encycloped. of Trees and Shrubs*, pp. 91, 119.—*A. carolinianum*, Hort.; *A. coccineum*, Hort.; *A. floridanum*, Hort.; *A. glaucum*, Hort.; *A. globosum*, Hort.; *A. hypoleucum*, Hort.; *A. leucophyllum*, Hort.; *A. virginianum*, Hort.; *A. Wagneri*, Hort. (See figs. 30, 31).

The Red Maple, the Swamp Maple, Sir Charles Wager's Maple [though this name is generally applied to A. dasycarpum. EDS.]. "Latitude, 47° N.; southward to Florida, west to Minnesota; Eastern Nebraska, the Indian territory, and Eastern Texas. Wood whitish or rose-coloured, close-grained, moderately hard, susceptible of a fine polish, largely used in cabinet-making, for turnery and wooden ware; the variety with undulating grain, known as 'curled Maple,' is highly valued. A large tree; generally in swamps. Common in all the forests east of the Mississippi River:" Sargent, *Catalogue of the Forest Trees of North America*, p. 13.

From the Silver Maple this may generally be distinguished by its leaves being much less cut, and not so white beneath; the tree, too, is more compact and less rapid in growth. The fruits are so distinct from those of A. dasycarpum that, furnished with these, there is no difficulty in coming to a conclusion. After examining a large series of specimens derived from native as well as cultivated trees, I find considerable variation in the colour and hairiness of the under-surface of the leaves, and also in the colour of the flowers, in some instances the foliage being almost as silvery beneath as that of the Silver Maple. As an ornamental tree this occupies a high rank. In early spring the leafless branches are clothed with compact clusters of conspicuous red flowers, and in autumn the leaves put on a bright yellow tint—in the neighbourhood of London at any rate. In its native woods the autumn coloration is infinitely beautiful—a fine glowing red.

The colour of the foliage is bright shining green above, glaucous beneath, the growing points and young leaves being tinted with reddish-yellow; the young shoots are reddish-brown.

The bark affords a dark purplish-blue dye, and makes a pretty good bluish-black ink; for both these purposes Emmerson asserts that its use is well known in Massachusetts.

FIG. 29.—ACER UKURUNDENSIS.

*Var.* SANGUINEUM: *A. sanguineum*, Spach, *Histoire naturelle des Végétaux*, vol. iii., p. 115; *A. fulgens*, Hort.; *A. splendens*, Hort.; *A. tomentosum*, Hort.

This is a variety with intensely red flowers and leaves much more hairy than is usual in the paler flowered type. There is a type specimen of A. sanguineum in Gay's herbarium taken from a tree in the Jardin des Plantes at Paris, and given to Gay by Spach himself: it represents a form with young leaves very hairy on their under surfaces. Mons. Lavallée, in his *Arboretum Segrezianum*, follows Spach in referring A. rubrum of Watson's *Dendrologia Britannica*, tab. 169, to A. sanguineum, but that figure seems to me to represent ordinary A. rubrum, and certainly does not agree with the specimen of A. sanguineum in Gay's herbarium.

*Var.* PENDULA: the weeping form of the Red Maple, seems uncommon; it is not at Kew.

and Koch says that he had not seen it. It is, however, in the collection of Mons. Lavallée.

*Var.* FOL. AUREO-VARIEGATIS: a form with leaves splashed with yellow; it is to be found in foreign gardens, but at present is not in the Kew Arboretum. *G. Nicholson.*

## CINCHONA CULTIVATION.

(*Continued from p.* 140.)

### IV.—Establishing Cinchona Plantations.

*Climate.*—It may be generally accepted for Jamaica (between 17° and 19° latitude north, and 75° and 79° longitude west) that, at all elevations from about 2500 feet to the Blue Mountain Peak, 7335 feet, the climatic conditions are all favourable for the successful cultivation of one or other of the various species of Cinchona. For comparison, it may be mentioned that Cinchona succirubra flourishes in the parish of Manchester, according to information supplied by Mr. Swaby, at an elevation of 2700 feet, with a rainfall of about 120 inches, and a mean annual temperature of 70° Fahr. This elevation may be taken as nearly the lowest at which the more valuable Cinchonas may be remuneratively grown in Jamaica.

At the Government Cinchona plantations Cinchona succirubra flourishes at 5000 feet. The records here show a mean annual rainfall of 136 inches and a mean annual temperature of 60° Fahr. The trees at this elevation do not seed freely, and are apparently so slow in maturing that this elevation may be taken as the highest, at which it would be advisable to cultivate red bark in Jamaica.

For the valuable crown bark, Cinchona officinalis, as it flourishes at 4500 feet near Whitfield Hall, and at 4800 feet at the Cinchona plantation, possibly it may grow as low as 4000 feet. Its range of cultivation, so far, in Jamaica is between 4500 and 6300 feet; a few plants of this species planted by Mr. Nock, on Blue Mountain Peak, in 1878, though they have suffered from their exposed position, would indicate that the conditions, even at this elevation, are not unfavourable to the growth of small leaved and hardy Cinchonas.

*Soil.*—All species of Cinchonas are most impatient of stagnant moisture at their roots, and therefore require an open subsoil, a sloping exposure, and other conditions of perfect drainage. They naturally prefer a rich soil, and do better in newly cleared forest than in grass lands. Cinchona officinalis, is, however, more tolerant than C. succirubra of a soil poor in vegetable humus, and grows on grass land, as well as on exhausted coffee soils.

The freer and more friable the surface soil the better, but the ultimate success of the Cinchona plant depends essentially on the character of the subsoil. An open well-drained subsoil is above all things indispensable to Cinchona cultivation.

"As soon as the roots of a Cinchona tree get down into sub-soil, in which there is any tendency for moisture to collect, the plant most certainly begins to sicken and die."

The best trees at the Government Cinchona plantations grow in a good friable surface soil, overlying a porous stony subsoil produced by decomposed rock of the metamorphosed series of Jamaica geology. This subsoil is found generally distributed throughout the parishes of St. Andrew, St. Thomas, and Portland. In limestone districts of the island eastward the soil generally must be very favourable to Cinchona cultivation, the only qualifying conditions being the elevation and mean annual rainfall.

*Sites for Plantations.*—In selecting sites for Cinchona plantations, it is important to bear in mind the points above mentioned, as regards climate and soil, and the species of Cinchona naturally adapted for them.

Where Cinchona is cultivated concurrently with Coffee, it is recommended to attempt to grow the valuable crown bark, C. officinalis, at all elevations above 4000 feet. On rather bare patches by roadsides, and, indeed, anywhere where plants can be placed, this hardy and valuable plant should be abundantly grown.

On Coffee plantations below 4000 feet the most suitable kinds are the red bark, C. succirubra, and a hybrid variety which has passed here as C. Calisaya. These may be planted on Coffee estates, as suggested above for C. officinalis.

In selecting sites for permanent Cinchona plantations as distinct from Coffee plantations, the nature of the soil, the directions of prevailing winds, the aspects, the mean annual temperature and annual rainfall, are all matters for serious consideration. Speaking generally, however, no sheltered situation, with good soil, can be said to be unsuitable for Cinchona anywhere on the Blue Mountain range. The northern aspect has a more equable temperature than the southern, but the latter appears to be generally preferred for Coffee. As Cinchonas delight in a moist, equable temperature, it is very probable that vast tracts of land lying hitherto uncultivated on the northern slopes of the Blue Mountain range will ultimately prove suitable for Cinchona.

*Clearing Land.*—When it is intended to establish a Cinchona plantation on uncleared land, the first consideration after the site has been carefully selected is to establish the seed-beds and nurseries. Full particulars respecting these are given in the foregoing paragraphs. While the plants are being thus prepared, the land intended for the plantation should be properly cleared as for Coffee cultivation.

It may be well, however, to point out that it is very advisable in Jamaica to leave moderately wide belts of forests standing on the ridges, for the purpose of affording shelter from strong winds. In addition to this it is recommended that on very steep places, rocky hollows and any patches of land unsuitable for Cinchona, that the original forest be left standing in order to ensure adequate shelter for the Cinchonas as well as save needless expense in cutting down, weeding, &c.

In India the methods pursued for clearing forest for Cinchona cultivation are described as follows:—"The best time for beginning to clear forest land for Cinchonas is obviously when the dry season has sufficiently advanced to make a second growth of grass improbable. When the felled forest, whether grass or timber, is sufficiently dry it may be fired. Stumps and logs remaining unburnt after the fire may be rolled away into spots unsuitable for planting, or heaped together and burnt. A better way is to lay them between the lines of plants, and allow them to rot and thus to profit by the humus formed by their decay. The large fibrous roots of tall grasses and other weeds likely to overpower the young trees about to be planted, should be dug out and killed either by exposure or burning. The land being thus cleared any

Fig. 30.—Acer rubrum. (see p. 172.)

Fig. 31.—Acer rubrum. (see p. 172.)

necessary roads may be lined off and made. The sites in which the plants are to be put must then be marked off. This may conveniently be done by means of a cord about 100 feet long, on which marks are tied at the intervals at which it is wished to plant the trees. This cord is stretched on the ground, and opposite each of the marks on it, a piece of split Bamboo or a peg is stuck into the soil. The cord is then moved, another line is staked off at a proper distance from the last, and so on. Coolies follow, whose duty it is to dig pits, about a foot to 15 inches in depth and 18 inches wide, of which the stakes already put in should be the centres. The earth (freed from roots and stones) which has been taken out of each hole should be returned to it, so as to form a free mass in which the roots of the plant about to be planted can freely work. A coolie in Sikkim makes 100 to 130 of such pits per day, according to the nature of the ground."

*Planting.*—When the ground has been prepared, as mentioned above, the plants already established in the nurseries after being gradually hardened will be fit for planting out. The night before the plants are taken out of the nursery beds they should be well deluged with water, in order that a good ball of soil may adhere to their roots in the process of transplanting. The plants should be carried from the nurseries to the fields in shallow boxes or baskets, well shaded from the sun and with a plentiful supply of wet moss, grass, or ferns round the roots. The best season for planting in Jamaica is evidently after the October rains, and the most favourable conditions are obtained during a prevalence of damp, cloudy or foggy weather, with only slight rain or occasional showers. It is unadvisable to plant during heavy rains, as most soils get clogged and heavy, and become in this state prejudicial to the tender rootlets of the plants. In placing the plants in the holes it is only necessary to make an opening with the hand or a trowel in the fresh loose soil already prepared for them, sufficiently deep to receive the roots without doubling them. When thus deposited the soil should be filled in round the plant, and well pressed as it is thrown in to cover the roots. No plant should be buried deeper in the ground than the collar or union of stem and roots. "When a portion of the stem is buried in transplanting the growth of the plant is much retarded, and it does not, as some suppose, give a firmer hold of the ground, but the reverse."

Too much attention cannot be given to the modes of putting out Cinchona plants. "It is too important an operation to be done badly; it is not wise to try to economise on it, and it is always unadvisable to do by contract." A good planter should be able to put in 500 to 1000 plants per day, according to the nature of the soil.

(*To be continued.*)

# Notices of Books.

**Siberia in Europe, &c.** By Henry Seebohm. (Murray.)

This volume contains the record of a trip, as novel as it was adventurous, to the valley of the Petchora, in North-Eastern Russia, for the purpose of studying the migrations and habits of birds. It was especially desired to ascertain the breeding haunts of the grey plover, the little stint, Bewick's swan, the sanderling, the curlew, sandpiper, and the knot. For the first three the search was successful, while the sanderling and the knot have been found breeding in lat. 82° N. during the Nares' Arctic Expedition: the breeding grounds of the curlew and sandpiper still remaining a mystery. In addition to the discovery of the eggs of the three birds before-mentioned, Mr. Seebohm and his companion have added a considerable number to the list of birds known to inhabit Europe, and they add largely to the knowledge of the habits of migratory birds. They brought home more than 1000 skins and over 600 eggs. This was effected in the course of about nine weeks—seventeen or eighteen other weeks having been occupied going and coming and waiting for spring.

The banks of the Petchora, a noble river falling into the Arctic Ocean, were reached after a rough journey of some ten days from Archangel, partly across a series of uninhabited swamps, which on the breaking up of the snow become impassable, so that no letter, no messenger, no telegram, can ever come; and for two months the valley of the Petchora is as effectually cut off from all communication with civilised Europe, as if it were in the moon. Our author gives us in a very unaffected manner a record of what he and his friends saw on their journey, and although the chief interest of the book will be felt by professed ornithologists, yet the lover of natural history will find much that is instructive, and the general reader, with no special proclivities, will yet find his attention aroused, and will probably lay down the book with a sense of pleasure, a considerable addition to his knowledge, and an increased sense of the general bearings of natural science.

Ust-Zylma, the starting-point of our author's Petchora explorations, presents some curious and not altogether pleasant experiences. It is described as one vast dunghill, which would probably be a source of much disease, but that it is frozen for seven months out of the twelve, while much of the filth is washed away by the sudden melting of the snow in summer, when half the village is under water. From the duration of the winter, the length of time during which the cattle are stall-fed, and the small amount of land available for cultivation, there is always a large surplus of manure which the peasants do not think worth the cost of preservation. Again, the river itself is the great fertiliser, exactly as the Nile is in Egypt. It is easy to get a living in this district, says our author, but not very easy to accumulate wealth, as there is no market for surplus produce, and no means of profitable communication with the great towns in the interior. The accounts given of the Samoyedes with whom the author came in contact is very interesting. They are a migratory race, of Mongol origin, almost entirely dependent on the reindeer for their clothing and means of subsistence. Birch bark supplies the material for their tents in summer, the skin of the reindeer is used in the winter. The food of the reindeer is the lichen, commonly known as the reindeer moss, which grows so abundantly on the "*tundras*," naked tracts of undulating land, rolling prairies of moor, swamp, and bog quite impassable for horses in summer, but easily traversed by the broad-footed reindeer even where it would be impossible for a man to stand. It is hinted that the Samoyedes are by some unexplained means enabled to steer their course by the reindeer moss, when it is impossible by other means to determine the direction in which to proceed. The snow is swept away, the lichen examined, and the course altered accordingly. It would be very interesting to have further particulars of this new Compass Plant. Unfortunately, the author tells the story at second-hand, and with no further amplification than we have mentioned. The *tundra* is covered with snow for seven or eight months in the year, the vegetation consisting of Carices, moss, and lichens. In some places there is abundance of Cranberries, the fruit of the last year being preserved by the frost and snow of winter. Andromeda polifolia, Ledum palustre, and Betula nana are mentioned as the most noteworthy plants, the latter running along the ground like Ivy. The travellers sunk in, in the summer time, to a depth of 1 foot or more before reaching a good foundation, which, when reached, proved to be "a solid pavement of ice." We should find it rather difficult to imitate these conditions in cultivation.

A circumstance that will be interesting to geologists and others concerned in glacial phenomena, recent or prehistoric, is the fact that the forests near the Petchora are "shaved off by the ice, which sometimes mows down the stoutest trees as a man mows grass with a scythe." A section of a trunk so sliced would be an interesting companion to the slabs of wood planed by the sand-blast, as figured in these columns in 1878, vol. ix., p. 13, from specimens brought from the Rocky Mountains of North-Western America by Sir Joseph Hooker. The trees we have seen destroyed by the flow or impact of ice have been simply snapped off, not cut as here described. The Larch seems to be the most useful tree of the district. Mr. Seebohm contrasts the haggard Larches, whose leafless branches were clothed with black and grey lichen like a suit of rags, and torn and twisted by the winds into wild fantastic shapes, with the Spruces, which looked as if they had just been combed and brushed. Mr. Seebohm does not tell us what Spruce he alludes to; it may have been the common Spruce, but more probably the Siberian one (P. obovata). In any case, in the forests of the Petchora the Larch is the smaller tree. It is felled in the forests 500 or 600 miles up the river, roughly squared into logs, and floated down in enormous rafts, like those on the Rhine, and like them forming a floating village. From Alexievka, the port, the timber is shipped during the summer to Cronstadt.

Many books of this nature are mere records of slaughter, becoming very wearisome to the reader not endowed with the passion for killing which in so many cases goes by the name of sport. It is easy to see in the present case that the killing is only a means to an end, and that end not a mere selfish one. As evidence of this the very numerous and valuable foot-notes, and the chapters on the migration of birds may be adduced. Why some birds in some countries do migrate and in others do not, is a mystery not yet unravelled. Many birds, our author tells us, such as the robin, the blackbird, and the song-thrush, which are permanent residents in England are migratory in Germany; and it is probable that it is only within comparatively recent times that these birds have ceased to migrate in England; "we may fairly conjecture that should the English climate remain long enough favourable to the winter residence of these birds they will develope into local races which will eventually have rounder and shorter wings than their Continental allies. In some genera of birds it is comparatively easy to determine the geographical range from an examination of the shape of the wings," those that have the widest area of distribution having the more pointed wings. It is still a matter of controversy, which was the original home of these migratory birds, some ornithologists holding that the original home of a species was its present winter quarters—others supposing that, before the instinct of migration was formed, the species was a resident in the district where it now breeds. The rule seems to be that all migratory birds breed in the coldest region to which they migrate, and which is probably the real home from which they travel from force of circumstances, more especially to supply themselves with food when such is not easily accessible at their breeding station. The resident birds of Heligoland—that tiny islet off the mouth of the Elbe—do not number more than a dozen species, but in spring and autumn the number of birds that use the island as a resting-place during the migration is so large, that as many as 15,000 larks have been captured there in one night. The author gives us a graphic account of his visit to the island on a "migration night"—an account amply confirmatory of the astonishing statements as to the vast numbers of birds to be met with at certain seasons on the island.

We can only add that the author, from his study of the birds of the valley of the Petchora, comes to the conclusion that so far as the Polar regions are concerned, the division into Nearctic and Palæarctic regions is purely arbitrary, and that for birds a circumpolar region ought to be recognised.

The book is illustrated with some charming woodcuts of young birds and their nests, and illustrations of scenery, while the tail-piece to nearly every chapter consists of a representation of antique Russian crosses, many as beautiful as they are curious.

**Household Surgery**; *or Hints on Emergencies.* By J. F. South, formerly one of the Surgeons to St. Thomas' Hospital. London: Murray.

Those who remember the earlier editions of this little book, and those who, having known its amiable writer, feel the more interest in the fate of a once useful publication, and in the well-earned repute of its author, will regret that a new edition should have been issued without having been submitted to the friendly revision of some surgeon who was more *au courant* with the practice of the present day. The work has been reprinted, it seems, for the special use of members of ambulance classes, but it would surely be better for the conductors of such classes to print and circulate, for the use of their pupils (as indeed we believe they do), some short, clear directions, than to let them rely on the teachings of a popular work of more than thirty years' standing. Here are all the old-fashioned poultices, blisters, and messes long since superseded by simpler and more effectual means. Here is the cupping apparatus, which few of the present generation of surgeons have ever seen—here is the key for tooth extraction, which we should expect to find in some historical museum now-a-days rather than on a dentist's table. We mention these things in explanation of our remark that even so good a book as this undoubtedly was, needs revision now by some surgeon still in active practice.

# Garden Operations.

## FLOWER GARDEN.

In these parts the thaw has been as rapid as the onset of the storm was sudden. It will be some time before all the injury done is apparent, but so far as this place is concerned, though lower temperatures have ben registered than last year, the plants that were then badly injured, do not yet appear to be so. Eucalyptus globulus is killed to the snow-line, also Phormium tenax; some of the Euonymuses a little blackened at the tips; Dracæna lineata killed to the ground; Palms, Chamærops Fortunei (unprotected) do not seem at all injured, Laurustinus slightly browned, as are the Portugal and common Laurels; some few of these may have to be cut down, but will soon break from the bottom. All the varieties of Conifers and small Japanese shrubs, such as Retinosporas, &c., are looking as fresh as if there had not been a bit of frost—a fact that must tend to increased planting of these kinds in preference to Laurels, Laurustinus, Bays, &c., that are so apt to be cut off whenever we are visited by a frost of 20° or so. It will be advisable to exercise a little patience before cutting over or down shrubs, &c., that seem to be killed, as some of them may recover. Last year we dug up for dead a number of Eucalyptus globulus; a single plant that was by accident left in the ground, as soon as the warm weather set in, threw up root-suckers of great strength, and, as a matter of course, far outdistanced for summer effect the seedling plants of the same that had been sown in heat in February. Our plants of half-hardy shrubs are thickly mulched with cocoa-fibre refuse, which mulching ought to have been supplemented with litter when the severe frost set in, only we had no warning of its coming. Roses are not hurt here, but doubtless will be in some parts of the country, and pruning of them should in such cases be deferred till it can be seen how far the wood is affected. Planting should be finished as early as possible, and the plants will more readily start into active root-growth if thickly mulched with stable litter; the standards should be tied to supports at once, or any new roots formed are liable to be snapped off the first windy day.

Other work in the open garden will be the completin of turfing and preparing ground for sowing grass seeds, turning walks, and resurfacing with fresh gravel; these will, after this frost, roll down splendidly, and a day's labour spent on them now will be likely to save several days of worry and bother of weeding them by-and-bye, it being hard times with weeds on well consolidated walks in the summer season. On walks that are moss-grown, through being overshadowed by trees, a little salt should be strewn, which soon destroys the same, after which a sprinkling of fresh gravel should be given and rolled in immediately after the first heavy rain. In the flower-beds spring bedders will need refirming in the soil; some of the tenderer bulbs would be benefited by a little protection during the prevalence of harsh winds or sharp frost: Yew spray or tiffany fixed over hooped sticks and the ends pegged into the turf are excellent makeshift protectors. Mixed beds and borders of hardy flowering plants and bulbs may now be manured and dug. Care is requisite in disposing them in their proper place in the beds or borders that the highest and strongest growers do not injuriously affect the smaller kinds. The surface of the ground, particularly for the bulbous kinds, should be clothed with hardy Sedums and Saxifrages.

Presuming that all summer bedding arrangements have been completed, and a computation made of the various kinds required, preparation should now be made for their manufacture, by means of sowing, division, or cuttings, as the case may be. Seeds of all kinds of subtropicals should now be sown; the most popular kinds here are those that with a minimum of labour—as to preparation for planting—give a maximum of pleasure; all the following belong to this class:—Cannas, Ricinus, Solanums, Wigandias, Ferdinandias, Eucalyptus, Ferulas, Acacia lophantha, Grevillea robusta, Melianthus major, and Chamæpeuce diacantha. Amongst hardy shrubs that serve for similar purposes, the best are—several kinds of Acacias, Robinias—particularly R. grandiflora, R. pendula, and R. Pseud-Acacia; Maples—especially the variegated Ash Maple, Acer Negundo variegatum, and several of the new Japanese Maples are invaluable for this kind of planting; Aralia japonica and A. Sieboldii variegata, Ailantus glandulosa (this should be cut down annually), Sumachs, Rhus Cotinus and R. glabra lacinata, Yucca recurva, Y. gloriosa, Y. filamentosa; Arundo conspicua, and Pampas-grass, Gynerium argenteum. Pelargoniums that have been wintered thickly in store pots or boxes will now need potting off, and till the roots are again established in the soil they should be kept in a close temperature of not less than 55°. Petunias, Verbenas, and plants of a similar nature may also now have more warmth to induce growth for cuttings; a stock of these is most expeditiously got up by the old hotbed plan—leaves and litter—and the pots of cuttings partially plunged in the material as soon as the rank heat has subsided. Coleus, and all the more tender section of bedders, cannot now have too much heat if they are expected to produce a plentiful supply of cuttings. *W. Wildsmith, Heckfield, Hants.*

## KITCHEN GARDEN.

Kitchen garden walks, if not already done, should be swept and rolled so that they may again become level and firm and free from weeds. Make another sowing of Peas of any of the mid-season varieties, amongst which Laxton's Supreme, Telephone, and Culverwell's Telegraph will be found suitable for all purposes; also plant out those raised in pots and subsequently hardened off. They should be turned carefully out of the pots, and planted with a garden trowel—disturbing the balls of mould and roots as little as possible in doing so—in rows 4 feet apart (which will be wide enough for the first crop) and one foot in the row, in a warm and previously prepared border, and a little soil drawn up to the plants on either side the row, after which a line of lime and soot should follow in the same direction, as also some short sticks to support the haulms for the time being, and then stick some Spruce boughs firmly in the ground on either side the rows sufficiently close to protect them from frosts and cutting winds. As the Peas progress in growth and become inured to the weather the boughs should be gradually removed, which will prevent their making a weakly growth; and so soon as the weather becomes favourable enough for the purpose (about the end of this month) the boughs should be removed altogether, and the Peas finally sticked. Beans should also be transplanted individually in rows 2 feet apart and 4 inches in the row, and a line of lime and soot laid on either side the rows to protect them from the attacks of slugs. Should the borders in which the Peas and Beans—especially the former—are planted be facing due south, that is, running east and west, it will be advisable to plant the rows at an angle of about 45° from the wall to the walk, by which means the individual rows will be more directly exposed to the influence of the sun. Another sowing of Broad Beans—Seville Longpod and Taylor's Broad Windsor—should also be made. Remove the Fern from young Lettuce plants that have been pricked out thickly in a warm border in the autumn for transplanting in February and March on all favourable occasions, and *vice versâ;* of these a planting might now be made in a warm border, over which a dusting of lime and soot had been previously strewn in rows a foot apart, and the same distance in the row. For this purpose the plants in every other row in the nursery-bed (above referred to) should be taken up as required, which will then leave a space of 1 foot between the remaining rows, which again should be thinned out in the row as the plants are required.

Forcing Department.—Shift Tomato plants, as they require more room at the roots, into larger sized pots, and again place them near the glass. Thin young Carrots growing on hotbeds to 2 inches apart in the rows, after which they can be thinned out as required for use. Transplant young Lettuce plants as soon as they are large enough to handle on a bed containing a gentle bottom-heat, and air freely on all favourable occasions. Land-up Potatos on hotbeds as they require it with soil of the same temperature as that in which they are growing; and keep up a good succession of Rhubarb, of Seakale, and Asparagus, giving air freely during mild days to that from which the present supplies are being had, to prevent it making a spindly growth, also to French Beans, which should be well syringed twice a day as a means of keeping the plants free from and checking the attacks of red-spider. Mint, Tarragon, Mustard, and Cress will likewise require attetion. *H. W. Ward, Longford Castle.*

## FRUIT HOUSES.

Peaches and Nectarines.—We have now a very agreeable change in the weather. From January 7 to 28 the thermometer here never rose above freezing point, and such a continuation of frost without a break is not remembered by the oldest inhabitant. The temperature in the early house may now be raised, keeping it about 55° at night with a corresponding rise by day. The flowers should by this time be pretty well set; so far as I can judge at present we have a very good set, and the embryo fruit look strong and well. Attend to fertilising late varieties, of which it is desirable to have at least one tree, as it prolongs the season of ripening, and is an advantage, especially where there are only two or three houses. Since writing my last Calendar I have introduced a weak hive of bees into the early house, and much pleased they appear to be with the agreeable change of quarters. They have worked well on bright days, and so far have behaved themselves properly. The second house will be ready for them in a day or two, when I shall move them. I tried a hive in a similar manner ten or twelve years ago, but failed with them; they would not take to the blossoms, but were all the time trying to escape from the house, and died by hundreds in the attempt. When the fruits are fairly set syringe gently twice a day with tepid water, but always allow them to get dry before night. Give them a thorough soaking at the roots with chilled water about 85°. Attend to disbudding, doing a little each day in preference to going over a tree at once. Do the centre strongest shoots and extremities of the trees the first, to give strength to the weaker and less forward shoots. Pull off all foreright shoots, leaving the lowest and best placed ones for heeling down. Give the second house a good watering with tepid water, which will carry them over their blooming season; keep the night temperature at about 50°, giving same treatment when in bloom as was given to the early house by keeping a drier atmosphere, fertilising, &c. Where there are more than three houses a third may now be started and treated according to the directions already given. *J. Wallis, Keele Gardens.*

### Melons.

The arctic weather that we have recently experienced has in the natural order of things tended to retard progress in the growth of young plants. Fortunately for ourselves, a healthy bed of dung and leaves just made before the storm came on, with a fair amount of top-heat from hot-water pipes, just furnished the requisite conditions, with careful watching, to tide us over the storm, and our young seedlings are (contrary to expectation at one time) now looking as prosperous as could be desired. Where, however, young plants have sustained a check it would be advisable to sow again, in order to have a strong reserve to fall back upon. A steady bottom-heat approximating to 80° or 85°, and a top-heat of from 70° to 75°, are the all-important conditions for young plants for the present. Melons, like Cucumbers, in a young state enjoy a brisk moist heat, such as that afforded by a genial hotbed, so that it is rather advantageous than otherwise to grow the young plants in pots until they attain a good size for the purpose of facilitating the renewal of bottom-heat. In earthing-up the plants, or in potting from the seed-pot, the soil should always be warmed to the temperature indicated by the thermometer in the bed where the plants or seedlings have been plunged. The requirements of the plants must be anticipated in all their stages. Before planting can be performed an efficient bottom-heat should be secured, with a view to its being lasting, as, for example, where it can be arranged to employ fresh linings to renew the heat. I am, of course, now referring to houses or pits which are only furnished with hot-water pipes for supplying top-heat, and where bottom-heat has to be provided by means of warm dung and leaves. The compost for growing Melons should be rich and well prepared. Our soil has been cut since last August, and was taken from a good pasture and only cut an inch thick. For every four layers of sod there is one of dung of nearly equal thickness. To this will be added a small proportion of wood-ashes and road-scrapings. It was taken indoors before the thaw, and will therefore be in good condition when it is required for planting. *W. Hinds.*

### Cucumbers.

That it is beneficial to Cucumbers to allow the temperature to fall several degrees below the orthodox figures recommended for them in winter, rather than have recourse to over-heated pipes there cannot be a doubt. The temperatures (which, I may add, could not be avoided) registered in our Cucumber-house during the late severe weather—sometimes falling below 50°—would alarm a good many, and yet our plants are pushing forth young growths freely since the weather changed for the better. Experience points to an arid atmosphere, created by an over-heated surface, as being injurious to the well-being of Cucumbers, and more exhaustive in its effects upon them than a few degrees of cold below the recognised mean temperature in which plants flourish in ordinary weather. Plants that have been at a partial standstill should, therefore, be encouraged to make growth rapidly by keeping the atmosphere constantly moist on bright days, and all superfluous young fruits as well as male flowers should be regularly removed. With respect to watering at the root, it is of the first importance always to ascertain the condition of the soil to its full depth before applying water at this season. A dry surface may indicate nothing more than the neglect of sufficient sprinklings to keep it moist. The top-dressing of horse droppings, recommended in a former chapter, has the virtue of retaining moisture and exciting root-action, and except in the case of vigorous growing plants (which I suspect are not very numerous at present) heavy root-waterings will not be necessary for some time to come. See also to the preparation of soil for planting out young plants raised from seeds as directed for Melons, and give them free ventilation to insure a sturdy and robust habit. *W. Hinds, Canford.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | Feb. 7 | Sale of Lilium auratum and Imported Orchids, at Stevens' Rooms. Sale of Lilium auratum and English grown Lilies, at the Auction Mart, by Protheroe & Morris. |
| Tuesday, | Feb. 8 | Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11; Scientific Committee, at 1; Annual General Meeting, at 3 P.M. |
| Wednesday, | Feb. 9 | Sale of an Importation of Odontoglossum Alexandræ, at Stevens' Rooms. |
| Thursday, | Feb. 10 | Sale of Imported Orchids, from Mr. Sanders, at Stevens' Rooms. |
| Saturday, | Feb. 12 | Sale of Roses, Fruit Trees, Shrubs, &c., at Stevens' Rooms. |

THE flower show season will soon be upon us, and we may anticipate the monotonous round of big shows and little shows—fresh enough, no doubt, to those who see but one or two in a year, as they see the pictures or hear an opera; interesting, of course, to the professional gardener, anxious to see what his brethren can do in their art; but withal, monotonous and wearisome to those who have no special interest in them. Can there be anything more depressing and dismal, for instance, to any but professed rosarians than a Rose show? Is it possible to degrade so lovely a flower more effectually than by thrusting hundreds of them in long boxes all of a row? To those who wish to compare the flowers, point by point, this arrangement is, no doubt, the most convenient, and, therefore, for such purposes of comparative study and judicial appreciation, it is doubtless the best. But the great mass of Rose lovers, apart from the handful of specialists, love to see their favourites in less formal and more natural guise, and there seems no reason why, with a little trouble, the requirements of both classes should not be met, or some compromise adopted which would not be objected to by the specialist while it would greatly enhance the pleasure of the general visitor. But, it will be said, these shows are for the initiated, not for the general public. To this it may be replied that the general public furnishes the funds in no stinted proportion, and therefore their interests and tastes should at least be consulted. Moreover, one object of such shows is supposed to be the education of the masses. Again, we are quite sure that even professed gardeners interested in their work would gladly welcome an attempt at conveying a little more information than is usually afforded at flower shows. The experienced Orchid grower, to take one illustration, may not need any information in his speciality, though it is certain that even he might occasionally like to have the chance of picking up information about the plants he is so familiar with; but it may well be supposed that if he is proficient in one department he is less so in others, and would be grateful to gather knowledge by means of the pleasant medium of a flower show if he could do so. At most flower shows nothing in the way of information is afforded beyond the name of the plant, often misspelt, and the name of the exhibitor. The schedule and catalogue, where there is one, contain no more information; no details are, as a rule, afforded as to methods of cultivation, the means employed, the time occupied, all of which would be most instructive to those whom shows are specially supposed to benefit—rarely any information is vouchsafed as to the kinship and structural peculiarities of the flower, and only occasionally any indication of its native country.

A pretty sight—a show in fact—is all that is in general aimed at. Results are displayed but, in general, no indications are afforded of the manner in which they are arrived at. This may be all very well for once, but when the show is repeated month after month intelligent sightseers long for something more. They are not satisfied with mere gazing and gaping, but they feel the want of impressions that shall outlast the pleasurable sensations of the moment and offer them something more substantial to dwell on in the future. If one object of a flower show be to diffuse a taste for horticulture, it should not only aim at attracting transient attention and admiration, but it should also afford some clue to the onlooker as to the course to be pursued in order to attain, in his degree and according to his means and his inclinations, the same objects. Practical Manchester, whose autumn show promises to be the exhibition of the year, might take this matter into consideration and see whether if not in all, at least in some one department an effort might not be made to convey to the gardener and to the amateur some more detailed information as to modes of culture, the characteristics, uses, native countries, and other attributes of plants. Of course we are prepared to hear that it cannot be done—that the time is insufficient, that the gardeners do not want it, that the public do not care for it, and other objections; but the same thing is or was said as to grouping plants for effect. Every year shows an improvement in this respect, as will be admitted by all those who remember the long green baize benches with rows of formal Azaleas and specimen greenhouse plants, which at one time were considered to constitute the correct method of arranging flowers at a flower show.

At Nancy last year, as we learn from a *brochure* lately sent us by M. Joly, a successful attempt in the direction we have indicated was made. The main object of the exhibition in the pleasant town just named, was to furnish information to the public on geographical matters and, as connected therewith, on the origin, native country and history of the plants exhibited—to make known to the gardener the altitude and climatal conditions under which the plant naturally grows, and thus to furnish useful data to the cultivator, and enable him to avoid disappointments in his attempts to grow the plants under artificial conditions. In like manner groups of plants as models for decorative art, jewellery, pottery, designs for fabrics, and so on, were so disposed as to indicate suitable forms and appropriate decorations. Had the artist of one of the designs for one of the Christmas numbers of our illustrated periodicals been more conversant with his material, he would hardly have placed an Azalea in full bloom by the side of a sick child on a Christmas morning. At Nancy, to continue our illustration, Japanese plants were placed side by side with Japanese pottery and other objects, so that the use made by the Japanese designer of particular plants could be illustrated, and hints for local "colouring" afforded to a French designer. In the catalogue of the exhibition we are told each plant had its number, and under this number information was given as to the latitude, longitude, and region where the plant grows, its name, synonyms, the year of its introduction, the name of the collector by whom it was introduced, the method of cultivation, uses, &c.

A translation of one entry in the catalogue will suffice to show the general character of this unique exhibition:—

CENTRAL AND EASTERN ASIA.

150. Chamærops Fortunei, *Hook.*; *C. excelsa*, Martius (not of Thunberg).—The Hemp Palm. (Palmaceæ.)

Uses:—Ornamental and Industrial. Mats, cordage, hats, and waterproof clothing.

Native country:—China and the Himalaya Snowy Valley (Tché-Kiang). Pére A. David, 1868.

Cultivated on the eastern coast of China (between 25° and 35° lat.), in the isle of Chusan (30° lat.); Rob. Fortune; at Pekin, protected in winter, and at Canton without shelter. Père A. David.

Introducer: Robert Fortune. Commissioned by the Hort. Soc., Lond., to collect in the N.E. Provinces of China (1843—45), and 1853—1856.

Specimens exhibited by M. Crousse, nurseryman, at Nancy.

Seedlings presented by M. Gallé, from seeds obtained in the open air at Segrez (Seine and Oise), on plants which lost in 1870-71 all their leaves, and which produced fruit in 1878.

Leaves presented by M. Gallé, cut from a specimen grown in the open air at Nancy, with protection, in 1879-80.

—— Adiantum farleyense. — The annexed illustration (fig. 32), prepared from a photograph kindly sent us by Mr. A. Ambrose, of Long Ashton, near Bristol, represents what is believed to be the first plant that was imported into this country of this noble Fern, and which is in the possession of the Rev. H. A. Daniel, Manor House, Stockland, near Bridgewater. It is a grand specimen in a 20-inch pot, grown in a compost the one half of peat and the other of loam, sand, charcoal and rough potsherds. During the winter of 1879-80 the thermometer in the fernery stood at 45° several times during the severe frost, but the plant did not suffer in the least from the low temperature. The history of this Fern will be founded at p. 730 of our volume for 1866.

—— Garden Aspects. — Literally perhaps not, but metaphorically the "voice of the turtle is once more heard in the land;" for if not the turtle, at least the birds sing again and twitter amongst the trees, and Nature is herself once more. If the "winter of our discontent" has been short it has also been sharp and decisive, leaving behind its mark on many things. But, fierce as was the cold and biting the blast, deep the snow and intense the frost, the thaw brings some amends, for it reveals the face of Nature once more after its temporary veiling from our view, with all the charms that the season can give, and in much of that green freshness in which we so much delight. The earth covered in snow presents a novel but none the less a monotonous aspect; we are momentarily charmed, then soon tire, and eagerly sigh for the time when the frozen vapour shall disappear, and the fair earth be once more seen. But with the departing frost and the fleeting snow, with the softer air and the balmy southern breeze, come anxious thoughts for favourite plants—and, indeed, for all the denizens of our gardens. Physically to us a fortnight's covering of snow would bring death, but plants seem to enjoy the unwonted coating of the cold element, and presently appear with an aspect of health and vigour that gives us ease of mind as to their condition. Well indeed has it been for all that found from the terrible wind and frost the friendly protection of the snow. How it has fared with plants that have not been so sheltered time will soon tell, but many things have no doubt suffered, and perhaps none more so than such diverse things as Tea Roses and Broccoli. It was just where the protection was most needed for these and similar things that it was least found. Those gardeners who laid their Broccoli as flat as well could be, must find in the safety of their crops now a full reward for their previous labour. No doubt the tale of woes and losses will be made up presently, but it is not probable that it will include any low growing plants; even Antirrhinums, Pentstemons, and Stocks, usually killed outright by such weather, seem little the worse for their snowy immersion. Certainly we are not yet out of the wood; the winter is not over, but we may well expect that such a visitation of cold will not come again this season.

—— Improvements at Sunderland.—We are informed that Messrs. Little & Ballantyne, Knowefield Nurseries, Carlisle, have been appointed by the Town Council of Sunderland to carry out the formation of the grounds and planting, also the rockwork and waterfalls at West Burn Fields Park and Recreation Ground. The work will proceed under the direction of their landscape superintendent, Mr. F. Spirey.

—— National Rose Society. — We are informed that there is every prospect of a most successful show being held at Sheffield this year. The local authorities (besides the contribution of 100 guineas) have started a special prize list amounting to £130, comprising four Silver Cups of 10 guineas each, and liberal prizes for Roses in pots, Roses grown within thirty miles of Sheffield, and bouquets of Roses. One of the cups will be given by the Mayor, another by the Master Cutler, and another by the President of the Botanic Society.

—— Institution of Surveyors.—The next meeting will be held on Monday, when a discussion will take place on the paper read by Mr. Joseph

Lucas (Associate) at the last meeting, entitled "Rural Water Supply, with special reference to the objects of the Public Health (Water) Act, 1878."

—— Cyclamen coum.—For nearly three centuries this beautiful little South European plant has been known in British gardens. Some weeks before the late snowstorm several plants, somewhat varying in colour, &c., were blooming freely on one of the pieces of rockwork at Kew, and their lovely purplish-red blossoms remained for some time apparently uninjured, even with a carpet of snow beneath them. The species, too, is interesting as being one of the earliest plants figured in the *Botanical Magazine* (tab. 6), a work which has already existed upwards of a century.

—— The Frost. — A Cornwall correspondent asks what the poor plants are to do? Within four days they experienced more than 20° of frost, while on the 26th the thermometer was as high as 50°, and the bees were at work!

—— Insurance against Hailstorms.—From the thirty-seventh annual report of the General Hailstorm Insurance Society, Norwich, it appears that the most destructive hailstorm in 1880 was that of June 19, when the farmers in the Eastern and Midland Counties suffered very severely; in fact, since the great storm of July, 1859, no other storm has caused such complete devastation. The business of the Society now extends over thirty-one counties, and in the past season it has increased in fifteen counties, but has slightly decreased in sixteen, especially in Bedford and Huntingdon; arising probably from an alteration in the rates from 5*d.* to 8*d.* an acre, rendered necessary in consequence of the losses in these two counties having for a long period exceeded the premiums by nearly 100 per cent., thus proving that the district was more than usually subject to hailstorms. During the entire season thirty hailstorms in seven counties were registered by the Society as damaging crops insured by them.

—— Lamium galeobdolon variegatum. — The Yellow Archangel of the chalk and limestone copses of England is one of our native plants which is certainly handsome enough to merit a place in the herbaceous border of any garden. The variegated form here noted is now conspicuous on some rockeries on account of the pretty blotches of white on the purplish-bronzy leaves of its long, prostrate, stoloniferous shoots.

—— New Potato-digger.—Mr. John Kirkpatrick, of Dumfries, has during the last year patented certain improvements in Potato-diggers or lifters, the objects of which are to separate the mould from the Potatos, and to deliver the latter in a line. To the framing machine is attached a shaker or screen arranged to act with a jogging motion; this shaker is placed in a line with the prongs, and the end nearest the tail of the machine is at a lower level than the end near the front, being very near the ground. To give the requisite tilting motion a tilt-wheel may be employed, or a chain-band operating an arm attached to the shaker. When the machine is in action the Potatos are thrown upon the shaker, by the motion of which the mould is separated, and falls through the screen, while the Potatos run down from the shaker and are delivered in a line upon the field ready for gathering.

—— Fuchsia procumbens.—This exceedingly interesting species of Fuchsia is fairly well known in gardens now for its peculiar trailing habit and singularly pretty but inconspicuous flowers, which have been not inaptly likened to brown shrimps. We have not, however, seen a more quaint or beautiful specimen of it than one we saw at Oxenford Castle last

Fig. 32.—A fine Adiantum farleyense. (see p. 176.)

month. This was a plant suspended in a small basket or pot, and was covered with ripe fruit. The leaves had all fallen off, so that the berries, which are about the size of small beans, and of a purplish-crimson colour, shone forth splendidly, forming a truly charming novelty amongst berried plants.

—— Flora of Tasmania.—Baron Von Mueller has published, in the *Proceedings* of the Royal Society of Tasmania, a complete list of the flowering plants and Ferns of Tasmania, with references to Hooker's standard Flora of the island. Since the publication of that work fifty species have been added to the list, and it is considered that at least as many more remain to be discovered.

—— Vine Disease in Jamaica.—A notice was given in this journal, September, 1880, p. 400, respecting a disease in Vines at Jamaica. Mr. Morris has favoured us with further specimens and information, and it now appears that the Uredo has been published by Thumen in his *Fungi of the Vine* (*Pilze der Weinstockes*), from specimens gathered in South Carolina. Dr. Cooke, to whom we are indebted for this information, is satisfied that the two plants are identical. There is however great doubt as to the genus, as the species have very much the character of Lecythæa. There is no doubt on the contrary that a new species of Æcidium is connected with the disease, and as it seems to be very virulent it is to be hoped that this pest may not be introduced, like the rust of the Hollyhock, into Europe. The Æcidium is very minute, and appears to have the power of exhausting the chlorophyll in those portions of leaf on which it is seated. Further observations are needful to determine whether the Uredo is connected with Æcidium as Uredo rubigo with the rust of the Berbery. This is not the whole of the mischief as to the Vines at Jamaica. The young shoots die, as in the black death of America and the subcuticular tissue swells, bursts out and forms cup-shaped ragged warts. The same thing takes place even in the veins of the leaves. The soil on which the Vines grow is white with mycelium, and we may therefore safely conclude that its presence is the cause of the disease. In portions of the stem minute Phoma-like specks occur as in the Australian disease, but as no spores could be found it is impossible to say that they are identical. It was mentioned before that the spores of a Septoria* had been found on examining the leaves. We have now specimens which show that all the spots are not due to the Æcidium, as some of them clearly arise from the attacks of a red Fusisporium with long linear sinuous spores; so that we have another Vine pest. These spots are different from the brown dead spots produced by the Æcidium. *M. J. B.*

—— Calceolaria fuchsioides.—This is a very singular, distinct, and beautiful species of Calceolaria. At Dalkeith Mr. Dunn had several plants in flower last month, and spoke highly of it as a winter blooming plant. In foliage and growth it is very like some of our common Fuchsias, the flowers are of a beautiful pale yellow, not unlike those of C. amplexicaulis. Warm greenhouse temperature seems to suit it. If it will only flower freely enough it will be very useful.

—— The Manchester Great International Horticultural Exhibition.—There are some things that may succeed by accident, but horticultural shows are not amongst them; and it is generally found that where the promoters are most in earnest the exhibitors are the most successful. Of this the Old Trafford annual gathering offers a marked example, and in the schedule which the Society have now issued for the Great International Show, to be held on August 24, 25, 26, and 27, they far outstrip anything that has ever before been offered as an inducement to incite fruit growers to put forth their strength in earnest, whilst plants, cut flowers, table decorations and vegetables are handsomely provided for. In the open class for collections of fruits the prizes amount to £125; ditto, for fruiterers, £63; for Grapes alone £106 are given. Pines, Peaches, Nectarines, Apricots, Plums, Pears, Apples, &c., have £182 allotted to them; fruit trees in pots, £30; fruits of foreign growth gold medals and money prizes to the value of £143; cut flowers, bouquets, and table decorations, £208; besides the prizes given by the National Rose Society and the Carnation Society, who each issue separate schedules for exhibitions of their special flowers to be held at the same time; plants, £638; vegetables, £113. Amongst the classes are the following:—Fifteen kinds of fruit, £20, £15, £10; twelve kinds, £15, £10, £5; nine ditto, £10, £6, £4; six ditto, £7, £5, £3; twelve kinds of hardy fruit, £7, £5, £3; ten varieties of Grapes, one bunch of each, £12, £8, £5; six varieties of Grapes, one bunch of each, £6, £4, £2; six Pine-apples, £10, £6, £4; three dishes of Peaches, £5, £3, £2; three dishes of Nectarines, £5, £3, £2; three dishes of Apricots, £5, £3, £2; two Melons, green-fleshed, £3, £2, £1; two scarlet-fleshed, £3, £2, £1; twelve kinds of Pears, two fruits of each, £4, £3, £2; dessert Apples, twelve kinds, two of each, £4, £3, £2; culinary Apples, twelve kinds, two of each, £4, £3, £2; fruiterers' collection of fruit, £15, £12, £8; ditto, ten kinds, £6, £4, £3; twenty sorts of vegetables, £10, £6, £4; ten sorts, £5, £3, £2; twenty-four varieties of Potatos, £7, £5, £3; twenty miscellaneous plants, flowering and fine-leaved, £20, £15, £10; groups of miscellaneous plants, arranged for effect, occupying a space of 20 feet by 10 (amateurs), £20, £15, £10, £5; ditto, occupying a space of 30 feet by 15 (nurserymen), £20, £15, £10, £5; twelve new plants, £12, £8, £5; dinner-table, laid out for twelve people, £15, £10, £6, £4. Then there are the prizes offered by the General Horticultural Company:—For six kinds of Grapes, two bunches of each, 30 guineas and 20 guineas; and for twelve dishes of fruit, 30 guineas and 20 guineas; the Veitch Memorial prizes, ten of £5 each and Medals offered for various subjects. Special prizes are also given by Messrs. Sutton, of Reading; Dickson, Brown & Tait, Dickson & Robinson, and G. & W. Yates. The cottagers' prizes amount to £28. These are the principal classes of the schedule, which in all number 237, the prizes reaching a total of £2000. We sincerely hope that the weather may be fine, as we feel sure this is all which is needed to crown the efforts of the Society, and bring together such an assemblage of gardeners and others interested in gardening as has not been since the Great International in London in 1866.

—— Brachysema lanceolatum.—Flowering freely as it does during the dull winter months, and requiring but little fire-heat, this Australian leguminiferous shrub deserves a word of praise. Although of rather straggling habit, its lanceolate leaves, dark green above with silvery pubescence beneath, are not without beauty; the blossoms, which are produced in axillary clusters, are rich scarlet in colour. A good plant, trained against one of the walls, is now in bloom in the winter garden at Kew.

—— Prizes for Asparagus.—With a view to improving the culture of Asparagus throughout the United Kingdom it is proposed by Mr. William Robinson to give a series of annual prizes, extending over a period of seven years. These prizes will be given in London, Dublin, Edinburgh, and the North, South, and West of England in different years. The first exhibition will be held at Tunbridge Wells, in the horticultural tent of the exhibition of the Bath and West of England Agricultural Society, which opens on June 6 next. The following prizes are offered for the first competition, and are open to growers in any part of the United Kingdom:—For gardeners in private places.—For the best bundle of Asparagus grown by the exhibitor: 1st prize, £4; 2d, £2 10*s.*; 3d, £1 10*s.*; 4th, £1. The bundle of Asparagus is to consist of sixty heads. For amateurs not employing any regular gardener.—For the best fifty heads, grown by the exhibitor, £2 10*s.*; 2d, £1 10*s.*; 3d, 15*s.* For cottagers.—For the best twenty-five heads grown by the exhibitor, £1 10*s.*; 2d, £1; 3d, 10*s.*; 4th, 5*s.* For the market grower in any part of the United Kingdom who shall exhibit the best three bundles, each containing 100 heads, £5 5*s.* This prize is offered by the Bath and West of England Society. For the market grower in the county of Kent who shall exhibit the two best bundles of Asparagus, each containing 100 heads: 1st prize, £3 3*s.*; 2d, £2 2*s.* These prizes are offered by Mr. S. Spalding.

—— Iris japonica.—A very handsome old-fashioned Irid, which has long been known in gardens, but is not nearly so frequently grown as it should be. In warm, well drained, sheltered spots in the open air it will often succeed fairly well, but as it is one of the species which thrives well and flowers freely in pots, cultivators would find it repay them for any trouble if they gave it house-room and turned it to account for conservatory or cool-house decoration. In the cooler portion of the Succulent-house at Kew some nice plants are now flowering, and the broad glossy handsome foliage, and delicately coloured pale blue and yellow blossoms, combine to form a very pleasing effect. The species is found in books and gardens under the name of Iris chinensis, I. fimbriata, and Evansia chinensis.

—— Decorative Pelargoniums Flowering in Mid-Winter.—Mr. Cannell and others have made us well acquainted with Zonal Pelargonium flowers at all seasons. Indeed, they seem to be fully finer, and are certainly more attractive, during the dark days of winter than in summer. But the Pelargonium proper seemed to baffle growers to do it at all well in the off season. In the gardens at Oxenford Castle during the late snowstorm Mr. Anderson had several dozens of nice little plants of the decorative type in fine flower, which were exceedingly pretty, and such an unusual sight deserves special mention.

—— Royal Seedsmen.—Messrs. James Carter & Co., having received the Royal command to attend at Marlborough House, that firm enjoys the distinction of a Royal warrant appointing them seedsmen and nurserymen to His Royal Highness the Prince of Wales.

—— Erica codonodes.—Mr. Boscawen sends us a bunch of this beautiful Heath, figured in *Gardeners' Chronicle*, p. 463, vol. vii. n.s., gathered from the open ground uninjured by 20° of frost, though some of the branches were broken off by snow.

—— The Insect Pest (Anisoplia austriaca) in Russia.—From reports of the British Consuls at different Russian ports, it seems that the so-called black beetle (Anisoplia austriaca) has continued its ravages in many parts of the country with serious results. Thus from Berdiansk the pest is said to have appeared in some districts, and, as usual, created great destruction; besides which "an insect of the caterpillar tribe caused sad havoc amongst the Linseed, finding its way into the plant the moment the seed was formed. It effectually demolished entire crops, and not being noticed by farmers until near harvest time, proved a severe disappointment and loss." From Nicolaieff a very interesting report comes, from which it appears that the insect first appeared in 1865 in the Melitopal district. Nothing is known how or whence it came, as it had never been heard of in any other part of Russia or bordering countries. At first the insects appeared in small numbers, but latterly they have increased to a marvellous extent, as will be gathered from the following extracts from Mr. Vice-Consul Wagstaff's report. He says they fly from ear to ear of the Wheat, and do not quit it until it is destroyed, and for this reason it is difficult to drive them away. There are on an average seven females to one male beetle on an ear of corn, or about 1,200,000 in an acre. To convey a clearer idea of the alarming extent of this plague, in one district 10 bushels of beetles were collected from 1 acre of Wheat. It has been ascertained that the cereals are destroyed by the beetles during the first fifteen days after their appearance, that is, about the commencement of July. They attack the ears when they are half ripe, and continue to consume them until the grain becomes thoroughly hard. It appears that when young they do not attack Barley or Oats. These insects are capable of making long flights, not only from one district to another, but even from one Government to another, inasmuch as they are now to be found in the Governments of Kkerson, Bessarabia, Tauride, Ekaterinoslav, Poltava, and Kharkoff. A portion of them have penetrated the interior as far as the Government of Witebsk, and some have shown themselves in the Cossack territory, bordering on the River Kuban. It is stated that in the month of July a mass of these beetles were discovered in the sea near Ochakoff; they were so thick that it was difficult to pull a boat through them. They were gradually washed on shore, and the inhabitants, instead of taking prompt measures, allowed them to remain there. When at last they recognised the danger with which they were menaced, persons were sent with

* The Septoria is probably the same with S. ampelina, B. and C., but the spores are rather sinuated than curved.

horses and casks to destroy them, but it was too late —about three-fourths had recovered strength and flown into the neighbourhood, and from that date a new generation will be formed in that district. The plan hitherto adopted in some districts for the destruction of these insects has been worse than useless; thus we read that in Taganrog, when the insects are seen blackening the ears of corn by their countless numbers, the usual means taken to remove them are by stretching a rope across a field and men at each end being employed in dragging it over the corn, thus shaking off the insects as well as a large portion of the ears. By this means the insects fall to the ground, but in a very short time they resume their places and their ravenous repast. It is pointed out that the prompt eradication of this pest is a question of vital importance, not only to Russia but to the whole of Europe, as Russia supplies so many countries with Wheat.

—— The Parnell Peach.—The name of Parnell at the present time is not universally associated with agreeable ideas, but there is a Peach, it seems, bearing the name which is described to us as a "mighty good Peach." It was raised, we learn, in Alabama by a son of the Irish M.P., and the name originally proposed for the fruit was "Home Rule." Many people will think they have heard enough of Parnell; but that will not prevent the Peach which bears his name from obtaining an appreciative reception at home or abroad.

—— Anthurium Scherzerianum.—Some time since we gave an illustration of a peculiar variety of this plant, in which almost every one of the little flowers which make up the spadix was furnished with a small spoon-shaped bract. We have now before us a precisely similar condition in the white variety (Williamsi), sent us by Mr. J. Child, of The Gardens, Garbrand Hall, Ewell.

—— The Weather.—General remarks on the weather during the week ending January 31, issued by the Meteorological Office, London:—The weather during this period has undergone a very decided change. At the commencement it was very cold and wintry, but on the 26th warmer weather set in over Ireland, and spread to all our stations, accompanied by occasional showers of rain, with mist or fog. A brilliant display of aurora was seen in nearly all parts of the kingdom during the evening of the 31st. The temperature has been much higher than of late, but, on the whole, has remained below the mean for the time of year, the deficit ranging from 3° in "England, S.W." to 8° in the "Midland Counties" and "England, N.E." This is largely attributable to the fact that the thermometer was extremely low during the first two days, when it fell to 1° at Churchstoke and Hillington, to 2° at Durham, and 4° at Geldeston, Silloth, and Markree. In all districts the minima were below 15°. The maxima occurred generally on the 31st, and were as high as 52° or 53° over the southern parts of England and Ireland. The rainfall was equal to the mean in "England, E." and "England, S.W.," and slightly more in "England, S.," but in all other districts it was less than the mean for the season. Bright sunshine shows an increase in the north-eastern districts, but a decrease elsewhere, the percentage of total possible duration ranging from 37 in "Ireland, S." and 29 in "Scotland, E.," to 10 in "Scotland, W." The wind at the commencement of the period was westerly in Scotland, and moderate from the eastward elsewhere; but towards the evening of the 26th a fresh or strong easterly breeze (reaching a gale in some places) set in on our south-west coasts, and soon extended to all parts of the kingdom, and during the remainder of the week moderate or fresh southerly breezes were experienced very generally.

—— Gardening Appointments.—Mr. Alexander Angus (late Foreman in the Fruit Department, Royal Horticultural Society's Gardens, Chiswick), has been appointed Head Gardener to C. H. Wilson, Esq., M.P., Warter Priory, York.—Mr. G. Kinson, for the last two years Foreman to Mr. Curtis, Lees Court, Faversham, has been appointed Gardener to H. Simonds, Esq., Barton Court, Kintbury, Berks.—Mr. George Hardy, Foreman to Mr. Milne, at Vale Royal, Cheshire, has been appointed as Gardener and Manager to W. Cunliffe Brooks, Esq., M.P., Forest of Glentanner, Aberdeenshire, in succession to Mr. Daniel Thomas, who is retiring after thirty-five years' service.

## ABIES (OR PICEA) GRANDIS.*

We are now enabled to give an illustration of the true Abies grandis, from a photograph taken from a native specimen collected by Dr. Engelmann and his associates, Prof. Sargent and Dr. Parry. From this and other specimens it is satisfactory to find that the tree usually grown in this country as Abies or Picea grandis is correctly so named. The illustration will serve to show the general character of the fertile branch and cone, and the following condensed extracts

Fig. 33.—Abies grandis. Section of leaf slightly magnified.

from a previously published note of Dr. Engelmann's in relation to A. amabilis (*Gard. Chron.*, Dec. 4, 1880, p. 720), will suffice to recall the more prominent botanical characteristics:—

"A. grandis is common on the low lands along the rivers in Oregon, Washington Territory, and the southern parts of British Columbia, and is sometimes found on the mountains. It has light coloured distichous leaves in 2—4 ranks, shorter on the upper side of the branchlets, without stomata above, deeply emarginate on the sterile branches, obtuse or very shortly cuspidate on the fertile branchlets, acute or acuminate only on the leaders; cones 3—4 inches long, 1½ inch, or scarcely more, in

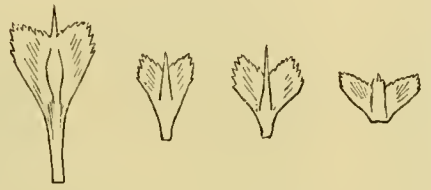


Fig. 34.—Bracts of Abies grandis.

diameter, apple-green, and usually less resinous than in A. amabilis; scales much broader than high, their bracts about one-third the length of the scale, obcordate or retuse mucronate, light green; wings of seeds hatchet-shaped, wider than long (fig. 35)."

To this description of the tree in its native country, where we are told it sometimes reaches 280 feet in height, we may add that the young trees in this country have an elegant pyramidal habit, with wide spaces between the whorls of branches. The bark of the shoots of the year is slightly hairy, and pale cinnamon-brown, that of the second year being glabrous, olive-brown and marked with circular leaf-scars. The leaves on the sterile shoots are in 2—4 ranks,

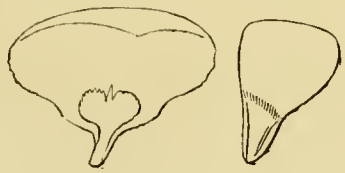


Fig. 35.—Abies grandis; scale, bract and seed.

all spreading horizontally at nearly a right angle from the shoot, olive-green and destitute of stomata above, glaucous beneath, the lowermost 1¼ inch long, the upper ones half that length, all linear-oblong, obtuse, slightly notched at the apex, more or less twisted at the base, midrib channelled above, prominent beneath. On making a thin slice across the centre of a leaf and examining it under the microscope the leaf-section (fig. 33) is seen to be oblong, obtuse, depressed in the centre above and generally prominent beneath along the midrib. The strengthening cells beneath the epidermis (hypoderm cells) are few and scattered, on which account the leaves have a flabby feel, unlike the stiff texture of leaves where these cells form a continuous layer. The palisade cells are well marked above, and there are two resin canals, R C, just beneath the epidermis on the lower surface. MacNab describes these canals as surrounded by strengthening cells, but these were not present in the comparatively few specimens we have examined. The shape of the cones is sufficiently indicated in the figure. Engelmann describes describes them in the fresh state as apple-green, but in the dried state they are pale cinnamon-brown.

This is certainly one of the handsomest of Firs, and is fortunately hardy in this country, though Mr. Fowler, in his notes on Conifers published in this journal, 1872, says it does not bear the buffeting of winds well. Engelmann speaks of it as probably the largest Fir known, and as constituting in Oregon one of the most important timber trees, though the wood is described as white, soft, and coarse-grained. All the collectors describe it as specially growing in valleys and along the alluvial banks of rivers.

The peculiar arrangement of the short leaves spreading horizontally, generally in four appressed rows, two on each side of the shoot, the leaves of the upper rows being nearly half the length of those of the lower rows, furnishes a ready means of distinguishing this fine species in gardens. In the A. lasiocarpa of gardens = concolor var., the same relative disproportion in the length of the upper and lower rows of leaves respectively is sometimes apparent, but in lasiocarpa, hort., the leaves are very much longer than in the true grandis. The tree grown in many nurseries as sp. from Vancouver's Island, belongs to the same species. The true amabilis has been confounded in some gardens and in some books with grandis, but the two are abundantly distinct, as will be readily seen by comparing the illustrations of the true amabilis, p. 725, vol. xiv., with that now given of the true grandis. *M. T. M.*

* Abies grandis, Lindl., in Penny Cyclopædia, i. 30; Forbes, in Pinet. Woburnense, tab. 43 (cone represented from the dried specimen as light brown); Engelmann, in Botany of California, vol. ii., 1879, p. 118; Gard. Chron, Nov. 29, 1879, p 684, and Dec. 4, 1880, p. 720; Sargent, Cat. For. Trees, N. Amer., p. 67.
Pinus grandis, Dougl., in Comp. Bot Mag, ii., p. 147; Parlatore, in DC. Prod. xvi., p. 427; MacNab, Proc. Roy. Irish Acad., ser. 2, vol. ii., p. 679.
Picea grandis, Loudon, Arboretum, iv. 2341; Encyclopædia of Trees and Shrubs, p. 1045, figs. 1957, 1958 (cone from Douglas' original specimen); Gordon, Pinetum, ed. 2, p. 217.

## Home Correspondence.

The Gardeners' Royal Benevolent Institution.—Mr. Clarke has ably exposed a glaring injustice in connection with the electing of pensioners to the above Institution. It is a grievance which I for some years past have felt ought to be removed, as it was once very forcibly placed before me. When soliciting a brother gardener to contribute to the funds of the Institution with a view to making a slight provision for old age, I was met with this observation—"Many things may happen in the space of fifteen years, and if through illness, loss of situation, or other causes the annual subscription—after being paid perhaps eight, ten or twelve years—should be discontinued, I should stand no better chance of receiving any benefit from its funds than one who had never subscribed a penny." Of course it was impossible to contradict this, and I am fully persuaded that this state of things has been, and undoubtedly is one great reason why this Institution has not become more popular amongst members of the craft. In consequence of recognising at that time the injustice of such a state of things I fully resolved never to vote for a non-subscriber when there was one or more candidates for election who had been subscribers. I presume, therefore, by Mr. Clarke's own showing, that for the future he will use his votes in a corresponding way; and if members generally voted in like manner it would be the means of bringing in a large accession of subscribers. Still such conditions ought not to be left to the caprice or otherwise of members. When a sometime subscriber is named on a list of candidates for a pension the justice of the case might be met by placing to the credit of such a candidate fifty votes for each year he subscribed to the funds of the Institution, so that the candidate that subscribed, say, five years, would start with a gain of 250 votes, thereby carrying out to the letter the wording of Rule 6, which specifies that "the object is to give a decided preference to those persons who have been contributing to assist others." *J. Ridout, Woodhatch Lodge, Reigate.*

—— I quite agree with the observations of Mr. Clarke with reference to the Gardeners' Royal Benevolent Institution giving the pensions to non-subscribers. I do not think it fair to the subscribers at large that outsiders should be permitted to reap the

benefit of its funds while others who have been contributing to assist the funds get the cold shoulder. I would not give my support to any non-subscriber whatever, because I do not think it fair to the man who has been subscribing for five, seven, or ten years, that he should be disappointed while another candidate who can command more influence stands the best chance. I think it ought to be made compulsory that every candidate who solicits the pension ought to be a subscriber to the funds of the Institution at least three years. *H. S. James, Farleigh Castle.*

—— I quite agree with Mr. Clarke that some alteration is wanted in rules that allow candidates, who have never subscribed a penny, to derive benefit from the funds of the Society before those who have done something to help others. I think no non-subscriber should be accepted as a candidate unless there are not sufficient candidates who have complied with the rules, or part of them. I find on looking over Rule 6 it is stated :—"The object being to give a decided preference to those persons who have been contribnting to assist others." It seems to me that this part of the rule has been passed over. *J. Bowerman, Hackwood Park.* [Our correspondents should remember that this is a "benevolent" association, assisted by a considerable amount of help from outside sources, and not a "benefit" society relying wholly on the means supplied by its own members. Where is the benevolence if no outside sufferer is to be benefited by the Institution? Still we agree with much that is urged on the other side, and the remedy lies with the voters themselves. Eds.]

**Effects of the Frost.**—The severe weather of the past three weeks just came in the nick of time, for previously everything was pushing prematurely, and this check to vegetation will put us right for fair sailing. The drifting snowstorm of the 18th inst. did its work with no sparing hand, for trees, shrubs, and vegetation generally were effectually enveloped with a good covering of snow, and with this armour prepared to do battle with the frosts that followed—sharp, continuous, and severe. On looking round little damage appears to have been done; this we must attribute to the steady thaw, absence of sunlight, and the protection of the snow. This is exemplified in a striking manner in the Broccoli quarters; the tall-growing varieties, as Knight's Protecting, Wilcove's Late White, Snow's Winter, &c., have their hearts bleached and decaying, emitting offensive effluvia, while those of dwarf kinds, recently ensconced in a good covering of snow, came out of the ordeal comparatively unscathed; notably is this the case with Sutton's Protecting, a dwarf, sturdy variety. The same remark also applies to part of a quarter that was "heeled over" in the autumn. Those so treated show a marked difference to those left untouched, the majority of which are severely injured in consequence of their heads peering above the snow's level, whilst their neighbours lying securely on their sides are comparatively uninjured. *J. J., Brenchley, January* 31.

—— Here, on the Cotswold Hills, 5 miles from Cheltenham, we had very severe frost from January 13 to 26, but on the 27th a general thaw set in. The effects of the frost are most disastrous. With the exception of Brussels Sprouts, Scotch Kale, and Sutton's Queen Broccoli, every green thing, including Sprouting Broccoli and Cottagers' Kale, is either killed outright or hopelessly injured, owing, no doubt, in a great measure to the previous mild weather. At the end of December the flower-buds on the common Laurels looked as they usually do at the beginning of March, and the consequence is that the common and Portugal Laurels are quite black. I fear that in such matters the obituary of 1881 will far exceed that of 1879. *Henry Eckford, Sandywell Park, Jan.* 30.

**Date Palms from Seed.**—I have repeatedly seen seedling plants of the Date Palm coming up outdoors, and considering the thousands of stones that are every year thrown away, I do not consider it an extraordinary circumstance, particularly as those which I have seen have generally been on or in the neighbourhood of what in Gloucestershire is called the "mixen;" but though I have often seen them come up, I have never known them wait for seven degrees of frost. *William Foster, Stroud.*

—— With reference to Mr. Dixon's note at p. 153, and your bracketed queries, allow me to add most certain testimony that seeds of the Date Palm do germinate in the open air. In the neighbourhood of large towns in the North market gardeners use house refuse largely as manure, and I have yearly seen great numbers of seedlings, thoroughly germinated and healthy, arise upon flats of ground on which this manure has been used. I am not at all doubtful about my facts, for not in one but in every case I have seen the seed or stone of the Date attached, as I have seen them in members of the same genus (Phœnix) in the propagating-houses in the Royal Gardens, Kew. I would add that the winter has always killed those which germinated in the open ground. *T. D. H.*

—— Referring to your queries at the end of my note in your last issue, I beg to say I am quite sure of the facts as there stated; but am sorry to add that the late severe weather has quite killed all the plants except one, which is protected by a bell-glass, and this has been much injured. I may also mention that I took one of the seedlings up and potted it, and it is now doing well in a warm greenhouse. The way in which I account for the seeds getting into the garden I may briefly state as follows:—I had a quantity of damaged fruit under my care; from amongst them I picked some fine Date stones, which I potted and placed in heat, but as at the end of three months they showed no signs of germination, I threw them into an ash-bin, the contents of which were ultimately wheeled into the kitchen garden for filling up a path then in course of formation, and amongst which they germinated. My employer (Captain Taylor), who has taken great interest in the plants, kindly encloses a note corroborating my statement. *M. K. Dixon, The Gardens, Glenleigh, near Hastings.*

**The Weather in Pembrokeshire.**—The weather has been most unusually severe here, and, considering that we are situated on an estuary of Milford Haven, and only a few feet above sea level, the frosts have been remarkably intense. The lowest readings are 21° of frost on the 14th; 15th, 28°; 16th, 31°; 17th, 25°; 20th, 20°; 21st, 30°; 22d, 27°; 23d, 21°; 25th, 24°; 26th, 25° of frost; and I am informed that in a more elevated part of the county the thermometer fell below zero. The amount of damage done to evergreens, &c., cannot at present be ascertained. Several species are severely injured. All the Cabbage tribe look as if they had been boiled. The farmers and cottagers have also lost a great many of their Potatos—some of them every one they had; so the frost appears to have been more disastrous to the Potatos than the disease ever was. The birds have perished in great numbers; starlings, blackbirds, redwings, and others could be picked up by the score. *Geo. Griffin, Slebeck Park.*

**Forcing Lily of the Valley.**—I have always found that to get very early flowers it is necessary to use bottom-heat, and, as your editorial note observed, well matured roots. They do well plunged in leaf-soil, or cocoa-nut-fibre refuse, and kept moist till the flower-spikes are well up, and then gradually brought to the light. I have always found the above plan succeed to get early bloom. *G. Wythes, Thirlestaine Hall Gardens, Cheltenham.*

**A Heavy Crop of Grapes.**—Permit me to give your readers the particulars of what I think may be justly termed a heavy crop of Grapes, grown in the gardens of S. Skinner, Esq., Throapham Manor, near Rotherham. The house is a three-quarter span in three divisions, each 30 feet long by 12 feet wide, with ten Vines in each, all young and vigorous. They have been heavily cropped from the first season of bearing, and for the season 1880 carried 660 bunches, or an average of twenty-two bunches per Vine, which weighed in the aggregate 6 cwt. Considering that the varieties are—with the exception of some half-dozen canes—Black Hamburgh and Foster's Seedling, I think the average per bunch is very good. The crop throughout was well finished, the berries being large and well-coloured, and when the whole were hanging were a grand sight to behold; of this vast number only about thirty bunches remain, cut from the Vines and bottled: these are keeping fairly well. Notwithstanding that the Vines bore such a heavy crop of fruit they made a splendid growth, short-jointed and well-ripened; and I congratulate Mr. F. Hatswell, Mr. Skinner's able gardener, on the skill he has displayed in handling them. *B. A.*

**Sawdust Manure.**—The editorial note at p. 151 explained exactly wherein the value of the so-called "sawdust manure" lies. It is called "sawdust manure" simply because sawdust is used to litter the horses with, instead of straw, for the sake of economy. As the droppings are scrupulously collected and thrown out as they appear, and the sawdust is not removed until it becomes thoroughly saturated, the general bulk is really horse-droppings; indeed, in my own sample the horse-droppings, quite whole and splendid material, were as 95 to 1. If, therefore, fresh horse-manure from highly-fed horses is of value we have it here, as well as the urine absorbed by the sawdust. *W. Earley.*

—— I think sawdust bears about the same relationship to manure that mustard does to beef; in both cases the latter is by far the most important. Further, I am of opinion that the less sawdust one puts into his garden the better. I have proof that plants do not like it, inasmuch as I have used it largely as a plunging material for hardy Ferns, herbaceous and alpine plants and small shrubs, and find it a most excellent protector; but it must be removed as soon as the spring comes, for many plants refuse altogether to grow through it as they will do through sand or cocoa refuse; in fact, it seems to kill the young slender shoots, and ultimately the plant altogether, and even when young shrubs are plunged in it they make no satisfactory progress so long as it encircles their stems. As a protecting agent against frost, and even wet—for dry sawdust will throw off a great deal of the latter—it stands very high; but in my mind it should never form an ingredient of the soil. Saturated with manure it would probably do no harm to a Rhubarb or a Cabbage plot; but my advice is, do not introduce it into herbaceous borders, or amongst choice plants or shrubs; if you do you will have cause to regret it. *T. Smith, Newry.*

**Lobelias.**—While on the subject of Lobelias, can any one tell me what L. Wallichii is, and where it comes from? I hope to flower a plant under this name this season, but would like to anticipate. *T. Smith, Newry.*

**Packing Cut Flowers.**—"G. G.," at p. 152, takes up the subject of packing cut flowers; he has, however, in my opinion, done very little to enlighten readers on the subject under discussion. I think every bouquet-maker knows the advantage of allowing cut flowers to stand a night in water before using them, especially hothouse flowers. The plan we adopt here is as follows:—We commence to gather the flowers at daybreak, avoiding all those which are full blown; we then cut the stems all one length, and tie them into small bunches, with a little damp moss round their stems, with the exception of Roses and other choice flowers, which we tie up singly, packing them into the boxes in an almost upright position. The boxes we use are made to hold two or more layers, according to the quantity we want to send, with a slip bottom between each layer of flowers. We also put a layer of Fern fronds both below and above each layer of flowers. We find Orchids, Stephanotis, Eucharis, Roses, Carnations, Lily of the Valley, &c., carry very well, while Zonal Pelargoniums, Calceolarias, &c., all fall to pieces when taken out of the boxes. We have always found those gathered and packed dry carry much better than when gathered wet; and nearly every one knows that flowers that are shut up close while damp very soon lose their colour. *J. C., Garbally.*

**Wanted, a Gardener.**—Mr. Thomas Reid (p. 118) expresses the feelings of scores of good men in the profession, viz., that few, if any, have yet attained to that state of perfection that would justify them to apply for the situation he alludes to as being advertised. Why, the list of requirements alone is sufficient to strike terror into a nervous man, not to mention what the serving of such an employer or employers must be. Don't I pity the man that has the misfortune to get the appointment; and yet he won't deserve to be pitied, for any man that would apply for such well deserves to be "Boycotted" by every gardener that has the least regard for his calling; and yet it may not be such a bad situation after all, for I see it is stated that some of the requirements "though preferred are not essential," but, curiously enough, this condition is attached to the one qualification of all others that employers look for in a good servant, viz., sobriety. May we hope from this circumstance that the whole advertisement is a hoax, or else charitably hope that when it was indited the writer was "half seas over"? This view of the matter is strengthened by the announcement of the munificent salary to be paid to the man who dares apply for and accepts the situation. Should my view of the matter be a mistaken one, and the advertisement be really *bonâ fide*, most sincerely do I trust that no gardener will lower himself by applying for the place. As for myself, though there is no immediate prospect that I shall need to walk the streets with a Cabbage on a pole, singing "I'm a frozen out gardener," yet I would ten times rather do that than accept the situation in question, even though I might be called either head gardener or manager. *W. W.*

**Early Snowdrops.**—The Snowdrop noted as being in flower at Chiswick on New Year's Day is an early-flowering form of G. nivalis, which originated here. It is usually in bloom from ten days to a fortnight before the common form of G. nivalis, and shows the early habit from the commencement of growth, being generally about 1 to 1½ inch in height when the common form is showing through the ground. Some years ago, when planting some of it along with other sorts for trial, I forwarded a few bulbs for the same purpose to Kew, Chiswick, the Rev. Harpur-Crewe, and Mr. P. Barr. [Our own specimens of the same variety in the open border were not open till February 1, but it was still the earliest of all. Eds.] From your note in your issue of the 22d it is satisfactory to know that the bulbs sent to Chiswick retain their early-flowering habit under altered conditions as to soil and climate. I sent at the same time bulbs of a pretty, dwarf, late-flowering variety we have here which usually flowers from ten days to a fortnight later than the common

Snowdrop. Mr. Harpur-Crewe dubs it "G. serotinus: a tiny late-flowering variety; quite a little gem in its way." *D. Melville, Dunrobin Castle, Sutherland.*

—— The following remarks, from last week's *Gardeners' Chronicle*, suggest a question which I should like to see discussed, that is, whether the Snowdrop does not flower earlier in Scotland than in England. The first patch I knew as a child was in front of our ben-house or parlour window at Old Scone in Perthshire. That used to be in flower on New Year's Day, as a rule. The paragraphs I refer to are the following:—"Early Snowdrops: Melville's early flowering variety of Galanthus nivalis was in flower on the rockwork at Chiswick on New Year's Day." A good proof of the justice of its claim to distinction is on p. 105. On January 4 the Scottish Horticultural Association held their ordinary monthly meeting in Edinburgh, of which you give an interesting report on p. 119, in which it is stated that Mr. Geo. Machray, Kelly Gardens, Wemyss Bay, exhibited Snowdrops which he had gathered on New Year's Day. It would be interesting to know if those gathered on the same day at points so widely separated as Chiswick and Wemyss were the same variety; also whether the Snowdrops grown in Scotland and those cultivated in England are the same. Assuredly all my early recollections of Scotch Snowdrops are associated with an earlier flowering season than in England. So much is this the case that when I first heard them called the Fair Maids of February, I objected, on the ground that they flowered in January. But of course a long residence in England has corrected these early notions, though it has not obliterated the early reminiscences of Snowdrops at the New Year. *D. T. Fish.*

**Is Cicuta virosa Poisonous?**—The notes on p. 147, which prove the harmless qualities of Æthusa Cynapium (Fools' Parsley), remind me of a wish to have the properties of Cicuta virosa (Cowbane) investigated. Being unwilling to try it upon myself, as I am the father of a large family, I shall be glad to send in season a supply of leaves and stalks to any one competent to make experiments with it safely. Some time ago I stated in the *Gardeners' Chronicle* that I have observed that cattle eat it without any bad results, in spite of its name, and I have never heard any authentic case of poisoning by it. Of the fatal effects and symptoms produced by Conium maculatum (common Hemlock) we have an everlasting record in the description given by one who was present at the death of Socrates; I recollect also seeing an account of some sailors who died from eating what proved to be Œnanthe crocata (Hemlock Water-drop). Cicuta virosa may be more poisonous than either of them, but it would be interesting to know for certain. *C. W. Dod, Edge Hall, Malpas, Cheshire.*

**A Word for Single Petunias.**—I did not happen to notice Mr. Douglas' disparaging words against those referred to by "J. S." at p. 116, but I quite agree with the latter writer's high opinion of single varieties. Well grown either in beds, borders, pans, or pots, there are few plants more showy or more graceful than single Petunias. They are so distinct from the double ones, that the two can hardly be said to compete. Specimens in pots may be so managed as to be what exhibitors call all flower. And what flower so perfect in form, so varied and brilliant in colour, and so pleasantly fragrant? And thus for vases, raised baskets, &c., the single Petunia is admirable, filling them to overflowing and hiding the sides with their long slender shoots, flowering so profusely as they fall. For hanging baskets, again, either out or indoors, some of the finer varieties of single Petunias are most valuable. They will also quickly and thickly cover dwarf walls, rustic fences, stumps of trees, or masses of rock or roots. But enough has been said to show the usefulness of single Petunias, though not half enough to exhaust their merits. For example, frequently stopped and thus forced to become bushy, few plants are more useful in 6 or 8-inch pots for the conservatory shelf or window garden than single Petunias. *D. T. Fish.*

**Phalænopsis Portei.**—Amongst the many grand Orchids in flower in the fine collection of Lord Rendlesham, at Rendlesham Hall, the rare and beautiful Phalænopsis Portei is in its glory. This plant, a native of the Philippines, is very rare, and is supposed to be a natural hybrid between Phalænopsis amabilis and P. rosea. The flowers are produced on a long drooping and branching spike; the sepals and petals are pure white, suffused with light rose; and the lip bright rosy-red, slightly tinted with orange. Very fine examples of P. grandiflora, P. amabilis, and P. Schilleriana, are also producing their lovely and invaluable flowers in great profusion. Mr. Mills, the gardener in charge, has evidently found out the requirements of these lovely Orchids, for they succeed admirably under his treatment. *Alfred Outram.*

**Ewell Castle Gardens.**—On a recent visit to these gardens, the seat of A. W. Gadesden, Esq., I was much struck with the beautiful arrangement of the houses. Of the very many places I have visited this is undoubtedly one of the cleanest—a place for everything, and everything in its place, evidently being the order of the day. There was a fine display in the conservatory, made up of some beautifully grown Cinerarias (a fine strain), Hyacinths, Camellias, Tulips, Narcissus, Epacris, Ericas, Azaleas, well intermixed with fine-foliage plants. In the stove, Calanthes, Euphorbia jacquiniæflora (splendidly done), Cœlogyne, Zygopetalum, Lælia anceps, and Cattleya Trianæ, intermixed with fine-foliage plants, are also a picture, the arrangement being perfect. Should any one find time to visit this place they will find a most enthusiastic gardener in Mr. Scutt, and gardens reflecting great credit on his ability. *A. O.*

Fig. 36.—Abies grandis. (see p. 179.)

**The Weather at Belvoir.**—Judging by the reports already published the wave of cold was very unequal in its intensity, not following latitude, and constant only in showing increased severity of a very marked character in low-lying situations and river valleys. Although cold and frosty weather characterised the first part of January, the really hard weather only commenced with us on the 9th, culminating on the night of the 14th in the low reading of 3°, or 29° of frost. The gale of the 18th was remarkable for its fury; laden with snow, it swept over the face of the country with merciless severity, and where there was an exposure of soil it carried soil and snow together for miles. The snow-drifts, when they began to melt, exhibited a curious stratification of earth and snow, the earth being from the neighbouring hills,

so that some of the clayland meadows had a fair dressing of light soil. The frost lasted with unmitigated severity until the 26th; on ten occasions the thermometer recorded from 20° to 29° of frost. Although a lower degree of cold was marked in 1879, a period of greater and more prolonged severity has not occurred since the terrible winter of 1859 and 1860. It is yet premature to speak of the effects of this weather on vegetation, but as far as can be judged at present plants have not suffered so much as they did last year. Snow was a great protection to small plants. Hoar frost accumulated on trees and shrubs from the fog and frost of three nights—24th, 25th, 26th, and the effect of the deeply incrusted ice crystals was indescribably beautiful. It has been a hard and trying time for birds; many blackbirds have perished from sheer hunger, and some of the old rooks forgot their shyness and came to the Castle walls to be fed. *Wm. Ingram, Belvoir, January* 29.

Echeveria glauca.—When at Garbrand Hall, Ewell, the beautiful seat of Mrs. Torr, I was struck by the way in which Mr. Childs winters his Echeverias. He kindly informed me that when winter is approaching he lifts his plants, shakes them clean out of the soil, bunches them in threes, and hangs them on the back wall of his vineries, where they are now in perfect health. Some one may be glad to hear of this plan. In addition to this, there are many features of interest in this well-kept place. The various specimen foliage and flowering plants, which have figured so conspicuously at various shows, are alone worth a visit. The place is well kept, and reflects great credit on the practical abilities of Mr. James Childs, the gardener. *A. O.*

Plant Groups.—There is much force in what "W. C., C." (p. 152) has said upon this subject, but it cannot be conceded that all the blame lies with the judges. My own observation favours the opinion that judges generally go for the most artistically arranged groups, and it is only when some dogmatic plantsman, who can see no other use for a plant than making it into a show specimen, has to make the award that mistakes are made. In reality the fault lies in the poverty of design shown by the exhibitors, although "W. C., C." believes that he is not amenable to that charge. It may be that his arrangement was artistic and meritorious, and if so he was unfortunate in the judges. The result was the more to be deplored because novelty in arrangement is so much wanting, and when found deserves all possible encouragement. Without doubt there is a tendency on the part of some judges to look rather at the size and nature of the plants grouped than at the general effect. "Oh," say they, "that is a new thing, and is costly;" or perhaps it is, "This plant is very difficult to grow, and deserves a point." But all such notions are entirely beside the question. The groups are really intended to exhibit the arrangers' decorative taste, and often the simplest and most unpretentious things produce the most pleasing effects. If the exhibitors exclaim with Lord Sherbrooke, "We must educate our masters" (meaning the judges), these latter may well retort, "Show your fitness for the work by educating yourselves." Some valuable prizes for plant groups arranged for effect are offered for competition by the General Horticultural Company at the South Kensington June show. These groups are to fill spaces of 400 superficial feet each, and are for the vast majority of gardeners who compete at suburban and provincial shows far too large, for at these the space seldom exceeds 100 feet. If the prizes had permitted of such a small class being introduced, possibly something might have been shown that would indicate to this class of exhibitors how to avoid stiffness, and show some diversity in elegance of design and arrangement. *X.*

The Recent Severe Weather and its Effects in South Cork.—Now that the great cold of January, 1881, is over, at least in South Cork, a few particulars of its effects may prove interesting, as coming from the mildest part of the United Kingdom. The frost commenced on the 10th, the average night temperature up to the 13th being 26° F. On the night of the 13th the first snowfall occurred, and from that to the 20th, when it reached the maximum, 15° of frost, the cold gradually increased. The lowest day temperature was also on the 20th, the mercury at 11 A.M. standing at 28°, and at noon at 31°. Such an occurrence as the temperature remaining below freezing point through the entire day has scarcely ever been experienced in this locality, where, on account of our insular position and the effect of the Gulf Stream on our southern shore, we have only a few hoar-frosts in ordinary winters, and most winters pass without snow. The depth of snow averaged about 4 inches for a week, no such snowfall having been known since 1854, and the depth of ice in the ponds and lakes averaged about 8 inches. The small birds that flock down here in great numbers when the weather becomes hard farther inland suffered terribly, dying in scores from cold and hunger, and vast numbers succumbed to the ravages of starving crows. Vegetation suffered very much also from the frost. The hardiest evergreens drooped for a while, though most of them have revived since. The Holly and Berberis and the Firs were the only trees that appeared uninjured every morning. The blue Australian Gum tree seems to have escaped. Even the Ivy assumed that dark appearance caused by the freezing of the fluids in the intercellular spaces of the leaves, but as the cells were not ruptured it has revived again; the same may be said of the Laurustinus, Aucuba and Portugal Laurel. The outdoor shrubs that seem to have suffered most are Veronicas, Spurges and Escallonias. The Araucaria imbricata seems to have escaped, and most Rhododendrons. A curious effect on the Bay tree in exposed places was that some of the leaves looked as if they were burned by fire. Soft herbaceous plants were very much cut down, but of course will again spring up from the rootstock. A very severe gale from the south-east, with rain, put an end to the frost of 1881 here on Jan. 26. *B. Cullinan, Union Hall, Cork, Jan.* 29.

Eucharis, &c., at Stansted Park.—In one of the plant-houses at Stansted Park, Emsworth, the seat of George Wilcher, Esq., I recently saw a healthy and well-grown batch of the lovely and useful Eucharis amazonica in flower. The plants were growing in 10 and 12 inch pots, each plant being furnished on an average with from seven to ten sturdy trusses of very large pure white bloom. Associated with these was a well-grown batch of Poinsettia pulcherrima, with stems 2 feet in height, furnished with healthy dark green foliage to the rim of the pot, and carrying heads of bracts measuring 16 inches in diameter. I need scarcely add what a charming effect the association of the above-named plants produced at the time of my visit. In another house I noticed what I think may be justly termed a miniature batch of Euphorbia jacquiniæflora; they were growing in 3-inch pots, and did not exceed 9 inches in height, one-fourth of which was furnished with bloom; these Mr. Hoskins uses extensively for indoor decorative purposes. *Visitor.*

The Neapolitan Violet.—As several references have lately been made in the *Gardeners' Chronicle* regarding the merits of several varieties of Violets, permit me to put in a plea for that old favourite of mine, the Neapolitan, a bunch of which I forward you. Similar blooms have been gathered in quantities since the beginning of December last. They are grown in pots—a practice I would strongly recommend, for not only do they bloom more freely with me, but they are always handy to gather from, standing on shelves in a warm greenhouse, while those in frames are liable to be sealed up with mats and bracken and so rendered useless, as a couple of frames have been here during the late severe weather. I may add the variety Victoria Regina is the favourite dark kind here, and does well all through the autumn and again in spring outdoors. *W. Fox, Holker Gardens, North Lancashire, Feb.* 1. [An excellent sample. Eds.]

Layering Vines at Combe Abbey.—The system of propagating Vines by layers as practised at Combe Abbey, by Mr. Miller, may have already been fully explained in your columns; if not, may I ask Mr. Miller to do so? It would be alike instructive, valuable, and interesting. My object in writing just now is to add my humble testimony to the great merits of the system and excellence of the results. A finer or stronger lot of young Vines in pots I have seldom, if ever, seen, and they have been produced at such a nominal cost! Big labels are in each pot. On the first one we read was "Black Hamburgh: layered March 19, cut away April 20"—a little over a month only. No expensive propagating-house is requisite, as such advance is made in one month as in three by the ordinary modes of propagating by eyes, and there are no failures. Propagating Vines by eyes is a very beautiful but rather expensive process, and requires special appliances and considerable skill and attention; layering Vines *à la* Miller is simple, expeditious, and within the reach of every one who grows a Vine. I would recommend the plan strongly to all gardeners with limited means, to amateurs wishing to rear their own Vines, and thank Mr. Miller for the lesson. *A. F. B.*

Damage Caused by Snow.—Since the thaw set in I have watched with particular interest the great amount of damage which has been done to nursery stock. Within the last three days I have been a witness of the disappearance of snow from many acres of thriving young trees, and I doubt if any one is now living who could say that so much destruction (to their knowledge) has taken place before. Every one who is accustomed to visit nurseries, as well as the owners or occupiers, will freely admit that where the snow drifts or settles between the rows of trees, that with such a thaw as we are now witnessing it takes an unusual length of time to disappear. I must say that the last three days has grieved me very much when I walk about and see the result. First to catch my eye is a rood or so of two-year-old Apple trees, and here and there I see one completely broken off at about 6 inches above the bud. The same kind of damage is done to a piece of two-year-old Plum trees. On taking a few steps farther I witness about 4000 Handsworth Box, varying from 12 to 18 inches in height, embedded half-way up in snow. I could not count how many appeared to have lost their leaders, and had bits of branches broken off, but a great many. Close by is a long bed of two-year-old Ligustrum ovalifolium; this seems to have had a steam-roller drawn over it, and pressed it completely flat. Next I witnessed a few stools of China Roses broken off at the bottom; also on the same land are a few golden Hollies on stems 2 feet high, which are very much disfigured. Walking to another field, I come to a bed of half-standard Roses, which, to my surprise, I find includes upwards of one hundred Gloire de Dijon completely broken, so as to be unfit for present sale; other kinds have suffered the same fate, but in less quantity. On passing on to a piece of standards—a 20-yard land—I count in two rows fifteen trees where the heads have been weighed to the ground just at this end of the piece. The snow drifted over a hedge to a depth of 5 feet. Beds of small Coniferæ and evergreen shrubs are very much broken about and put out of shape, the branches being trained downwards, and in some instances broken out on one side, giving an unsightly appearance and making them unsaleable. In the grounds where climbers are plunged in pots and tied up with stakes, the snow completely covered them and weighed the tops about in all shapes and forms. I could have given a more detailed account, but time will not allow me to do so. I might mention that it would be absurd on my part to give an estimate of the damage done, because at first sight it it is really impossible; but I cannot help thinking that it will be felt for some time to come by owners of nursery stock. *F. Perkins, Kings Thorpe, Northampton, Feb.* 2.

New Potatos in January.—The mildness of the winter up to the date of the recent storm is probably as remarkable as the suddenness of the storm itself. We are now gathering a few nice dishes of new Potatos, which are fair samples, and would have been much better but for the serious check the plants received from want of light and too much heat during the late period of frost and snow. The tubers were planted in small pots on Nov. 2, and afterwards planted out into a pit warmed by hot-water pipes, and the first gathering was made on Jan. 29. The variety is Veitch's Ashleaf. *W. Hinds, Canford.*

## The Poultry Yard.

A Turkey Hatched During the Cold.—In common with all other inhabitants in the British Isles, the birds have had a hard time of it during the last three weeks, and had it not been for many humane persons feeding them, the major part must have been starved; but a most extraordinary thing took place here at the home farm in the bird way. A hen turkey showed a disposition to stray, and was brought home and shut up for a few days, and was again liberated, some weeks ago, when she was completely lost. No one knew where she had gone to, but as the woods around the farm are some 500 acres in extent, and swarming with foxes, her disappearance was easily accounted for. One may well imagine the bailiff's surprise when this day he found the lost hen, a quarter of a mile distant, and a young bird by her side apparently three days' old. Here this poor bird had sat all through the frost and snow, with but little food and shelter from the biting wind, and hungry foxes with keen appetites all around her; and yet she is found in a meadow adjoining the wood with her small charge, but how she escaped all these ills is little short of a miracle. *J. Rust, Eridge Castle, January* 31.

## Obituary.

On January 24, at Acton Scott, in the county of Salop, Frances, widow of Thomas Pendarves Stackhouse Acton, Esq., in her eighty-seventh year. Mrs. Stackhouse Acton, who was married in 1812, was the eldest and favourite daughter of the late Thomas Andrew Knight, Esq., and his constant associate in the many experiments carried out at Downton Castle, which gave such an impetus to scientific horticulture in the first quarter of the present century, and her home for so many years gave the name to one of the finest fruits—the Acton Scott Peach—which was raised by that famous pomo-

logist. She was an accomplished artist and authoress, and possessed a wide knowledge of geological, botanical, horticultural, and antiquarian lore; and, above all these accomplishments, was distinguished for great goodness of heart, and unceasing generosity and kindness to her poorer neighbours.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
FOR THE WEEK ENDING WEDNESDAY, FEB. 2, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 27 | 29.06 | —0.70 | 41.0 | 33.0 | 8.0 | 36.6 | — 1.5 | 35.4 | 95 | S.; S.W. | 0.12 |
| 28 | 28.87 | —0.89 | 42.1 | 34.5 | 6.6 | 38.3 | + 0.1 | 35.9 | 91 | W. | 0.12 |
| 29 | 28.77 | —0.99 | 46.0 | 40.5 | 5.5 | 43.8 | + 5.5 | 40.2 | 88 | S.S.W. | 0.23 |
| 30 | 29.36 | —0.40 | 47.8 | 42.0 | 5.8 | 44.5 | + 6.1 | 41.6 | 91 | S. | 0.08 |
| 31 | 29.12 | —0.34 | 48.0 | 37.0 | 11.0 | 41.7 | + 3.2 | 40.2 | 95 | S.; S.W. | 0.00 |
| Feb. 1 | 29.79 | —0.07 | 37.1 | 32.3 | 4.8 | 34.2 | — 4.4 | 33.5 | 98 | W. | 0.00 |
| 2 | 29.55 | —0.22 | 47.1 | 32.6 | 14.5 | 42.0 | + 3.3 | 37.5 | 85 | S.S.E.; W. | 0.08 |
| Mean | 29.25 | —0.52 | 44.0 | 36.0 | 8.0 | 40.2 | + 1.8 | 37.8 | 92 | S.; W. | 0.63 |

Jan. 27.—Fog, and dull in the early morning; fine after noon; very damp; gentle thaw.
— 28.—Foggy and gloomy morning; fine afternoon; rapid thaw.
— 29.—Fine morning; became bad at noon; wind and rain.
— 30.—Fine warm and damp morning. A fine day; snow fast disappearing.
— 31.—Fine clear and bright morning; sunshine very bright after noon; red aurora in the evening; foggy from 9 P.M.
Feb. 1.—Dense fog in the morning, and more or less fog all day.
— 2.—Fine morning; no fog; dull and gloomy from noon; rain began to fall at about 2 o'clock; a cloudy night.

LONDON: *Atmospheric Pressure.*—During the week ending January 29, in the neighbourhood of London, the reading of the barometer at the level of the sea increased from 30.16 inches at midnight on the 22d to 30.30 inches at 9 A.M. on the 24th; it decreased to 29.15 inches at 9 A.M. on the 28th, then turned to increase, and at noon on the same day was 29.19 inches, decreased to 28.89 inches on the afternoon of the 29th, and at the end of the week was 28.99 inches. The mean reading at the level of the sea was 29.60 inches, being 0.16 inch lower than the preceding week, and 0.33 inch below the average for the week.

*Temperature.*—The highest reading in the week was 46°, on the 29th. On the 24th the highest reading was 28°.1. The mean of the seven high day temperatures was 36°.6. The lowest reading recorded took place on the 26th, and was 15°; the lowest reading on the 29th was 40°.5. The mean of the seven low temperatures was 28°. The greatest range of temperature in one day was 19°.7, on the 26th, the next greatest being 12°, on the 25th; and the smallest range happened on the 24th, when it was only 4°.1. The mean of the seven daily ranges was 8°.7.

The mean daily temperatures were 32°.5 on the 23d, 25°.9 on 24th, 24°.4 on 25th, 24°.7 on 26th, 36°.6 on 27th, 38°.3 on 28th, and 43°.8 on the 29th, being 5°.1, 11°.8, 13°.4, 12°.7, 1°.5 below the average on the 23d, 24th, 25th, 26th, 27th respectively, and 0°.1, 5°.5 on the 28th and 29th above the average.

The mean temperature for the week was 32°.3, being 8°.6 of higher temperature than that of last week, and 5°.6 below the average of the same week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, was 89°.9, on the 25th; the next in order being 50°, on the 28th and 29th, and 49° on the 27th. The mean of the seven readings was 48°.6.

*Rain.*—Rain fell on the 26th, 27th, 28th, and 29th, the greatest amount being 0.234 inch on the 29th, and the least being 0.100 inch on the 26th; the total amount that fell in the week was 0.576 inch.

The week opened with a continuance of the cold weather of the previous week. On the evening of the 26th a thaw set in which became rapid to the end of the week, the daily temperature increasing.

ENGLAND: *Temperature.*—During the week ending January 29 the highest temperatures were 52° at Truro, 49° at Plymouth, and 47° both at Brighton and Bristol. At Leeds, Bradford, Hull, Nottingham, and Sunderland the temperature did not exceed 40°. The mean from all stations was 43°.7.

The lowest temperatures recorded were 7°.3 at Wrottesley, 8°.5 at Norwich and Liverpool, 10°.8 at Leicester, the lowest temperatures at Plymouth and Truro being 19°.1 and 15° respectively. The mean from all stations was 12°.6.

The range of temperature in the week was greatest at Truro, 37°, the next in order being Norwich, 36°.5, Cambridge, 33°.8, Bristol, 33°, and Leicester, 32°.7. The smallest ranges were 26° at Sunderland, 27° at both Hull and Bradford, and 28° at Leeds. The mean from all stations was 31°.1.

The mean of the seven high day temperatures was the highest at Truro, 45°.1; at Plymouth, 40°.2. At Leeds, Bradford, Hull, Sheffield, Wrottesley, and Nottingham the mean did not exceed 33°. The mean from all stations was 35°.

The mean of the seven low night temperatures was least at Wrottesley, 18°.6; the mean was greatest at Truro, 29°, and Plymouth, 28°.6. The mean from all stations was 24°.1.

The mean daily range was greatest at Truro, 16°.1; Wrottesley, 13°.3; and Nottingham, 13°; and least at Blackheath, 8°.6., and Bradford, 8°.7. The mean from all stations was 10°.9.

The mean temperature for the week was highest at Truro, 36°.7; Plymouth, 34°.1; at Wrottesley, Nottingham, Hull, Bradford, and Leeds the mean temperature did not exceed 27°. The mean from all stations was 29°.3.

*Rain.*—Some fell at all stations, the greatest quantity being 1.85 inch at Truro. *Snow* also fell at several stations on the 23d, 24th, 26th, and 27th. The mean from all stations of rain and melted snow was 0.48 inch, and the average number of days rain or snow fell being four. *Fog* prevailed at Norwich on the 26th, Cambridge on the 24th and 26th, Wrottesley on 24th, 25th, 26th, 28th, aad 29th, and Hull and Bradford every day of the week. The weather during the week was cheerless everywhere, and very cold on the 27th, when the weather became calm, foggy, dull, damp, and mild, with continued slight rain, and dripping from melting snow.

SCOTLAND: *Temperature.*—During the week ending January 29 the highest temperatures were 39°.8 at Aberdeen, 39° at Edinburgh, Greenock, and Paisley, and 38° at Dundee; the general mean being 39°.

The lowest atmospheric temperatures were 4° at Paisley, and 19°.2 at Greenock; the general mean being 19°.

The mean temperature for the week was greatest at Aberdeen, 29°.8, and least at Paisley, 25°.5; and the general mean was 28°.3.

*Rain.*—Some rain fell at all stations; the greatest amount registered was 1.24 inch at Edinburgh; and the least, 0.08 inch at Leith and Dundee; the general average was 0.34 inch.

JAMES GLAISHER, F.R.S.

## Answers to Correspondents.

ANTS: *J. D.* Ants are very difficult to dislodge in plant-houses unless their nests and runs can be got at with scalding water, which is the best remedy when it can be applied. Guano dusted about their tracks will sometimes drive them away.

BRIERS: *J. T. C.* Try Mr. G. Prince, of Oxford; and, failing that source, consult our advertising columns.

BROWN-TIPPED LEAVES: *R. B.* Possibly from too dry an atmosphere, owing to the amount of fire-heat which has been necessary during the late severe weather. Possibly just the opposite, from the damping of the foliage when ventilation was impracticable. Not knowing the treatment given, we cannot say which of the two is most likely.

COLEUS: *Constant Reader.* Your best plan would be to clear the plants of the insects by dipping them in tobacco-water, or any of the many insecticides, such as Fowler's, and then to put them in a brisk heat to get a supply of young clean plants from cuttings.

CYCLAMENS: *J. Shrimpton.* A strain of fair average merit, but nothing more.

EGG PLANTS: *A Constant Reader.* These are properly classed by seedsmen along with vegetables, the fruits being sometimes used by French cooks.

EMIGRATION: *Tam*, and *A Young Gardener.* We cannot undertake the responsibility of advising gardeners as to what colony they would do best to emigrate to. A healthy climate is the most important consideration.

ICE-HOUSE: *E. R.* Only a local architect, with more details before him than you give us, could give any satisfactory information of the nature desired. You will find some details and illustrations of ice-houses in our number for December 28, 1878.

IVIES: *J. B. M.* Some of the prettiest of the smaller-leaved green varieties are, H. Helix palmata, Glymii, walthamensis, donerailensis, himalaica, conglomerata, and rhomboidea obovata. Of the smaller variegated sorts there are H. H. foliis argenteis, foliis aureis, Cavendishii, marginata pulchella, minor marmorata, and argentea rubra—all neat and desirable kinds.

LEUCADENDRON ARGENTEUM: *J. T. C.* Sow the seeds in a little bottom-heat, and grow the plants on in a greenhouse. It does best in a mixture of loam and peat, and requires good drainage. Be careful not to over-water them at any time.

MR. C. STOWE: Mr. W. J. Walton, 80, Cheapside, E.C., would be much obliged to any correspondent for the present address of Mr. C. Stowe, gardener, late of Lee Green.

NAMES OF PLANTS: *A. Healey.* We cannot undertake to name Coleuses, except species; there are too many of them.—*J. Roberts.* A Polytrichum, but we cannot tell the species without fruit.—*J. D.* A poor variety of Cypripedium barbatum.

OSMANTHUS FLOWERING: *J. Bunyard.* Osmanthus Aquifolium and O. ilicifolius are one and the same species, though apparently so different, and plants under both names have frequently flowered in this country. You will find an illustration of a flowering shoot in our number for November 25, 1876. It belongs to the Oleaceæ.

POTATO: *W. H. Massie.* You ask too much of us. How can you expect any one to name a Potato from one tuber, or to give any opinion of its merits?

POTATOS BY WEIGHT: *J. L.* asks if a greengrocer, who is a licensed hawker, calls at his door with vegetables for sale, can he compel the said greengrocer to serve him with Potatos by weight? Potatos are usually sold by measures of capacity, and such measures must be of the description stated in section xvi. of the "Weights and Measures Act, 1878." In London it is the custom to sell small quantities by weight, but there is no compulsion in the matter that we are aware of.

PRIMULAS: *W. Grieve.* Not up to the mark. The blush with pink stripes is probably the best, and may be worth growing on for improvement. You might get something good from the spotted one, as has been already done, but in its present form it is already superseded.

TRANSPLANTING: *J. S., and Others.* Wait a little. We shall have more to say by-and-bye.

WOODLICE: *J. D.* If very numerous, scalding water may sometimes be advantageously poured down the walls where they are apt to congregate. They can in any case be trapped by laying about either a scooped Turnip or Potato, or a 5-inch pot containing a little damp litter. These traps, however, require to be examined daily, and the insects which are trapped destroyed. A toad or two kept in the house will soon diminish their numbers.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

GENERAL HORTICULTURAL COMPANY (JOHN WILLS), LIMITED, Warwick House, Regent Street, W.—Vegetable, Flower, and Agricultural Seeds, Fruit Trees, Roses, &c.

GEORGE EDWARDS, Balham, S.W.—Garden and Farm Seeds, &c.

SUTTON & SONS, Reading—Potatos for Seed.

STRIKE & HAWKINS, 62, High Street, Stockton-on-Tees—Garden and Agricultural Seeds.

MARTIN & SON, 61, Market Place, Hull—Garden and Agricultural Seeds, &c.

VILMORIN-ANDRIEUX & Co., 4, Quai de la Mégisserie, Paris—Flower, Vegetable, Farm, and Tree Seeds.

JOHN STEWART & SONS, Commercial Street, Dundee—Vegetable and Flower Seeds, &c.

M'KENZIE & SONS, LIMITED, Camden Quay, Cork—Vegetable and Flower Seeds, and Amateur's Guide.

P. M. FAY & Co., North King Street, Dublin—Select Seed Catalogue and Amateurs' Guide.

W. B. ROWE & Co., 65, Broad Street, Worcester—Vegetable and Flower Seeds, &c.

THOMAS KENNEDY & Co., Dumfries—Special List of Roses, &c.

CONNON & REID, 22, Haddon Street, Aberdeen—Vegetable and Flower Seeds.

COMMUNICATIONS RECEIVED:—T. C.—D. T. F. (anticipated).—E. J.—W. R.—J. D.—J. W.—J. H.—W. T.—J. B.—W. I.—W. B.—T. R.—Preston.—M. L.—C. Pf.—T. C.—L. B.—W. E.—W. M. G.—A. D. M.—G. L. M.—G. L.—G. Syme.—W. H.—G. T.—J. T. B.—S. W.—A. Ernst.—E. W. M.—R. C.—S. N.—J. S. G.—J. B.—H. N. E.

DIED—On January 31, at Eltham Nursery, S.E., JAMES WILLIAM TODMAN, after a short illness, in his fifty-fourth year. Foreign papers, please copy.

# Markets.

*COVENT GARDEN, February 3.*

The severe frost has told its tale upon late Grapes, the effects of excessive firing being seen in most of the samples reaching us this week, and plump stuff is in demand. American Apples arriving soft and washy. Trade quiet. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 1 6– 5 0 |
| Grapes, per lb. | 3 0–10 0 | Pine-apples, per lb. | 1 0– 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Asparag., Fr., bndl. | 25 0– .. | — Cos, each | 0 6– 1 0 |
| — Sprue, per bund. | 1 6– 2 0 | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Parsley, per bunch | 0 4– .. |
| Celery, per bundle | 1 6– 2 0 | Radishes, per bun. | 0 2– .. |
| Chilis, per 100 | 3 0– .. | Rhubarb, per bund. | 1 0– .. |
| Cucumbers, each | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| Garlic, per lb. | 1 0– .. | Spinach, per bushel | 4 0– .. |
| Herbs, per bunch | 0 2– 0 4 | Tomatos, per lb. | 0 9– 1 0 |
| Horse Radish, p. bun. | 4 0– .. | Turnips, new, bunch | 0 4– .. |

POTATOS:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ferns, in variety, per dozen | 4 0–18 0 |
| Begonias, per doz. | 6 0–12 0 | Ficus elasticus, each | 1 6– 7 6 |
| Cineraria, per doz. | 10 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cyclamen, per doz. | 12 0–18 0 | Genista, per doz. | 12 0–18 0 |
| Cyperus, per dozen | 6 0–12 0 | Hyacinths, per doz. | 8 0–12 0 |
| Dracæna terminalis | 30 0–60 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| — viridis, per doz. | 12 0–24 0 | Myrtles, per doz. | 6 0–12 0 |
| Epiphyllum, per dozen | 18 0–30 0 | Palms in var., each | 2 6–21 0 |
| Erica gracilis, dozen | 9 0–18 0 | Primula, single, per dozen | 5 0– 6 0 |
| — caffra, per doz. | 8 0–12 0 | Solanums, per dozen | 6 0–18 0 |
| — hyemalis | 12 0–36 0 | Tulips, 12 pots | 6 0– 9 0 |
| Euonymus, various, per dozen | 6 0–18 0 | | |
| Evergreens, in var., per dozen | 4 0–18 0 | | |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 1 0– 2 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Bouvardias, per bun. | 1 0– 3 0 | Pelargoniums, 12 sprays | 1 6– 2 0 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Poinsettia, 12 blooms | 3 0– 6 0 |
| Chrysanthemums, 12 blooms | 2 0– 4 0 | Primula, double, per bunch | 1 0– 1 6 |
| Cyclamen, 12 blms. | 0 3– 0 6 | — single, 12 sprs. | 0 6– 1 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Roses (indoor), doz. | 2 0– 6 0 |
| Eucharis, per doz. | 4 0– 9 0 | — yellow Fr., doz. | 2 0– 4 0 |
| Euphorbia, 12 sprays | 3 0– 5 0 | — red French, doz. | 3 0– 4 0 |
| Gardenias, 12 blms. | 15 0–30 0 | — Christmas, 12 bl. | 1 0– 2 6 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Hyacinth, Roman, 12 sprays | 1 6– 2 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Tuberoses, per dozen | 4 0– 8 0 |
| — red, 12 blooms | 1 0– 3 0 | Violets, 12 bunches | 1 6– 2 6 |
| Lilac, Fr., per bunch | 8 0–10 0 | — Neapolitan, Fr., per bunch | 5 0– 7 0 |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | — Czar, Fr., bunch | 2 6– 3 0 |

## SEEDS.

LONDON: *Feb.* 2.—An increasing inquiry is now shown for field seeds. Choice red Clover of foreign growth is in short supply. In fine yearling seed more business has been passing at advancing rates. For Alsike the tendency is still upwards. White Clover is in good demand at full prices. The sale for Trefoil is for the moment slow. Values for Italian Rye-grass keep firm. The recent advance in spring Tares of 1s. per quarter is well maintained. Lucerne and Timothy are scarce and dearer. Canary is lower. Hemp seed being now remarkably cheap meets with more attention. Blue Peas are in improved request. The trade for Linseed is steady. *John Shaw & Sons, Seed Merchants,* 37, *Mark Lane, London, E.C.*

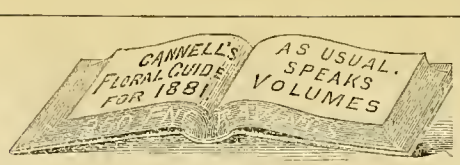
## POTATOS.

The Borough and Spitalfields markets reports state that limited supplies were on sale. There was a dull trade as follows:—Scotch Regents, 90s. to 110s. per ton; Scotch Champions, 90s. to 100s.; Victorias, 100s.; German reds, 4s. to 5s. per bag; Belgian kidneys, 4s.—The imports into London during last week were small, owing to the state of the weather; 67 tons have been reported from Barfleur, and 100 sacks from Boulogne.

## COALS.

The following are the quotations current at market during the week:—Bower's West Hartley, 14s. 9d.; Bebside West Hartley, 14s. 9d.; Walls End—Hetton, 18s. 6d.; Hetton Lyons, 17s.; Hawthorns, 17s. 3d.; Lambton, 18s.; Wear, 17s.; South Hetton, 18s. 6d.; Tunstall, 17s.; Caradoc, 18s. 6d.; Pittington, 17s.; Tees, 18s. 3d.

**Government Stock.**—Consols closed on Monday at 98½ to 98⅜ for delivery, and 98 11/16 to 98 13/16 for the account. Tuesday's figures were, for delivery, 98⅜ to 98⅜, and as on Monday for the account. On Wednesday and Thursday the closing prices were, for delivery, 98½ to 98⅜, and 98¾ to 98⅞ for the account.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H. CANNELL AND SONS' extraordinary exhibits at nearly all the great Flower Shows and Floral Committees, even as far distant as Liverpool and Brighton, caused quite a surprise and consternation throughout every horticultural circle. Much of the success is due to the perfection of their INVIGORATOR, or REAL MANURE for PLANTS, together with their FUMIGATING MATERIALS for exterminating the greenfly and many other insects. Full particulars for use, &c., they will be pleased to send on recipt of a post-card.

Confirming the above—

Mr. GILBERT, *Burghley Hall, Stamford, says*:—"Send me another 50 lb. of your fumigating material."

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ZONAL PELARGONIUMS,
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H. CANNELL AND SONS beg to announce that they have a large stock of the twenty-four varieties which they exhibited, and caused such sensation and elicited the admiration of all beholders at the last Chrysanthemum shows held at South Kensington, Liverpool, Birmingham, Royal Aquarium, Tunbridge Wells, &c., many blooms measuring 2¼ inches across.

For a winter display of the most brilliant colours they are indispensable.

Single, 9s. per doz.; two dozen, 16s.; Cuttings, 4s. per doz.
Double, " " "
See eulogistic reports of our Doubles at all large Shows.

Splendid varieties, in 5-inch pots, beautifully in flower, 13s. per dozen.

*Gardeners' Chronicle*, January 17, 1880, says:—"Messrs. Cannell & Sons again sent a rich collection of cut blooms of Zonal Pelargoniums, clear and lustrous in colour, and, if anything, larger than ever. The committee recommended Messrs. Cannell & Sons' exhibits for the award of a Silver Medal."

**Chrysanthemums.**

OUR 500 VARIETIES of CHRYSANTHEMUMS have been all proved, cut down, and stood in order as per Catalogue, consequently we are now able to execute orders to any extent. Stock Plants, selected, 6s. per dozen; Cuttings, 2s. per dozen, post-free. Our selection, Plants, 5s. per dozen; Cuttings, 1s. 6d. per dozen. One cutting each of 100 good and distinct decorative kinds post-free for 10s.

**Scientifically hybridised, and the choicest BEGONIA SEED ever offered.**

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CATALOGUE of FLOWER SEEDS, choicest of the choice, post-free.

**Violets in Full Bloom.**

H. CANNELL AND SONS beg to offer very fine Plants, in 5-inch pots, full of flower, 7s. per dozen; smaller size, 5s. Marie Louise, 10s. per dozen; smaller size, 7s. Cheaper by the hundred. Strong clumps from ground of twenty other varieties.

CATALOGUE, with price, &c., on application.

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BEGONIAS ARE THE BEST.

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| DRY BULBS. | Each | Per doz. |
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| CHOICEST VARIETIES, mixed | 3s 6d. | 36s. |
| BEDDING VARIETIES | | 10s. to 18s. |

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THE QUEEN'S SEEDSMEN, READING.

**First-class Nursery Stock.**

JAS. BACKHOUSE AND SON have to offer the following, all fo which have been carefully transplanted, and can be recommended to the attention of Planters as clean grown, strong, and well rooted:—

**FOREST TREES.**

LARCH, 1 to 1½ foot, 20s.; 1½ to 2 feet, 27s. 6d.; 1½ to 2½ feet, 32s. 6d.; 2 to 3 feet, 37s. 6d.; 2½ to 3½ feet, 45s.; 3 to 4 feet, 50s. per 1000.
ALDER, 3 to 4 feet, 27s. 6d. per 1000.
ELM, Wych or Scotch, 4 to 5 feet, 40s. per 1000.
" English, 3 to 4 feet, 37s. 6d.; 4 to 5 feet, 50s. per 1000.
HAZEL, 2½ to 3½ feet, 35s. per 1000.
PINUS AUSTRIACA, 9 to 15 inches, extra, 42s.; 15 to 21 inches, extra, 55s. per 1000.
" LARICIO, 9 to 18 inches, 30s. per 1000.
SPRUCE FIR, 9 to 15 inches, 15s. per 1000.
WHITETHORN or QUICKWOOD, 2-yr. seedling, 2-yr. transplanted, 20s. per 1000.
" extra strong, for gapping, 35s. per 1000.

**ORNAMENTAL TREES.**

BEECH, Purple (grafted), 5 to 6 feet, 150s.; 6 to 7 feet, 180s.; 7 to 8 feet, 220s. per 100.
HORSE CHESTNUT, 4 to 5 feet, 10s. 6d.; 5 to 6 feet, 15s. per 100.
ELM, Grafted Broad-leaved English or Dutch, 3 to 4 feet, 30s.; 6 to 7 feet, 50s.; 7 to 8 feet, 60s.; 8 to 10 feet, 80s. per 100.
" Wych, 5 to 6 feet, 10s. 6d.; 8 to 10 feet, 50s. per 100.
" Weeping, 6 to 8 feet stems, good heads, 30s. to 60s. per dozen.
EUONYMUS EUROPÆUS (Spindle Tree), 2 to 3 feet, 20s. per 100; 3 to 4 feet, 5s. per dozen; 5 to 6 feet, 6s. per dozen.
MOUNTAIN ASH, 8 to 10 feet, 9s. per dozen; 50s. per 100.

**CONIFERÆ.**

ABIES ENGELMANNI, 9 to 12 inches, 7s. per dozen, 50s. per 100; 12 to 15 inches, 10s. 6d. per dozen, 75s. per 100; 15 to 18 inches, 15s. per dozen, 100s. per 100.
" PARRYANA, the best and hardiest form of A. Engelmanni, and one of the handsomest of the Spruce family. 9 to 12 inches, 12s. per dozen, 80s. per 100; 12 to 15 inches, 15s. per dozen, 100s. per 100; 15 to 18 inches, 18s. per dozen, 130s. per 100.
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CRYPTOMERIA ELEGANS, 12 to 18 inches, 7s. per dozen, 50s. per 100; 1½ to 2 feet, 9s. per dozen, 65s. per 100; 2 to 3 feet, 15s. per dozen, 105s. per 100.
CUPRESSUS LAWSONIANA, 1½ to 2 feet, 6s. per dozen, 30s. per 100; 2 to 2½ feet, 9s. per dozen, 50s. per 100.
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OF

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GARDEN IMPLEMENTS and REQUISITES, FRUIT TREES, ROSES, &c., for 1881,

*Is now published, and will be forwarded, post-free, on application.*

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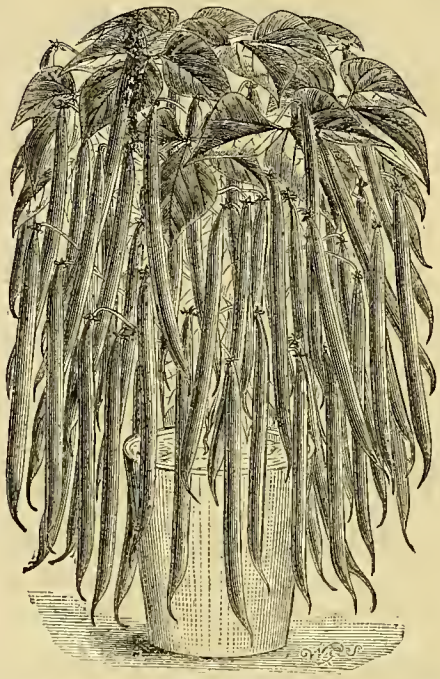

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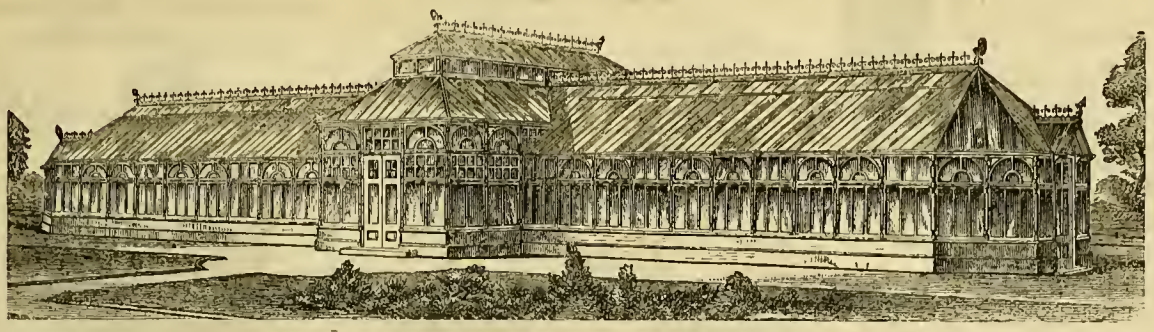

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ARCHANGEL and ST. PETERSBURG MATS, RAFFIA, SEED BAGS and SACKS, &c.
Prices on application.
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Of improved construction, can be erected in a few minutes, with Roosting House, Covered Run, Nests, Perches, &c., complete, 12 feet long 4 feet wide. Price £6 10s., carriage paid. Write for Illustrated Catalogue, containing useful Treatise on Poultry Management, free by post.
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GREENHOUSES erected in any part of the Country, including Brickwork and Carriage, 20 feet × 12 feet, £42; 30 feet × 12 feet, £60; 50 feet × 16 feet, £100. Estimates and Plans free on receipt of size required.
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HORTICULTURAL BUILDER,
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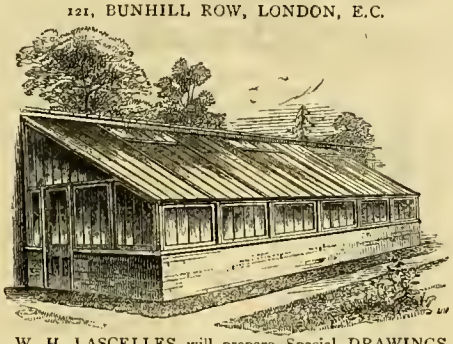

W. H. LASCELLES will prepare Special DRAWINGS and ESTIMATES for GREENHOUSES, if desired, without charge, and send his Illustrated Sheets, post-free, and also Sketches of Wooden Buildings for Tool-houses, Store-houses, &c.
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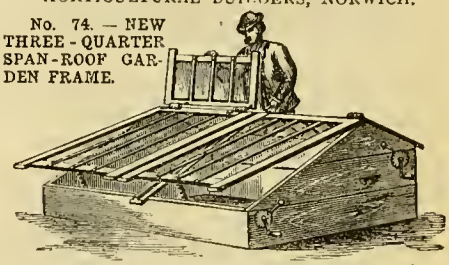

This Illustration shows a new Frame, specially adapted for Growing Cucumbers, Melons, &c., and for Storing Plants, giving greater height, more convenience, and better access to all the plants inside than our ordinary Melon and Cucumber Frame, No. 75.

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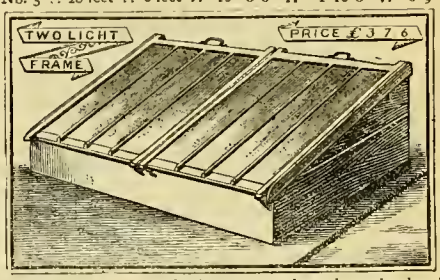
| Size. | Long. | From front to back. | | Gearing extra to 8 ft. size and upwards. | Packing Cases. |
|---|---|---|---|---|---|
| No. 1 | 4 feet | 6 feet | £3 0 0 | — | £0 4 0 |
| No. 2 | 8 feet | 6 feet | 4 15 0 | £0 15 0 | 0 5 0 |
| No. 3 | 12 feet | 6 feet | 6 10 0 | 1 2 0 | 0 6 6 |
| No. 4 | 16 feet | 6 feet | 8 5 0 | 1 10 0 | 0 8 6 |
| No. 5 | 20 feet | 6 feet | 10 0 0 | 1 16 0 | 0 9 6 |

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| 4-light ,, | 16 feet by 6 feet | 6 7 6 | 5s. 0d. |
| 5-light ,, | 20 feet by 6 feet | 7 17 6 | 6s. 0d |
| 6-light ,, | 24 feet by 6 feet | 9 7 6 | 6s. 6d. |

Lights only, 6 feet by 4 feet, unglazed and unpainted, 6s. each. Glazed with 21-oz. sheet glass and painted three coats, 16s. each.
All Orders amounting to 40s. Carriage paid to any Railway Station in England and Wales; also to Edinburgh and Glasgow, Dublin and Belfast.
Any damage in transit made good if advised immediately.
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PORTABLE TURKISH BATH (as used by Royalty, and at Malvern), invented by C. HUNTER for Gout, Rheumatism Sluggish Liver, Disease of the Kidneys, Stiffness of Joints, Lumbago, &c. The apparatus may be used in any room, is perfectly safe, and is without trouble in preparation.

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**Geometrical Mosaic and Encaustic**

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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

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| 20 × 12 to 24 × 16, | 11s 6d, | 13s 6d, | 14s 6d, 15s 6d. |
| 20 × 17 to 24 × 18, | 12s., | 14s., | 15s., 16s. |

Per 100 ft. Box.

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| 21-oz., Orchard House, 20 × 12, | 20 × 15, | 16s., | 17s. 3d., |
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15-oz., for Cutting up, 34s., 41s., 42s. 6d., 53s. per 300 feet case.
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LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.

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15-oz. and 21-oz., in Boxes containing 200 feet,

**Carriage Paid to any Railway Station in England.**

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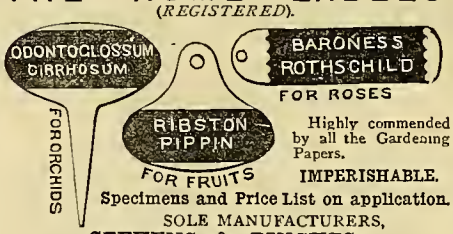


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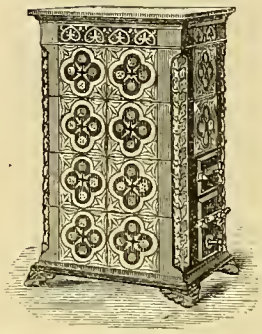

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**The Best System of Heating is by Hot Water.**
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THE BEST

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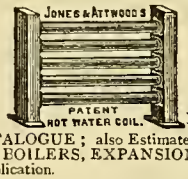


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3 feet 6 inches, 5 feet, and 6 feet.

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| No Smoke | No Dust |
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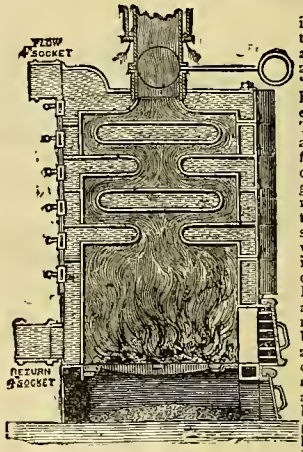
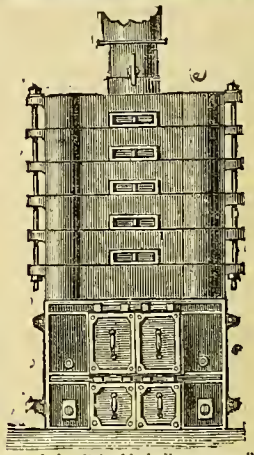
**Wright's Patent "Endless-Flame Impact" Hot-water Boilers.**




The whole interior is specially arranged to secure the largest amount of the direct and most powerful "flame-impact," delivered on the most effective surfaces. The interior currents are specially arranged for the most powerful circulation. Air and gases thoroughly mixed and burnt, and the formation of smoke largely prevented. The whole interior one large combustion chamber. May be erected by any ordinary workman. Indiarubber between all the joints, allowing every facility for expansion or contraction. Not a "fixture." May be altered to any power or level. In handy sections. Breakages easily repaired, &c. No brickwork. An accident to the furnace top or other exposed central section does not bring them to a standstill; but the defective piece being removed, two "Life Boat" connections (price 3s. 6d. each) are then put in, to carry up the waterways inside; all are then screwed up, and will work away till new sections arrive. With these "Life Boat" (so called because they save the ship) connections, the flaw is not touched nor lowered; a perfectly singular and unparalleled thing hitherto. The benefit of such an arrangement is simply inestimable, as it secures nearly all the advantages of the "double-boiler system" at half the cost. New Malleable Iron and Tubular Series.



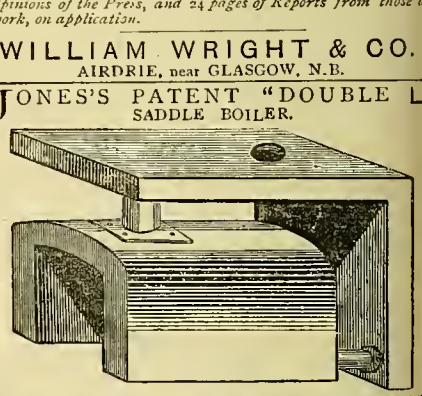
*Descriptive Pamphlets. New Price LIST of 175 Boilers, Opinions of the Press, and 24 pages of Reports from those at work, on application.*

**WILLIAM WRIGHT & CO.**

AIRDRIE, near GLASGOW, N.B.

**JONES'S PATENT "DOUBLE L"**

SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. High. | Wide. | Long. | To heat of 4-in. Pipe. Feet. | Price. £ | s. | d. |
|---|---|---|---|---|---|---|
| 20 in. | 18 in. | 18 in. | 300 | 7 | 0 | 0 |
| 20 ,, | 18 ,, | 24 ,, | 400 | 8 | 0 | 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 | 0 | 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 | 0 | 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 | 0 | 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 | 0 | 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 | 0 | 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 | 0 | 0 |

Larger sizes if required.

*From* Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

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FOR HEATING APPARATUSES.
The largest stock in the Kingdom. 4-inch pipes, 1s. 7d. per yard.
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**2-WHEEL HAND GAPPING DRILLS.**
Will sow every description of Farm and Garden Seeds.

There is no spring and slide to get out of order and damage the seed, being worked by a brush. The rows can also be put in at equal distances without a line.
Price, with 2 wheels, 20s. each.
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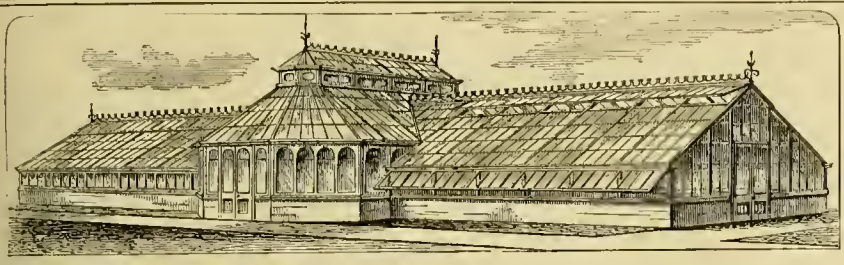
" to sow 2 rows, 34s. each.
For larger Manual and Pony Drills, see Illustrated List free from F. BIRD & CO., 11, Great Castle St., Regent St., London, W.

Two Gold Medals awarded to us by Royal Horticultural Society, at the



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Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price*. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.
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HEATING APPARATUS, with thoroughly *reliable Boilers* supplied and fixed in the most practical and efficient manner, and guaranteed to work economically and answer its purpose in all seasons. We devote special personal attention to this branch of our business, and have *never* had a *failure*.
**Plans, Estimates, and Catalogues free. Customers waited on in any part of the Kingdom.**
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Have the largest and most complete stock in the Trade to choose from.

HOT-WATER BOILERS, PIPES, and CONNECTIONS,
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*Their New Illustrated Catalogue, 10th Edition, now ready*
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**Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.**
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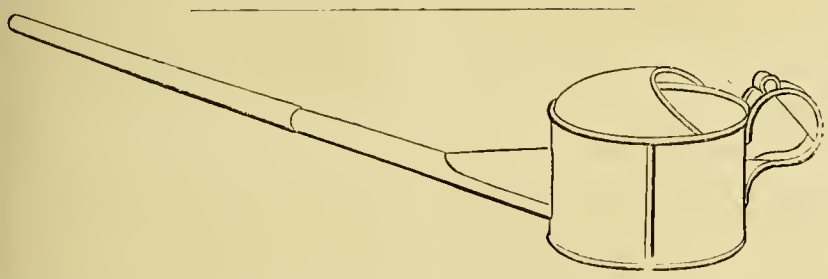

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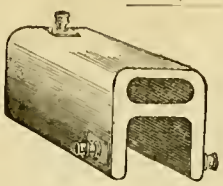

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Unsurpassed for economy and utility.
**HEATING APPARATUS fixed complete.**
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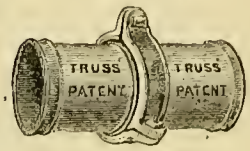


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*Catalogues Free on application.*

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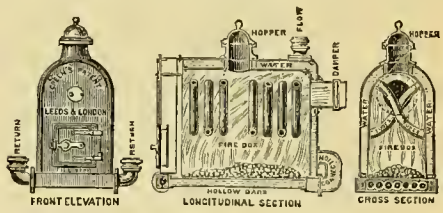
*With Tubes or Shelves, and Hollow or Ordinary Cast-iron Grate Bars.*
**SADDLE BOILERS,**
With WATERWAY BACKS and WELDED BOILERS, Specially adapted for Heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.
*They are the neatest, cheapest, most effective and durable of any extant.*
The Tubular ones are remarkable for their great Heating Power, Slow Combustion, and the length of time the Fire will Burn without requiring attention.

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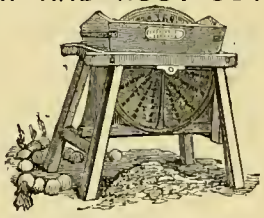

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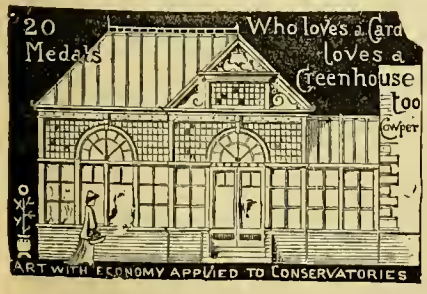


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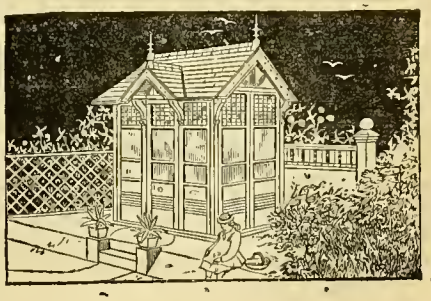

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NURSERY MANAGER, FOREMAN, or SALESMAN.—Twenty years' experience in all branches of the trade, in the best nurseries. Qualified to take journey; energetic, obliging, and of good address. First-class references. —S. B., 21, Grayland Villas, Catford, S.E.

TO SEED MERCHANTS, NURSERYMEN, &c. (WHOLESALE OR RETAIL).—The ADVERTISER (age 32) is open to treat with a first-class Firm to represent them as Manager, Traveller, or in any good position. Possesses a thorough knowledge of the business in all its branches. Also a good Accountant and Correspondent. Eighteen years' experience.—ALPHA, *Gardeners' Chronicle* Office, W.C.

ASSISTANT, in Seed Trade.—Five years' experience; good references.—ALPHA, 10, Distillery Street, Norwich.

SHOPMAN (HEAD), MANAGER, or TRAVELLER, or any position of trust.—Thoroughly experienced in every department of the Trade. Will accept a temporary engagement.—R. S., *Gardeners' Chronicle* Office, W.C.

SHOPMAN (ASSISTANT), or JUNIOR CLERK.—Age 23; has acquired an excellent knowledge both in the Nursery and Seed Trades. Eight years' experience. Good references.—D. P., Grand Pump Room Library, Abbey Church Yard, Bath.

SHOPMAN (SECOND, or ASSISTANT).—Age 21, Scotch; well up in the Retail Seed Trade. Good reference.—SEEDSMAN, 18, Hardgate, Haddington, N.B.

TO SEEDSMEN.—Wanted, to place a Youth (age 15½), in a good Retail Seed Shop.—For terms apply to JOSHUA LE CORNU, Nurseryman and Seedsman, Jersey.

COMMISSION WANTED.—A GENTLEMAN having a good connection amongst Nurserymen and Florists in London and Suburbs, would be glad of another Commission for a First-class Belgian House.—B., *Gardeners' Chronicle* Office, W.C.

KINAHAN'S LL WHISKY.

KINAHAN'S LL WHISKY.
Pure, Mild and Mellow, Delicious and Most Wholesome. Universally recommended by the Profession. The Cream of Old Irish Whiskies.

KINAHAN'S LL WHISKY.
Dr. Hassall says—"Soft and Mellow, Pure, well Matured, and of very excellent quality."

KINAHAN'S LL WHISKY.
Gold Medal, Paris Exhibition, 1878; Dublin Exhibition, 1865, the Gold Medal.—20, Great Titchfield Street, London, W.

DINNEFORD'S MAGNESIA.
The Medical Profession for over Forty Years have approved of this pure solution as the Best Remedy for
ACIDITY OF THE STOMACH, HEARTBURN, HEADACHE, GOUT, AND INDIGESTION,
and as the safest Aperient for Delicate Constitutions, Ladies, Children, and Infants.
DINNEFORD'S MAGNESIA.

SPRING MEDICINE.—OLD DOCTOR JACOB TOWNSEND'S SARSAPARILLA is the most effective and pleasant Remedy for all Blood and Skin Diseases, Gout, Pimples, Ulcers, &c. Most invaluable during Spring and Autumn. In bottles, 2s. 6d., 4s. 6d., and 11s.—131, Fleet Street, E.C.

More Cures of Coughs, Colds, Asthma, and TIGHTNESS of the CHEST, by
DR. LOCOCK'S PULMONIC WAFERS.—From Mr. Fell, M.P.S., Dewsbury:—"Having had occasion to use Dr. Locock's Wafers myself, for Tightness of Chest, I found them answer admirably, and I hear the highest eulogium from others, who have tried them for Coughs, Asthma, &c." In Asthma, Consumption, Bronchitis, and Rheumatism, they give instant relief, a rapid cure, and taste pleasantly.—Sold at 1s. 1½d., and 2s. 9d. per box.

HOLLOWAY'S PILLS.—For the cure of Debility, Bile, Liver and Stomach Complaints, this inappreciable medicine is so well known in every part of the world, and the cures performed by its use are so wonderful, that it now stands pre-eminent above all other remedies, more particularly for the cure of bilious and liver complaints, disorders of the stomach, dropsy, and debilitated constitution. In these diseases the beneficial effects of the Pills are so permanent that the whole system is renewed, the organs of digestion strengthened, and a free respiration promoted. They expel from the secretive organs and the circulation the morbid matter which produces inflammation, pain, fever, debility, and physical decay—thus annihilating, by their purifying properties, the virulence of the most painful and devastating diseases.

# STERLING *Carter's* NOVELTIES.

Pronounced by the Royal Horticultural Society and other acknowledged Authorities to be THE BEST of the SEASON.

## SEEDS.

Pronounced by the Royal Horticultural Society and other acknowledged Authorities to be THE BEST of the SEASON.

**NEW PEA — Carters' Stratagem.** THE ONLY PEA CERTIFICATED BY THE ROYAL HORTICULTURAL SOCIETY IN 1879.
Price, in sealed packets, 5s. per pint.

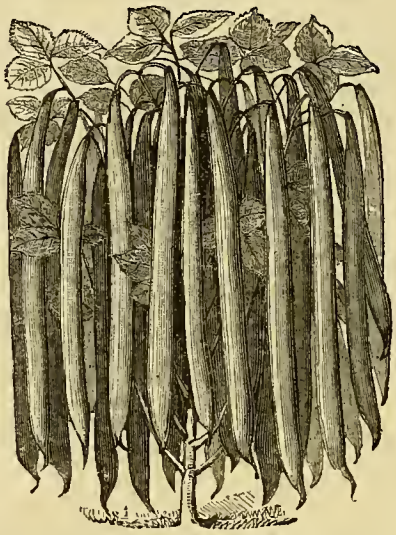
**NEW PEA — Carters' Telephone.** AWARDED THE FIRST-CLASS CERTIFICATE OF THE ROYAL HORTICULTURAL SOCIETY, 1878.
Price, in sealed packets, 3s. 6d. per pint.

**NEW PEA — Carters' Pride of the Market.** A SUPERB NEW DWARF PEA FOR GARDEN or FIELD CROPS.
Price, in sealed packets, 3s. 6d. per quart.

**NEW PEA — Culverwell's Telegraph.** AN INDISPENSABLE EXHIBITION VARIETY.
Price, in sealed packets, 2s. per pint.

**NEW PEA—Carters' Little Wonder.** A DWARF WRINKLED MARROW, AS EARLY AS ADVANCER.
Price, in sealed packets, 2s. 6d. per pint.

**NEW BEAN — Carters' Leviathan.** TAKES FIRST PRIZE EVERYWHERE, PRODUCING ENORMOUS PODS, 13 to 15 inches long.
Price, in sealed packets, 2s. 6d. per pint.



CARTERS' LONG SWORD.

NOTE.—We are again offering Valuable Prizes for the above Peas, and also for Collections of Vegetables, at the Meetings of the Royal Horticultural Society. For particulars see Schedule, or apply to us.

**NEW BEAN (Dwarf) — Carters' Long Sword.** A REMARKABLY PRODUCTIVE AND FINE-FLAVOURED VARIETY.
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Price, in sealed packets, 1s. 6d. and 2s. 6d. per packet.

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Price, in sealed packets, 1s. per packet.

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Price, in sealed packets, 1s. per packet.

237/238, HIGH HOLBORN, LONDON, W.C. { THE QUEEN'S SEEDSMEN, SEEDSMEN BY SPECIAL WARRANT TO H.R.H. the PRINCE OF WALES. } 237/238, HIGH HOLBORN, LONDON, W.C.



## SHUTTLEWORTH, CARDER & CO., Orchid and New Plant Importers,

191, CLAPHAM PARK ROAD, CLAPHAM, S.W.,

Having received their first consignment (from Mr. JOHN CARDER) of Choice Imported ORCHIDS, in splendid condition, beg to announce that

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 9, at half-past 12 o'Clock precisely, grand masses of ODONTOGLOSSUM CRISPUM (ALEXANDRÆ), from the districts from which the best varieties come; CATTLEYA TRIANÆ, species, from Ibague, the locality where Mr Shuttleworth collected those which have already flowered in this country, and given such satisfaction—extraordinary fine masses with perfect leaves; MASDEVALLIA HARRYANA—grand masses of this well known lovely Orchid; and ODONTOGLOSSUM GLORIOSUM. Dried flowers will be shown.

*May be viewed the morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.



## ODONTOGLOSSUM ALEXANDRÆ,

And other Large and Valuable Importations of Orchids.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 10, at half-past 12 o'Clock precisely, an extra large importation of ODONTOGLOSSUM ALEXANDRÆ, from the very best localities: the pieces are large, and in extra health. Also a quantity of splendid masses of LÆLIA ANCEPS and ALBIDA, CYMBIDIUM EBURNEUM CATTLEYA MENDELII, C. CITRINA, CHYSIS AUREA, MASDEVALLIA TOVARENSIS PHAJUS TUBERCULOSUS, and the new PHAJUS HUMBLOTI, and other ORCHIDS.

*May be viewed the morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.


Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, February 5, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 372.—Vol. XV. { New Series. } SATURDAY, FEBRUARY 12, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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*IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.*


**Now Ready, in cloth, 16s.,**

*THE GARDENERS' CHRONICLE,*

Volume XIV., JULY to DECEMBER, 1880.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

ARRANGEMENTS for 1881:—

EXHIBITIONS OF SPRING FLOWERS, Wednesdays, March 30 and April 27.

SUMMER EXHIBITIONS, Wednesdays, May 25 and July 6.

EVENING FÊTE and SPECIAL EXHIBITION, Wednesday, June 22.

BARNARD CASTLE HORTICULTURAL SOCIETY'S SHOW, FRIDAY, AUGUST 26.—£10 for Four Stove or Greenhouse Plants in flower; £8 10s. for Six distinct varieties of Fruit, and £5 for Four Ornamental-leaved Plants. Schedules on application to

J. J. BAILEY, Secretary.

LAXTON'S JOHN BULL PEA, a new 3 feet, main crop, Blue-Wrinkled variety, is
The Largest and Handsomest for Exhibition,
The Best for Flavour and Quality,
The Best for a Heavy Crop,
The Best for General Cultivation.
Price 5s. per sealed half pint.
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**Myatt's Improved Kidney Potatos.**

DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh, can offer above. Price per ton on application.
DOWNIE AND LAIRD, Seedsmen, 17, Frederick Street, Edinburgh.

FOR SALE, Myatt's Prolific POTATOS.—Several tons to dispose of, cheap. Also RHUBARB, and Jerusalem ARTICHOKES, for planting. We have also all the leading kinds of HERBS in stock. Apply
H. THORNTON AND CO., Dancer's Nurseries, Fulham, S.W.

SEAKALE.—SEAKALE.—SEAKALE.—Also ASPARAGUS and RHUBARB, for forcing and planting. Prices on application. Our Seed CATALOGUE is now ready, and will be forwarded free on application.
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RHUBARB, Victoria and Albert. Cask and packing included, 16s. per 100.
T. EVES, Gravesend Nurseries.—Established 1810.

RHUBARB FOR SALE, CHEAP.—Strong Planting Roots, 15s. to 20s. per 100; ditto for Forcing, 25s. per 100, 6s. per dozen. Package free for cash with order to
S. BIDE, Alma Nursery, Farnham, Surrey.

**To the Country Trade.**

WHITE SPANISH and STRASBURG ONION.

JAMES CARTER, DUNNETT AND BEALE are prepared to quote Special Prices to their Country Friends of the above, on application.
237 and 238, High Holborn, London, W.C.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

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FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

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DWARF ROSES, on Manetti, fine, 35s. per 100, £7 per 500. A few thousands 1-yr. cultivated Seedling BRIERS, 20s per 1000. If properly managed will be fit for budding Summer, 1881. For cash with orders only.
RICHARD LOCKE, The Rose Farms, Red Hill, Surrey.

**Eastern Counties Seed Growing Establishment.**

CATALOGUE of POTATOS and SEEDS for 1881, now ready. Post-free on application.
E. ABBOTT, Railway Nursery, Ardleigh, Colchester, Essex.

BUYERS wishing to avail themselves of a CHEAP OFFER of various TREES and SHRUBS should refer to large Advertisement appearing in this Paper on the 8th of last month, or see T. L. MAYOS' reduced LIST.
Highfield Nursery, Hereford.

POTATOS.—Rivers' Royal Ashleaf. Apply A. WARWICK, Solham, Deeping.

**To the Trade.**

POTATOS.—Myatt's Prolific Early Kidney, Magnum Bonum, Champion, Early Rose. Lowest cash price per ton on application.
W. W. JOHNSON AND SON, Seed Merchants, Boston, Lincolnshire.

**To the Trade.**

SCARLET RUNNER BEANS.—Price on application.
EDMUND PHILIP DIXON, Seed Grower, Hull.

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JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

**Eltham Nurseries.**

THE BUSINESS will be CARRIED ON by Mrs. ELIZABETH TODMAN (Executrix).

LARGE CONSIGNERS of CHOICE CUT FLOWERS, FRUITS, CUCUMBERS, &c., are requested to communicate with
WISE AND RIDES, Horticultural Agents, Tavistock Court, Covent Garden, W.C.

**Floral Commission Agency.**

WANTED, choice FLOWERS of all kinds, and MAIDENHAIR FERN. Letters and consignments, W. CALE, 4, Tavistock Row, Covent Garden, W.C.

**Gardenias.**

WARREN AND CRAIK will return the highest Price for GARDENIAS, TUBEROSES, and MARÉCHAL NIEL ROSES. Not for commission.
43, Jermyn Street, St. James's, London, W.

WANTED, from Stores, GERANIUMS of sorts, choice Gold and Bronze and Tricolors, for cash.
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WANTED, MANETTI STOCKS, COLEUS, Double PRIMROSES, and Bedding GERANIUMS. State price and quantity to
JAMES KIRK, Nurseryman, Stourbridge.

WANTED, to Purchase, 1000 MANETTI STOCKS, fit for Working.—Apply, stating price, to E. WILSON SERPELL (late Pontey), Nurseryman and Seedsman, Plymouth.

WANTED, ARBUTUS, 2 to 3 feet, bushy.
PARKER AND SONS, St. Michael's Hill Nursery, Bristol.

WANTED, LARCH, SPRUCE, Scotch and Silver FIR, 4 to 5 feet, well rooted. State price to DOWNIE AND LAIRD, Royal Winter Gardens, Edinburgh.

WANTED, strong CRAB and CHERRY STOCKS. Sample and price to
KINMONT AND KIDD, Nurserymen, Canterbury, Kent.

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SUTTON'S SEED POTATOS. SUTTON'S EARLY ASHLEAF.

SUTTON'S SEED POTATOS. SUTTON'S FILLBASKET.

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SUTTON'S SEED POTATOS. Carefully handpicked. A splendid change from all soils.

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SUTTON'S SEED POTATO LIST. Beautifully Illustrated and fully Descriptive. Gratis and post-free on application.

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LILIUM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz.; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

**Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.**

MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

POPLARS, Black Italian, very strong, 8 to 10 feet, 7s. per 100; HAZEL, 3 to 4 feet, 30s. per 1000; PRIVET, Evergreen, 3 to 4 feet, 25s. per 1000; LIMES, strong, from layers, 6 to 7 feet, 12s. per 100.
W. AND J. BROWN, Nurserymen, Stamford.

LARCH, 2 to 3 feet. Price on application.
PARKER AND SONS, St. Michael's Hill Nursery, Bristol.

**Pæonia sinensis and other varieties.**

ROBERT PARKER begs to announce that he can supply the above-named by the dozen, 100, or 1000, in nearly 150 named varieties, from 12s. per dozen upwards. Descriptive and priced Lists forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

LAPAGERIAS.
WHITE, extra strong, 42s. each; do., 31s. 6d. each; smaller, 21s. each.
RUBRUM, strong, 10s. 6d. each.
ROSEA, strong, 7s. 6d. each.
Price to the Trade on application.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Eastern Counties Seed Growing Establishment.**

CATALOGUE of POTATOS and SEEDS for 1881, now ready. Post-free on application.
E. ABBOTT, Railway Nursery, Ardleigh, Colchester, Essex.

STANDARD PLUMS.—Green Gage, Prince of Wales, Prince Engelbert, and many other of the finest kinds. Special Prices to the Trade and Large Buyers.
EWING AND CO., Eaton, Norwich.

SEED POTATOS.—For Sale, a splendid sample of Myatt's Prolific, true, 5s. 6d. per bushel. Special quotations for larger quantities.
W. ELDING, 7, Guildhall Street, Canterbury.

VINE POTS.—VINE POTS. The strongest and most durable POTS for VINES or FRUIT TREES are supplied by
JOHN MATTHEWS, Royal Pottery, Weston-super-Mare
"References to most of the leading Firms in the Trade."

## SALES BY AUCTION.

SALE THIS DAY AT HALF-PAST TWELVE O'CLOCK.

**Roses, Fruit Trees, Bulbs, &c.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 12, at half-past 12 o'Clock precisely, choice named Standard and Dwarf ROSES, including Hybrid Perpetuals, Noisette, Moss, and others; also Pyramid and Dwarf-trained FRUIT TREES, all first-rate sorts; HARDY HERBACEOUS PLANTS, choice LILIUMS, GLADIOLI, TIGRIDIAS, and other BULBS for Spring Planting; a few lots of English-grown CAMELLIAS, AZALEAS, RUSTIC GARDEN WORK, &c.

On view the morning of Sale and Catalogues had.

**7000 Lilium auratum, just received from Japan,** some in magnificent condition.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, February 14, at half-past 12 o'Clock precisely, an importation of 7000 bulbs of LILIUM AURATUM, just received from Japan, including some of the finest bulbs ever imported. Also rare Hardy ORCHIDS, including a new Cypripedium from California, with native Drawing; Habenaria psycodes, H. fimbriata; Cypripedium acaule, and other hardy North American species. A few plants of a new GENTIANA, some fine plants of CLINTONIA ANDREWSII, &c.; a consignment of 2000 double Italian TUBEROSES from America; several importations of rare Californian and Japanese LILIES, including gigantic bulbs of Lilium Humboldtii, L. parvum, L. pardalinum, L. Washingtonianum, and others; 200 fine imported clumps of JAPANESE IRIS, received direct from Japan; a consignment of TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, and GLADIOLI, from New Jersey, &c.

On view morning of Sale, and Catalogues had.

**Choice Imported Orchids.**

Collected by Mr. John Carder, and received in splendid condition.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 16, at half-past 12 o'Clock precisely, grand masses of ODONTOGLOSSUM CRISPUM (Alexandræ), from the districts from which the best varieties come. CATTLEYA TRIANÆ species—these are in splendid condition, many being well furnished with leaves. The grand varieties which have already flowered in this country were brought home by Mr. Shuttleworth in 1875. The colours varying from pure white to the most delicate rose, with deep purple labellum; the pure white variety of CATTLEYA TRIANÆ, and MASDEVALLIA HARRYANA.

On view the morning of Sale, and Catalogues had.

**Established Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 17, at half-past 12 o'Clock precisely, the collection of ESTABLISHED ORCHIDS formed by the late C. Leach, Esq., of Clapham Park. Also another small collection of ESTABLISHED ORCHIDS, the property of a gentleman, including, among many others, some grand plants of Phalænopsis in fine health, Cattleya dolosa, C. eldorado splendens, Lælias, Aerides, Cypripediums, Vandas, Oncidiums, Miltonias, Odontoglossums, many of them being fine specimen plants, well worthy of attention; and fifteen fine plants of Masdevallia Shuttleworthii.

May be viewed morning of Sale, and Catalogues had.

**Camellias and Azaleas from Ghent, Standard and** DWARF ROSES, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY NEXT, February 19, a consignment of 200 CAMELLIAS, 200 Indian AZALEAS, mostly named, and well set with bloom-buds, from Ghent; first-class Standard, Dwarf, and Climbing ROSES, all good named sorts; Pyramid and Dwarf-trained FRUIT TREES, a great variety of HARDY HERBACEOUS BORDER PLANTS, choice GLADIOLI, LILIUMS, TIGRIDIAS, and other BULBS for spring planting, &c.

On view the morning of Sale, and Catalogues had.

**The renowned Collection of Orchids of** JOHN DAY, ESQ., of TOTTENHAM.

MR. J. C. STEVENS has received instructions from J. Day, Esq., to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without the slightest reserve, during the ensuing spring months, his entire COLLECTION of ORCHIDS. This Collection, which is one of the finest in the country, contains well-grown specimens of almost every species and variety worth growing. The following are the days of Sale:—

| | |
|---|---|
| THURSDAY, March 31 | THURSDAY, May 5 |
| FRIDAY, April 1 | |
| | MONDAY, May 23 |
| TUESDAY, April 12 | TUESDAY, May 24 |
| WEDNESDAY, April 13 | |
| | THURSDAY, June 9 |
| WEDNESDAY, May 4 | FRIDAY, June 10 |

Further particulars will appear prior to each Sale, and Catalogues will be ready about ten days before. The plants will be on view on the morning of each Sale, but cannot be viewed on the premises without a special order from Mr. J. C. STEVENS. To avoid any risk to the plants, they will be brought to King Street on the afternoon prior to each Sale, and when necessary the rooms will be heated.

**Monday Next.**

LILIUM AURATUM and KRAMERI, ORCHIDS, and PLANTS from Ghent.

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, 5000 splendid bulbs of LILIUM AURATUM and KRAMERI, just arrived from Japan in unusually fine condition; an excellent assortment of hardy English-grown LILIES and BULBS, extraordinary fine bulbs of L. Humboldtii, L. parvum, L. pardalinum, and L. Washingtonianum; also the new L. Parryi, L. Neilgherrense, and L. Szovitzianum; choice Californian bulbs, including Butterfly Tulips (Calochortus), Mariposa Lily, the Golden Star Tulip, &c.; a consigment from Ghent of 300 CAMELLIAS and AZALEAS, well budded, PALMS, &c.; 2000 AMARYLLIS FORMOSISSIMA from Mexico, together with about 200 lots of Established ORCHIDS, including nice healthy plants of Odontoglossum vexillarium, Chysis aurea, Masdevallia aurea, M. psittacina, Angræcum sesquipedale, Dendrobium Jamesianum, Oncidium Gardnerianum; Batemannia meleagris, and many other rare and choice species.

View morning of Sale. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Thornton Heath—Clearance Sale.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Sion Nursery, Thornton Heath, S.E., on THURSDAY, February 17, at 12 o'Clock, by order of the Executrix of the late Mr. A. Henderson, without Reserve (the Estate having been disposed of), the whole of the Trade Erections, including 13 well-built GREENHOUSES, containing about 12,000 feet super. of Glass and Woodwork, 5 PITS, 3400 feet of HOT-WATER PIPING, 6 BOILERS, 150,000 BRICKS, &c.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

**The Anchor Gardens, Knap Hill, Woking, Surrey.**

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Jay to SELL by AUCTION, on the Premises, as above, on TUESDAY, February 22, at 12 o'Clock, 6000 LAURELS, POPLARS, &c., 3500 AUCUBA JAPONICA, 4500 HOLLIES, Standard and Dwarf ROSES, HERBACEOUS PLANTS, &c.

On view. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C.

**The Springfield Watercress and Pleasure Gardens,** 156, Wandsworth Road, S.W.

CLEARANCE SALE, Ground required for building.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises (as above), on THURSDAY, February 24, at 12 o'Clock, 1500 CLOVE CARNATIONS, 1000 ROSES, 5000 RHUBARB ROOTS, and materials of GREENHOUSE, PITS, AREOURS, and DRINKING BARS, a FOUNTAIN, and Effects.

On view day prior. Catalogues of Auctioneers, 98, Gracechurch Street, E.C.

**Brox Nursery, Chertsey, Surrey.**

In the High Court of Justice, Chancery Division, in the matter of the Estate of George Gray the Younger, deceased.—Gray *v.* Gray.

MR. R. WATERER (of the Firm of R. & J. Waterer & Son), the person appointed by Vice-Chancellor Sir C. Hall (the Judge to whose Court this action is attached), will SELL by AUCTION, upon the Premises, on MONDAY, FEBRUARY 21, and following Days, at 12 o'Clock punctually, the whole of the valuable and well-grown NURSERY STOCK, comprising about 150 lots of Mixed Ornamental Shrubs, including many fine Specimen Plants, well furnished and well-rooted; 2000 Standard and Dwarf Roses, 40,000 Green and Variegated Hollies, 1 to 4 feet; 1000 Kalmia latifolia, 4000 Rhododendron ponticum, 1 to 2 feet; 10,000 do., 3 to 6 inches; 2800 Rhododendrons, to name; 300 fine do., 3 to 4 feet, well set for bloom; 200 Golden Yew, 1 to 2 feet; 3000 common do., 3500 Portugal Laurel, 6 inches to 2 feet; 10,500 common Laurel, 1 to 3 feet; 6000 caucasica do., 1 to 2 feet; 3000 Aucuba japonica, 6 inches to 2 feet (bushy plants); 500 mascula do., 3000 Cedrus Deodara, 2 to 5 feet; 5000 Wellingtonia gigantea, 1 to 4 feet; 2000 austriaca and Laricio, 2000 Silver Fir, 500 Picea Nordmanniana, 1 to 3 feet; 1500 Weymouth Pine, 3 to 5 feet; 500 Abies Douglasii, 3 to 6 feet; 2500 orientalis, 1 to 3 feet; 600 Menziesii, 2 to 5 feet; 3000 Retinospora ericoides, leptoclada, plumosa nana, 6 to 18 inches; several thousand Forest Trees, Scarlet Chestnut, common Horse Chestnut, Poplar, Mountain Ash, Sycamore, Common and Purple Beech, Spruce, from 3 to 14 feet; fine Weeping Ash and Willow, 7 to 8 feet; 2000 Fruit Stocks, consisting of Pears, Crabs, Mussel and Common Plums, a quantity of clean-grown Fruit Trees, of the most choice sorts, and true to name, comprising 3000 Standard and Pyramid Apples, Pears, Plums, and Cherries, 15,000 Maiden Apples and Pears (very strong); 2000 Paul's Double Scarlet Thorn, 2000 Berberis, japonica, Aquifolia and Darwinii; 500 Clematis in pots, to name; 300 Ivies of sorts, 3000 Deutzia gracilis, and a variety of other Stock, all well grown, well rooted, and in good condition for removal; also a very valuable powerful 6-yr. old Bay CART-HORSE, PONY, and Village CART; Two nearly New Crosskill CARTS, one with Springs and patent Axletrees; capital HARNESS, and other effects.

May be viewed seven days prior to the Sale, and Catalogues had upon the Premises; of Messrs. HEATHFIELD AND SON, Solicitors, 44, Lincoln's Inn Fields, London; of J. A. REDHEAD, Esq., Solicitor, 5, Mark Lane, London, and Chertsey; and of Messrs. R. AND J. WATERER AND SON, Auctioneers and Valuers, Chertsey, Surrey.

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FOR DISPOSAL, in a most thriving town on the South Coast, a NURSERY, FLORIST, and SEED BUSINESS, with a good Jobbing Connection, and doing a profitable Trade, which may be easily extended, comprising nearly 2 Acres of Land, 2 Pineries in full bearing, Stove and Cucumber House, Propagating House, 2 Span-roofed Greenhouses; also Show House and Seed Shop, all heated with Hot Water, together with 2 Ranges of Pits, Frames, Potting Sheds, Worksbop, &c. Rent only £25 per annum. Goodwill, Nursery Stock, Shop, Greenhouses, and all Erections.

Price and particulars on application to FLORIST, 26, Alexandra Street, St. Leonard's-on-Sea.

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WILLIAMS' for AMARYLLIS and all other Bulbous Plants. For many years these Nurseries have been celebrated as possessing the finest collection of Amaryllis in the country.

WILLIAMS' for LILIUMS. Consignments of LILIUM AURATUM are now being received in splendid condition.

WILLIAMS' for PITCHER-PLANTS, including all the old and well known varieties, as well as several novelties of B. S. Williams' own introduction.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

RETAIL SEED CATALOGUE.—We shall have pleasure in sending the above post-free to all applicants. Our prices will compare favourably with those quoted by other Seedsmen, and the Seeds may be relied upon as being from finest selected stocks.

F. AND A. SMITH, West Dulwich, S.E.

RASPBERRY.—Northumberland Fillbasket, extra strong Canes. Lowest price on application to E. P. DIXON, Hull.

**Extra Strong Vines.**

FRANCIS & ARTHUR DICKSON & SONS offer as above, splendid well ripened, short-jointed Canes, both Fruiting and Planting sizes, raised without bottom-heat, and thoroughly clean and healthy. Priced LIST, including all the best varieties, on application.

The "UPTON" Nurseries—Chester.

**Lilium auratum.—Newly imported from Japan.**

GARAWAY AND CO. will forward per post, on receipt of 1s., a strong flowering bulb of the above most beautiful Lily; or on receipt of P.O.O. for 10s. will forward a dozen carriage paid to any railway station.

JAS. GARAWAY AND CO., Durdham Down, Clifton, Bristol.

**To the Trade.**

HOME-GROWN FLORISTS' FLOWER SEEDS.

F. AND A. SMITH can still supply a limited stock of their superb strains of the above, including BALSAM, CALCEOLARIA, PRIMULA, &c.

Price LIST on application.

The Nurseries, West Dulwich, S.E.

SEED POTATOS.

GRAMPIANS, Robertson's true stock, 20 tons, at £6 10s. per ton.

CHAMPIONS, true Scotch, 25 tons, at £3 15s. per ton.

PRINCE ARTHUR KIDNEY, 15 cwt., at 11s. p. cwt.

RIVERS' ROYAL ASHLEAF KIDNEY, 5 tons, at £6 10s. per ton.

And other leading sorts. Prices on application.

THOMAS IMRIE AND SONS, Nurserymen and Seedsmen, Ayr, N.B.

B. S. WILLIAMS begs to intimate that in the event of any of his Customers not receiving his ILLUSTRATED CATALOGUE, if they will kindly communicate with him, a Copy will be sent.

Seed Merchant and Nurseryman, Upper Holloway, London, N.

**Surplus Stock of**

ZONAL PELARGONIUMS, potted in single (3-inch) pots in October. Dr. Denny's Commander-in-Chief, per 100, 20s.; per dozen, 5s.; Fire King, per 100, 12s.; Vesuvius, 8s. per 100; Master Christine, 8s. per 100; Jennie Dodds, 12s. per 100. Will be sent in March.

HENDER'S magnificent strain of PETUNIAS, single, 2s. per packet.

HENDER AND SONS, Nursery, Plymouth.

TO THE TRADE and LARGE BUYERS I beg to offer the following, at very low prices:—

RIBES, in variety.
WEIGELAS, ditto.
SPIRÆAS, ditto.
DEUTZIA CRENATA flore-plena.
LONICERA LEDEBOURII.
VIRGINIAN CREEPERS, and
SWEET BRIERS.

All the above are stout bushy stuff, and all transplanted spring 1880.

CHARLES KERSHAW, The Head Syke Nurseries Brighouse.

QUICKS, extra strong, 3 to 3½ feet, fine, 17s per 1000; LAURELS, bushy, 1½ to 2 feet, 80s. per 1000; PEAR STOCKS, fit to graft, strong, 30s. per 1000 HOLLY, bushy, 1 to 2 feet, 25s. per 100.

Mr. JACKSON, Blakedown, near Kidderminster.

SUTTON'S MAGNUM BONUM POTATO—For Sale, true stock, being the produce of seed supplied by Messrs. Sutton & Sons when first introduced by that firm. They are in prime condition, and perfectly free from disease or frost. A 2 cwt. sample will be sent carriage paid to any Railway Station in England or Wales, on receipt of Post-office Order for 18s., and address. Also EARLY ROSE, at 14s. per 2 cwt. Carriage paid. Cheaper by Ton or Truckload.

J. T. SMITH, Potato Merchant, Wisbech, Cambs.

**To the Trade.—Clearance of Land for Building.**

ASPARAGUS, Colossal, 1-yr., 4-yr., and 9-yr (forcing); also RHUBARB Roots—Linnæus, Ruby Prince Albert, Stott's Monarch, and Johnston's St. Martins.

FREEMAN AND FREEMAN, Norwich.

ORCHID FLOWERS for Sale (CŒLOGYNE CRISTATA)

Apply at 33, Turner Road, Lee, S.E.

**Epacris.**

F. AND A. SMITH are offering the above in extra fine Plants, unusually well set with flower. Price on application.

The Nurseries, West Dulwich, S.E.

EUONYMUS EUROPÆUS.—Strong Seedlings of different ages, per 1000 or 10,000, at cheap rates. Prices by correspondence.

A. RATHKE AND SON, The Nurseries, Praust, near Danzig, Prussia.

FOR SALE, on account of leaving, a few well and tastefully made VIRGIN CORK HANGING BASKETS, WALL BRACKET POTS, FLOWER POTS, FERN CASES, &c. To be sold cheap.

Address GEORGE CHAPMAN GREEN, 1, Sheldon Street, Bishop's Road, London, W.

**To the Trade.**

SPECIAL QUOTATIONS for

ALL KINDS of TURNIP SEED forwarded on application.

EDMUND PHILIP DIXON, Seed Merchant, 52, High Street, Hull.

**Notice—Notice—Notice.**

AGRICULTURAL, KITCHEN GARDEN and FLOWER SEEDS.

An allowance of 10 per cent. made on all orders above 20s., and carriage paid to all parts of London within a radius of 20 miles.

Also special facilities given to Market growers where seeds are required in large quantities. A trial respectfully invited.

COLLECTIONS for LARGE and SMALL GARDENS from 10s. 6d. to £3 3s. Catalogues free on application.

H. THORNTON AND CO., Nurserymen and Seedsmen, "Dancer's" Nurseries, Fulham, W.

CHOICE NEW FLOWER SEEDS for Spring, 1881. Post-free, with Instructions for Cultivation.

ASTER, DANIELS' VICTORIA.—The most beautiful Aster in cultivation. Flowers large, beautifully imbricated and perfectly double; splendid. Twelve superb varieties, 3s.; mixed seed, 6d. and 1s. per packet.

DANIELS BROS., The Queen's Seedsmen, Norwich.

BALSAM, DANIELS' CAMELLIA-FLOWERED.—Remarkably fine and double, with large brilliantly coloured flowers. Six beautiful varieties, 3s. 6d.; mixed seed, 1s. 6d. per packet.

DANIELS BROS., The Queen's Seedsmen, Norwich.

COCKSCOMB, DANIELS' GIANT PRIZE.—Magnificent strain from combs 36 inches by 12 inches, and of the richest velvety crimson colour. Per packet, 2s. 6d.

DANIELS BROS., The Queen's Seedsmen, Norwich.

PANSY, DANIELS' PRIZE BLOTCHED.—A superb strain of fine varieties with large, beautifully spotted flowers; highly commended. Per packet, 1s. 6d. and 2s. 6d.

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PETUNIA HYBRIDA GRANDIFLORA.—A new and distinct class of large-flowered beautiful varieties, producing blooms of immense size and of the most charming colours. Choicest mixed, per packet, 1s. 6d. and 2s. 6d.

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PHLOX DRUMMONDI GRANDIFLORA.—A new class of splendid varieties. Flowers large and brilliant with white centres; much superior to the old Phlox Drummondi. Eight splendid varieties, 2s. 6d.; mixed seed, per packet, 6d. and 1s.

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STOCK, DANIELS' LARGE-FLOWERED TEN-WEEK.—The finest Ten-week Stock in cultivation, flowers large, brilliant, perfectly double, and deliciously fragrant; should be in every garden. Twelve beautiful varieties, 3s.; mixed seed, per packet, 6d. and 1s.

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ZINNIA ELEGANS, NEW DOUBLE.—A very fine class of beautiful varieties with handsome, perfectly double flowers of the most splendid colours. Twelve brilliant varieties, 2s. 6d.; choicest mixed, 6d. and 1s. per packet.

DANIELS BROS., The Queen's Seedsmen, Norwich.

EUONYMUS JAPONICUS, 6 to 12 inches, 8s. per 100; E. AUREA MARGINATA and MEDIOPICTA, 6 to 9 inches, 20s. per 100; 9 to 15 inches, 6s. per dozen. VARIEGATED and ORNAMENTAL IVIES, 3s. per dozen; VERONICA TRAVERSII, 3s. to 6s. per dozen. ALPINE and ROCK PLANTS, 2s. per 100.

STANSFIELD BROTHERS, Southport.

**Roses, Fruit Trees, &c.**

WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.

Ottersbaw Nurseries, Chertsey.

LARCH.—500,000 1-yr., 1-yr., very fine lot. Samples and price on application.

JAMES ANDERSON, Nurseryman and Valuer, Meadowbank, Uddingston, near Glasgow.

HAZEL AND PRIVET.—50,000 Hazel, and 20,000 Privet, for sale, cheap for cash. Samples and price on application.

J. GEO. HILL (late Scott), The Royal Nurseries, Merriott, Somerset.

ARAUCARIA IMBRICATA.—A large Stock of fine Specimens of the above, from 6 to 9 feet high. Price on application to

T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

**Seeds.**

CHARLES TURNER'S Descriptive Price LIST for the present season is now ready, and may be had on application.

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PLANT FROST RESISTING SHRUBS.

TREE BOX looks as fresh and green after the late severe weather as ever. A large stock of all sizes. Prices on application to,

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KENTISH FRUIT TREES.—One of the largest stocks in the county, comprising Standard Pyramid and Trained CHERRIES, APPLES, PEARS, and PLUMS, in 300 varieties, at from 60s. to 100s per 100. GOOSEBERRIES and CURRANTS, KENTISH COBS, RASPBERRY CANES, &c., at very low prices.

T. EVES, Gravesend Nurseries.—Established 1810.

THORN QUICK and HOLLY for Hedges. Several thousands of the above to be Sold Cheap, the ground being required for other purposes. Apply

W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

THE MOST SUPERB ROSES that money can buy.

Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100. Descriptive Price LIST on application.

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COVERT PLANTING.

BOX, Tree, 1½ to 2 feet, per 100, 12s.
COTONEASTER MICROPHYLLA, 1½ to 2 feet, per 100, 25s.
MAHONIA AQUIFOLIA, 1 to 1½ foot, per 100, 10s.
PRIVET, Evergreen, 5 to 6 feet, per 1000, 60s.
SPRUCE FIRS, 2 to 3 feet, per 100, 10s.

JNO. JEFFERIES AND SONS, The Royal Nurseries, Cirencester.

PLANT FRUIT TREES EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.

We beg to invite Inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

*Descriptive Priced CATALOGUE, free on application.*

CRANSTON'S NURSERY & SEED CO. (LIMITED).

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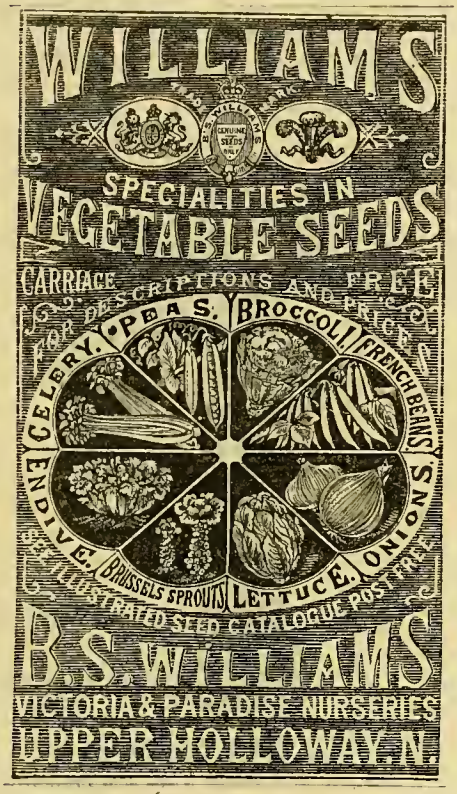


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Without exception the finest possible Strain.

Price, per packet, 1s.

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BEGS TO OFFER

Large Quantities, at Low Prices, of—

ALPINE PLANTS, AQUATICS, ERICAS, PERENNIALS. } Hardy.

CONIFERÆ, Half a foot high. The best Golden and Silver Variegated sorts.

Tottenham Nurseries,

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FOR SALE,

A Large Quantity of

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1 to 2, and 2 to 3 feet.

*Special Prices on application to*

CRANSTON'S NURSERY & SEED CO. (LIMITED)

KING'S ACRE, near HEREFORD.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, offer:—

ASH, Mountain, 3 to 4 feet, 20s., 5 to 6 feet, 30s. per 1000.
AREA THEOPHRASTI, 3 to 4 feet, 8s. per 100.
ALDER, 1½ to 2 feet, 14s., 3 to 4 feet, 26s. per 1000.
FIR, Silver, 2-yr. and 2-yr. transplanted, 6s. per 1000.
,, Scotch, 9 to 12 inches, 15s. per 1000.
,, Spruce, 6 to 9 inches, 5s., 9 to 15 inches, 8s., 1 to 1½ foot, 10s., 1½ to 2 feet, 15s. per 1000.
LARCH, 9 to 12 inches, 12s., 1 to 1½ foot, 15s., 1½ to a feet, 18s. per 1000.
LIMES, 3 to 4 feet, 100s. per 1000; 6 to 7 feet, 25s. per 100.
OAK, 1 to 2 feet, 12s. per 1000.
PINASTER, 9 to 12 inches, 8s. per 1000.
POPLAR, Black Italian, 3 to 4 feet, 20s., 4 to 5 feet, 28s. p. 1000.
SYCAMORE, 2 to 3 feet, 20s. per 1000.
ANDROMEDA FLORIBUNDA, 1 to 2 feet, 80s. per 100.
BERBERIS DULCIS, 9 to 12 inches, 20s. per 1000.
BOX ELEGANTISSIMA, 9 to 12 inches, 12s. per 100.
CEDRUS ATLANTICA, 3 to 5 feet, 20s. per dozen.
,, DEODARA, 1½ to 2 feet, 50s. per 100.
CRYPTOMERIA ELEGANS, 1½ to 2 feet, 18s., 2 to 3 feet, 25s. per 100.
CUPRESSUS ERECTA VIRIDIS, 1 to 1½ foot, 20s. p. 100.
DOGWOOD, Red, 1½ to 2 feet, 40s., 2 to 3 feet, 60s., 3 to 4 feet, 80s. per 1000.
EUONYMUS RADICANS VARIEGATA, 3 to 4 inches, 20s., 4 to 6 inches, 25s. per 1000.
HOLLY, Golden Queen, 1 to 1½ foot, 100s., 1½ to 2 feet, 150s. per 100.
,, Silver, 1 to 1½ foot, 40s. per 100.
JUNIPER, Irish, 12 to 15 inches, 12s. per 100.
,, tripartita, 6 to 9 inches, 12s. per 100.
PICEA NORDMANNIANA, 3 to 4 feet, 18s. per dozen.
RETINOSPORA PLUMOSA, 4 to 6 inches, 10s., 9 to 12 inches, 20s., 12 to 15 inches, 30s. per 100.
RHODODENDRON PONTICUM and Hybrid, 9 to 12 inches, 70s., 12 to 18 inches, 120s. per 1000.
,, JACKSONI, 6 to 9 inches, 25s., 12 to 15 inches, 40s. per 100.
WHIN, Double, 1 to 1½ foot, 80s. per 1000.
YEWS, 9 to 12 inches, 8s., 1½ to 2 feet, 20s., 2 to 3 feet, 25s. per 100.

**The Nurseries and East Kent Seed Warehouse,**
ASHFORD, KENT.

THOMAS BUNYARD begs to announce that his First Annual CATALOGUE of SEEDS for the GARDEN and FLOWER GARDEN is published, and may be had post-free on application. He will only say it is a complete List, and contains all that can be desired in a Trade Catalogue. Flower Seeds, post-free; 5 per cent. discount for cash. Orders kindly solicited.

THOMAS BUNYARD, Ashford, and at Rye, Sussex.

**Cheap Offer of Fruit and Other Trees,**
SHRUBS, HERBACEOUS and SPRING BEDDING PLANTS.

T. L. MAYOS, having to give up two portions of his Nurseries this Spring, offers the above at 25 per cent. off Catalogue Prices for Cash. Orders will be executed in rotation until stock is sold. CATALOGUES Free. Apply, Highfield Nurseries, Hereford.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.

EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

BEAUTY of NORFOLK.—Choice new Seedling Potato, of extra fine quality. This may be described as a late Beauty of Hebron being of the same habit of growth and quality, but more robust, and ripens a fortnight later, is a good disease resister, and first-class for Exhibition. Per pound, 1s.; 7 lb., 6s.; 14 lb., 10s. 6d. 100 other choicest kinds in stock.

DANIELS BROS., Seedsmen to H.R.H., The Prince of Wales, Norwich.

GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, short jointed and well ripened: Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears Apples, and Figs.

Descriptive Price LIST for 1d. stamp.

RICHARD SMITH AND CO., Nurserymen, Worcester.

**Seeds of Superior Quality, Carriage Free.**

OUR DESCRIPTIVE PRICED and ILLUSTRATED CATALOGUE of Select Vegetable and Flower Seeds, Potatos for Planting, &c., is now ready, and will be forwarded post-free on application.

DICKSON AND ROBINSON, 12, Old Millgate, Manchester.

**Webb's Prize Cob Filberts.**

MR. COOPER having succeeded to the whole of the late Mr. Webb's valuable stock of Prize Cob Filbert Trees, is prepared to supply them in small or large quantities, and solicits early orders.

Calcot Gardens, near Reading, Berks.

**Twelfth Edition**

"WEBBS' PRIZE COB FILBERTS, AND HOW TO GROW THEM."

This Pamphlet will be forwarded to any one sending Two Postage Stamps to

Mr. COOPER, Calcot Gardens, near Reading, Berks.

SPRING FLOWERS

POLYANTHUS—Choice varieties, including Gold and Silver Chain, Hose-in-Hose, &c.
PRIMROSES—Double White, Lilac, Yellow, Crimson, and choice Single varieties.
COWSLIPS—Giant and other sorts.
AURICULAS—Alpine and Double Dark varieties.
HEPATICAS—Red, White, and Blue.
CHRISTMAS ROSES—In variety.
SWEET WILLIAMS—Very choice sorts.
WALLFLOWERS—Yellow and Dark.
MYOSOTIS DISSITIFLORA—Spring Forget-me-Not.
COLEUS—In first-class variety.

Apply to Mr. COOPER, Calcot Gardens, Reading, Berks.

EVERGREEN HEDGES, in great variety, very cheap.

Descriptive Price LIST on application.

RICHARD SMITH AND CO., Nurserymen, Worcester.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

**Gold Medal Begonias.**

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 1*s.* and 2*s.* 6*d.* each. All first quality. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

JOHNSTON'S DOWNSHIRES.—We can now supply this fine variety, 3*s.* 6*d.* per peck, or 10*s.* 6*d.* per bushel. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8*s.* per dozen, 50*s.* per 100.
Descriptive LIST on application.
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RASPBERRY CANES and STRAWBERRY PLANTS.
For Sale, in large or small quantities, the undermentioned very best varieties:—

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| Carter's Prolific. | President. |
| Northumberland Fillbasket. | Sir Joseph Paxton. |
| Red Antwerp. | Aigburth. |
| Semper Fidelis. | Elton Pine. |
| Fastolf. | Eleanor. |

Apply to JOSIAH H. BATH, Manor Farm, North Cray, Kent.

WHITE ELEPHANT.—A choice new American Potato, of very great promise, raised from the same seed-ball as the Beauty of Hebron, which it resembles in many respects, but more productive; in fact, we may claim that the White Elephant not only possesses the unexcelled qualities of the Beauty of Hebron, but also the wonderful productiveness of the old California of twenty years ago. Price 1*s.* 3*d.* per pound, 7 lb. 7*s.* 100 other choice kinds in stock.
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LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

KING NOBLE, or EARLY GOLDEN SHAW; the best early Potato of its class, being as early as the true old Ashleaf, and as fine a flavour, but produces four to six times the quantity. Dwarf and compact habit. First-class for early work. Per peck, 4*s.*; per bushel, 14*s.* 100 other choice kinds in stock.
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APPLE TREES with MISTLETO growing on them. Price from 7*s.* 6*d.* to 21*s.* each.
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ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUIOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

Contractor to Her Majesty's Government. By appointment to H.R.H. Prince of Wales.

# POTATOS.

## Best and Cheapest House in Berkshire for all kinds of Seed and Eating Potatos.

LARGE STOCKS of the above, comprising every variety worth growing.

### SPECIAL OFFERS:—

**100 Tons Scotch Champions,** good seed size, no waste in cutting, in quantities not less than 1 ton. Price £4 10*s.* per ton. Can supply from either light or heavy soils.

**50 Tons Seed Size Victorias,** at £5 per ton.

**Also,** large quantities of the **well known Berkshire Favourite,** for present consumption; recommended by thousands as the best obtainable variety at this time of the year: £5 5*s.* per ton. All free on Rail.

*CATALOGUE of both kinds, GRATIS and POST-FREE, on application to*

**C. FIDLER, Potato Grower, Reading.**

# AIGBURTH BRUSSELS SPROUTS.

*The Best Flavoured, Hardiest, and Most Productive Variety in Cultivation.*

**In use from October to March.**

This is the only variety which has withstood the recent severe weather; it has been tested by the most practical Gardeners, and pronounced the best sort in cultivation. The Royal Horticultural Society's trials of Brussels Sprouts at Chiswick also placed the "Aigburth" variety in the place of honour—1st. The *Gardeners' Chronicle* remarks in leading article, January 29, p. 136, "The trial of Brussels Sprouts at Chiswick served to show the decided superiority of certain stocks in a remarkable manner: the best were the 'Aigburth.'"

*In Sealed Packets only, post-free,* 1*s. each.*

## ROBERT P. KER & SONS.
BASNETT STREET, LIVERPOOL.

**TO THE TRADE.—SPECIAL OFFER.**
**VINES—VINES—VINES.**

W. G. CALDWELL AND SONS can still supply strong FRUITING CANES of the following varieties, at 4*s.* 6*d.* each; Planting Canes, 3*s.* each:—

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| Alnwick Seedling, | Foster's Seedling, |
| Black Hamburgh, | Lady Downe's, |
| Duke of Buccleuch, | Madresfield Court, |
| Gros Colmar, | Trebbiano, |

The Nurseries, Knutsford, Cheshire.

**THE LARGEST ROSE GARDENS IN ENGLAND.**

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(ESTABLISHED 1785.)

*New Rose Catalogue for* 1880-81, now ready and may be had post-free on application.

**Awarded over 60 First Prizes for Rose Blooms this season.**

CRANSTON'S NURSERY and SEED CO. (LIMITED), King's Acre, Hereford.

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THE NEW PLANT AND BULB COMPANY beg respectfully to invite attention to the above. CONTENTS:—Beautiful BULBOUS and OTHER PLANTS suitable for Present Planting for Summer and Autumn Flowering, in Open Ground, or Conservatory Decoration, &c. Post-free on application.
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Elvaston Nurseries, Borrowash, Derby.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
Descriptive Price LIST on application.
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RARE and CHEAP LILIES, including that lovely Lily, LILIUM AURATUM, are offered at prices which will command patronage. Finest possible Roots of auratum, Size No. 1, 9*d.*; No. 2, 1*s.*; No. 3, 1*s.* 6*d.*; and No. 4, 2*s.*, with liberal discount to Trade. CATALOGUE free on application to
W. GORDON, New Plant and Bulb Importer, Office, 10, Cullum Street, London, E.C.

WILTSHIRE SNOWFLAKE.—A splendid new Seedling Potato, raised by Mr. Jas. Lye, Clyff Hall, Market Lavington; it obtained First-class Certificate at Devizes in November last, and reported by the Royal Horticultural Society as a most promising variety: *vide Gardeners' Chronicle*, November 20, 1880. Price 1*s.* per pound, 7 lb. 6*s.* 100 other choice kinds in stock.
DANIELS BROS., Seed Merchants, Norwich.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Illustrated Catalogue of Ferns.**

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

WORMLEIGHTON'S SEEDLING.—This splendid new variety of Potato obtained the First Prize, as the best Seedling Potato not in Commerce, at the Great International Potato Show, held at the Crystal Palace, in September last. Price 2*s.* 6*d.* per pound, 7 lb. 15*s.* 100 other choice kinds in stock.
DANIELS BROS., The Queen's Seedsmen, Norwich.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.
Strong HOLLY, 9 to 12 inches high, 12*s.* per 100.
Strong HAWTHORN QUICK, 25*s.* to 30*s.* per 1000.
RICHARD SMITH AND CO., Nurserymen, Worcester.

CABBAGE PLANTS, very strong autumn sown Early Enfield, Rainham, Robinson's Drumhead Russell's (true) Thousand-head, &c., at 3*s.* per 1000 (1200), 25*s.* per 10,000 (12,000).
N.B. Plants warranted free from club-root, grown on strong soil from best seed stocks. Low quotations for very large quantities. Descriptive LIST and testimonials on application.
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

RASPBERRY CANES.—100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30*s.* per 1000; samples of 100 for 4*s.*, free in London, no change of rail. Also 100,000 FASTOLF, price 10*s.* per 1000; samples of 200 for 2*s.* 6*d.* free on rail, sent to any station in Great Britain. Payments to accompany orders. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to
A. AND E. BATH, Colgates Farm, Sevenoaks, Kent.

SPECIAL CHEAP OFFER of THORN QUICKS.
Having to Clear a Portion of Ground we offer large quantities of strong and extra strong Thorn Quicks at considerable reduction. Prices on application to
JOSEPH TREMBLE AND SONS, Victoria and The Castle Nurseries, Penrith.

**To the Trade.**
**HOME-GROWN GARDEN and FIELD SEEDS.**

H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
Seed Growing Establishment, Wisbech.

DOBBIE'S PRIZE SEEDS and PLANTS.—The superiority of both Seeds and Plants have been well proved, from the fact that they carried off the greater majority of Prizes from the most important Shows in the United Kingdom during the last ten or twelve years. Ample Testimonials in proof thereof are given in CATALOGUE of the year, to be had free on application to
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BEET, FRISBY'S EXCELSIOR.—The magnificent Beet, sent out last season, has been highly appreciated, and is acknowledged to be the best in cultivation. The top is small, with dark shiny leaves, the root long and of fine tapering form, flesh deep crimson, excellent flavour. Per packet, 1*s.* 6*d.*

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EDMUND PHILIP DIXON, Seed Grower, Hull.

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**To Market Gardeners and Others engaged in Planting.**

PEARS, Standard and Pyramid.
CHERRIES, Standard and Pyramid.
THORNS, Standard and Pyramid.
GOOSEBERRIES, CURRANTS, STRAWBERRIES, RHUBARB, &c.

*For Prices and List of Sorts apply to*
**CRANSTON'S NURSERY & SEED CO.** (LIMITED),
KING'S ACRE, near HEREFORD.

PRACTICAL ECONOMY in the GARDEN secured by our system of business, *i.e.*, Cash with Order. We hold one of the largest stocks of TUBEROUS BEGONIA SEED in the Trade. Our HANDY GUIDE, containing Novelties for 1881, free on receipt of stamped directed wrapper. HELLEBORUS NIGER (Christmas Rose), strong roots, 6 for 2s. 6d., 12 for 4s. 6d., carriage free. Cash with Order. GIBBS AND CO., Deben Valley Nurseries, Woodbridge, Suffolk.

## GEO. JACKMAN & SON,
(ESTABLISHED 1810,)

**Cultivators of**
FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
ROSES, RHODODENDRONS,
*Conifers and Hardy Climbers.*

**THE CLEMATIS**
A SPECIALITY.

*Descriptive Priced Catalogues free.*
**WOKING NURSERY, SURREY.**

# SEED POTATOS.

## H. & F. SHARPE'S
## WHOLESALE CATALOGUE of SEED POTATOS

*Is published, and contains all the best kinds worthy of cultivation,*

INCLUDING THE FOLLOWING, VIZ. :—

**RIVERS' ROYAL ASHLEAF.**
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MYATT'S PROLIFIC KIDNEY.
**MONARCH KIDNEY.**
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AMERICAN EARLY ROSE.
SNOWFLAKE.
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WALKER'S IMPROVED REGENT.
PATERSON'S VICTORIA.
SCOTCH CHAMPION.
KING OF THE FLUKES.
BREADFRUIT.
BRESEE'S PEERLESS.
EXTRA EARLY VERMONT.
RED-SKINNED FLOURBALL.

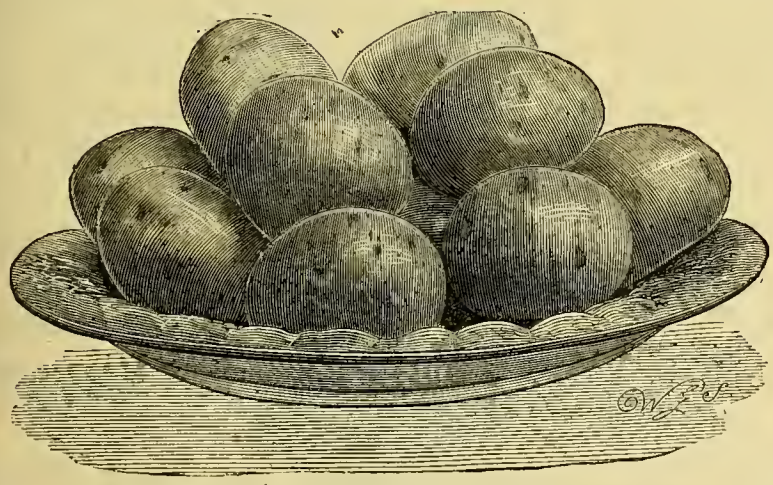
The above have been selected from the very finest stocks entirely for Seed purposes—can therefore be recommended with every confidence.

*Further particulars may be had on application.*

SEED GROWING ESTABLISHMENT, WISBECH.

# PRIZE STOCKS of POTATOS.

The Best White Round Potato, hitherto free from disease, grown on virgin soil, and will thus be a splendid change of seed.



Our Stock of "Schoolmaster" Potato is unsurpassed, having been awarded 1st Prize, Crystal Palace, 1879; 1st Prize, Manchester, 1879; 1st Prize, Birmingham, 1879; Two 1st Prizes, Crystal Palace, 1880; 1st Prize, Birmingham, 1880.

DISH OF "SCHOOLMASTER" POTATOS.

The Two Single Dishes of "Schoolmaster," exhibited by Mr. KERR, at the Great International Potato Exhibition, held at the Crystal Palace, London, September 22 and 23, 1880, were the **Two BEST DISHES of POTATOS in the Show.**

Our Mr. KERR being the most successful *bonâ fide* Grower and Exhibitor of Potatos in the Kingdom, parties entrusting us with their orders may depend upon getting true varieties. Our Stock is most complete, and one of the very best in the kingdom.

**Send for our POTATO LIST, which contains every kind worth growing and all the New Varieties.**

## KERR & FOTHERINGHAM,
**THE ROYAL SEED ESTABLISHMENT, DUMFRIES, SCOTLAND.**

## FRANCIS & ARTHUR DICKSON & SONS.
106 Eastgate St. & The "Upton" Nurseries **CHESTER.**
**VEGETABLE & FLOWER SEEDS.**
**Seed Potatoes & Garden Requisites.**
**QUALITY UNSURPASSED, CARRIAGE FREE.**
*Illustrated Catalogues Post Free.*

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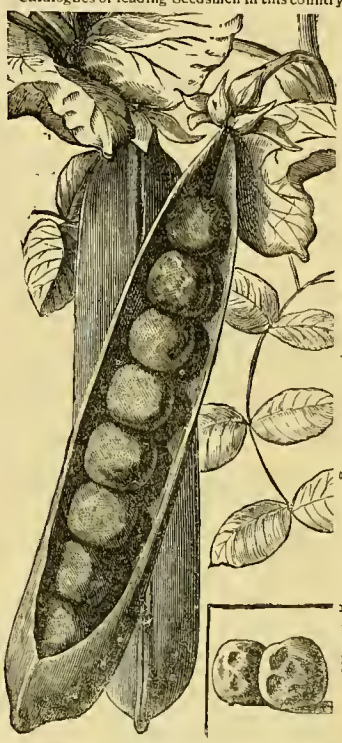
TWO HUNDRED THOUSAND HERBACEOUS and ALPINE PLANTS, for Borders, Rockwork, &c. See Descriptive LIST, giving colour, height, time of flowering &c., free by post for one penny stamp.
R. S. & Co.'s selection of 100 good showy varieties, for 25s.
RICHARD SMITH AND CO., Nurserymen, Worcester.

## DAY'S "EARLY SUNRISE" PEA

**Specially adapted for Early Podding.**
For description and particulars of this grand new variety, see Catalogues of leading Seedsmen in this country and America.



**Among many Testimonials may be quoted:—**
*From* Messrs. SUTTON & SONS, *Reading, Oct. 21, 1880.*—"Your 'Sunrise' Pea is very early, of good quality, and a great cropper."
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Messrs. JAMES VEITCH AND SONS, Royal Exotic Nursery, Chelsea, S.W.
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## TEA ROSES, £3 PER 100
Extra strong, on own roots, in 4½-in. pots.
GLOIRE DE DIJON, ISABELLA SPRUNT, &c.
Trade terms on application.
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**700 Tons of Seed Potatos**
of the
CHOICEST VARIETIES
for Sale by

IF YOU WANT TO SAVE 100 PER CENT., SEND FOR BOOK OF PRICES and TESTIMONIALS.

Saint Patrick, Schoolmaster, Reading Abbey, (Sutton's), International Kidney, Fidler's Improved Ashleaf, Covent Garden Perfection, Fidler's Improved Shaw, Beauty of Hebron.

Late Rose, Dunbar Regents, Scotch Champions, Paterson's Victorias, Magnum Bonum (Sutton's), Bresee's Prolific, Berkshire Favourite, Fox's Seedling, Early Ashleaf, &c.

**C. FIDLER,**
Potato Grower,
Importer and Exporter,
**104 & 105, Friar Street,**
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*Book of Prices and Testimonials sent, post-free, on application.*

CABBAGE PLANTS.—A quantity of Early Rainham and East Ham for Sale.
S. CAMPAIN, Deeping, St. Nicholas, Spalding.

PRICKLY COMFREY.—For Sale, about 800 4-yr. -old Plants, containing at least 10,000 Sets, Sets, 12s. per 1000, or £4 for the lot of Plants delivered at Malpas Station. Prepayment by Post-office Order to
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**Imantophyllums (Clivias).**

J. VAN DER SWAELMEN has much pleasure in announcing that he has to offer for Sale a limited stock of strong and unusually fine plants of the above ornamental Winter and Spring-flowering Greenhouse Plant. These valuable plants, from 1½ to 2 feet in height, have been raised from hybridised seeds of a NEW GRAND VARIETY, + MINIATUM, and without doubt good and distinct varieties will be among the number. Most of them will flower this spring for the first time; some already show buds. Orders are executed in strict rotation at the following very liberal rates, viz., One fine picked plant, 10s. 6d.; Twelve ditto, 100s.
The Lily Nursery, Ghent, Belgium.
N.B. Price for the whole stock will be given on application.

HELLEBORUS OLYMPICUS and H. O. ALBUS, fine clumps in flower, 12s. per doz. HELLEBORUS FŒTIDA, pretty palmate foliage, a good undershrub for woodland walks, &c.; strong plants, 6s. per doz., 40s. per 100. Package free, cash with order.
GEORGE BUNYARD AND CO., Old Nurseries, Maidstone.

PURPLE SPROUTING BROCCOLI SEED.—Fine stock. For price and samples, apply to
GEORGE BUNYARD AND CO., Maidstone.

AUCUBA JAPONICA, 2 to 6 feet, good colour. Apply to
GEORGE BUNYARD AND CO., Maidstone.

KENT COB NUTS are fetching 2s. per pound. GEORGE BUNYARD AND CO., Maidstone, can supply fine plants, 7s. per dozen, 50s. per 100, of the true Kent kind. Package free for cash with order.

**To the Trade.**

SAMPLES and SPECIAL QUOTATIONS of

CLOVER and GRASS SEEDS

forwarded on application.

EDMUND PHILIP DIXON, Seed Merchant, 52, High Street, Hull.

SPRING FLOWERS.—
ALYSSUM SAXATILE COMPACTUM, 2s. per dozen.
ANEMONE FULGENS, 4s. per dozen.
ARABIS ALBIDA, 2s. per dozen, 14s. per 100.
" variegata, 2s. 6d., per dozen, 16s. per 100.
AURICULAS, Alpine, fine, 3s. per dozen, 20s. per 100.
CARDAMINE PRATENSIS, fl.-pl., fine spring flower, 3s. per dozen, 20s. per 100.
DAISIES, of sorts, 5s. to 10s. per 100.
ERYSIMUM PULCHELLUM, a gem, 4s. per dozen, 30s. per 100.
PANSY, D. Cavan, crimson, 3s. 6d per dozen, 20s. per 100.
" Sunburst, scarlet, extra fine, 3s. 6d. per dozen, 20s. per 100.
IMPERATOR, plum-purple, best of its colour, 2s. 6d. per dozen, 16s. per 100.
PHLOX NELSONI, eight new hybrids, 6s. per dozen.
PRIMULA ROSEA, 7s. 6d. per dozen.
SAPONARIA OCYMOIDES, 3s. per dozen.
SAXIFRAGA WALLACEI, 6s. per dozen.
Nearly all in single pots. For full List see Catalogue.
RODGER, McCLELLAND AND CO., Hill Street, Newry.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 3½ feet.
SCOTCH, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted.
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

**Trees, Quickwood, &c.**

MESSRS. MARTIN AND SON, NURSERYMEN and SEEDSMEN, Cottingham and Hull, have the following to offer, at very cheap rates:—
ARBOR-VITÆ, American, 2 to 3 feet, 4 to 6 feet.
ASH, 4 to 5 feet, 6 to 7 feet.
BERBERIS JAPONICA, 2 to 4 feet.
BOX, Tree, 2 to 3½ feet.
CHESTNUTS, fine, 8 to 10 feet, 10 to 12 feet; some fine trees, 12 feet, for avenues.
ELMS, Wych, 5 to 7 feet, 8 to 10 feet.
LIMES, 8 to 10 feet; fine specimens for avenues, 12 feet.
LABURNUMS, 6 to 8 feet.
POPLARS, Silver, 6 to 8 feet.
PINUS CEMBRA, 5 to 7 feet, fine specimens.
PRIVET, Common, 2 to 3 feet, 3 to 4 feet, very strong.
POPLARS, Italian, 8 to 10 feet, 10 to 12 feet.
SYCAMORE, 7 to 8 feet, 8 to 10 feet.
SPRUCE, 1½ to 2 feet.
YEWS, Common, 3 to 5 feet.
QUICKWOOD, 1½ to 2, 1½ to 2½, 2 to 3, 3 to 4 feet.
Our Nursery Stock is very large. Catalogues of Seeds may be had on application. Wholesale and Retail.

**Vegetable and Flower Seeds.**

A. RIEMSCHNEIDER, Brandenburg on Havel, Germany, has to offer:—
BEANS, yellow, for forcing, per cwt., 24s.
" Flageolet, blood-red, per cwt., 22s.
" White Princess, extra, per cwt., 28s.
" New Emperor, extra, per cwt., 50s.
" dwarf, Sugar Pearl, extra, per cwt., 40s.
STOCKS, German Ten-week, large-flowered, extra fine, twenty varieties, each distinct, 4s. 6d. per ounce; choice, mixed, 3s.; assortment of twenty varieties, 100 seeds of each, 2s.
ASTERS, BALSAM, LARKSPURS, WALLFLOWER, &c., in the finest varieties, and first qualities, at low prices.
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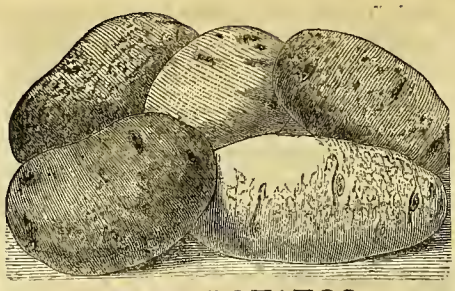

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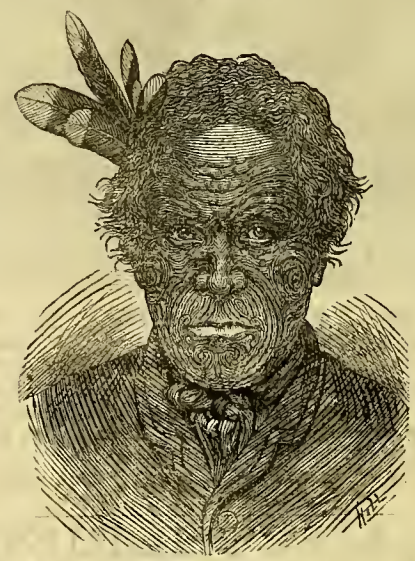

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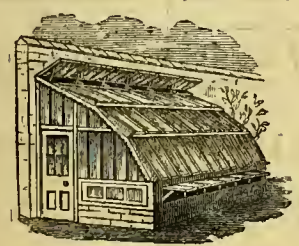

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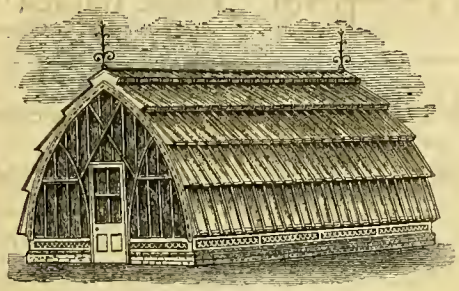

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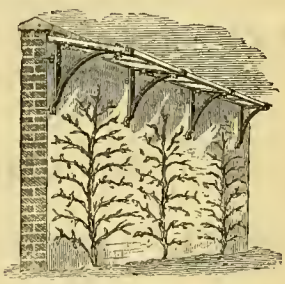

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We have the pleasure of introducing to the English public this New and perfectly distinct Wrinkled Pea, feeling convinced, after a most careful trial, that it will prove to be not only the earliest Dwarf Wrinkled Pea, but that for quickness of growth, productiveness, and flavour it is unequalled by any other early variety. It grows from 8 to 10 inches in height, comes ready for table in five weeks from the date of planting, and is invaluable for forcing under glass or for early sowings in the garden.

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THE

# Gardeners' Chronicle.

*SATURDAY, FEBRUARY 12, 1881.*


## A SCOTCH IMPROVER.

A PECULIAR interest attaches to the name and history of Lord Kames, from the novelty of his estate improvements, and from his personal accomplishments as a writer and judge.

The customary and ancient methods of increasing the fertility of the land have been by means of one or other of the three M's—manure, mud, or marl. From the time of the Romans the soil has been chiefly fertilised by the three methods of manuring, warping, or marling it. Lord Kames, on the contrary, reversed the common practice. As the owner of a "moss" of many thousand acres, he set himself the task of removing the mass of vegetable matter so as to expose the strong land below. Having invented a water-wheel adapted to his purpose, he poured a constant stream of water from the Teith upon successive portions of the land he was engaged upon, and successfully scoured the moss into the neighbouring stream of the River Forth.

The best farms of the present estate of Blair Drummond, which the descendants of the great improver have inherited, were thus created ninety years ago, and Lord Kames became renowned throughout England as well as Scotland as the most original and successful agricultural improver of his day. The great proprietors of Scotland had just commenced the amelioration of their property at the time of Lord Kames' death. Sir John Sinclair—future editor of the *Statistical Account of Scotland*, where the Blair Drummond operations are well described—was already hard at work teaching his too numerous tenantry at Thurso; the Duke of Athol was planting his Larches, and the gentlemen of the country generally had formed themselves into a "Society of Improvers," the oldest agricultural society in Britain, not omitting the Bath and West of England Society of 1777.

In connection with these several movements and activities, and more particularly those of Lord Kames, it should be mentioned that the notorious cattle-lifter named Rob Roy had recently died. He had retired from the trades of cattle dealing and cattle lifting—especially the latter—some years, when in 1772 he died, in his native Strath of Balquhidder, where he lies in the churchyard, a day's march from Blair Drummond. Until the death or retirement of Rob Roy Scotch improvements could not have taken place, since the polite arts of agriculture and gardening must have been trampled under foot, as in the dark ages. Having lived through the transition period, and finding the Strath of Balquhidder over-populated by poor people, Lord Kames sent for them to Blair Drummond, and at the time of his death, in 1782, at the age of eighty-six, the reclaimed land was occupied by the men who had themselves accomplished its improvement, who were the sons of the cattle lifters under the old *régime*, and who became, in this new field of industry, substantial farmers in many cases, and the parents of those who still fill the same position on the same spot.

An inquiring tourist, therefore, who finds himself in Stirling will probably feel an interest in

taking the train to Doune and visiting Blair Drummond. At the entrance to the domain, half a mile from Doune, you cross the River Teith—the sportive and sport-affording Teith. The park gates are immediately in front of you, a handsome lodge on the right, the river on the left, and on the opposite bank is the ancient castle of Doune.

The carriage road passes for about a mile through a wood remarkable for its beautiful specimens of the Spruce, which grows here in every variety of form, drooping or erect, on a rich, moist soil not many feet above the level of the river. Midway between the lodge and house you enter the open park by a gate, near which grows the noblest Sycamore I have seen except the one at Birnam on the banks of the Tay, which is said to be one of the two last remaining trees of Birnam Wood. To prevent misleading statements as to the size of trees they should be measured with the aid of a cord and a rule, and the figures noted down at the time of your inspection, and they should not be measured, as they sometimes are, on the following day, at 100 miles distance from the spot where they grow, and with the aid of the imagination.

The Blair Drummond Sycamore measures 17 feet 6 inches at 5 feet from the ground, and its branches cover a space 75 feet in diameter. Near this noble tree are some Spruce Firs, whose growth has been very curiously affected by the breaking of their tops by storms when they were young and growing. The head of each tree having been broken, a struggle for the leadership seems to have taken place, and in each case a lateral branch, like the Baliol of Scottish history, has asserted its claim, taking an upward direction and assuming the leadership by virtue of its superior growth. The mode in which this singularity of growth has been produced has been the same in each case. The most robust of the laterals has first extended itself horizontally to a distance of 9 or 10 feet from the trunk, so as to clear the other branches; it has then turned suddenly upwards and assumed the perpendicular direction as the new "leader" of the tree. When several branches of the same tree have taken the upward growth the strange effect is produced of a tree resembling a vegetable candelabrum rather than a pyramidal Fir of the accustomed form and shape. In the darkest part of the adjoining wood is another vegetable phenomenon in the shape of a small Yew tree dwarfed in the shade with a thick flat head the size of an umbrella, spread out like the sounding board of a pulpit. The plant must have become dwarfed at an early stage of its growth when the stem had attained a length of about 1 foot. Its flat head was formed in the absence of the sun, which should have drawn the branches heavenward: even now it is not too late. The fencing of a heath where seedling Scotch Firs have been gnawed down close for many years by cattle has enabled them to grow up into timber trees, and yet the Fir has comparatively little of the rejuvenating and repairing power of some trees. It cannot repair the loss of a limb, and when its stem has once been stripped by overcrowding it cannot afterwards develope new heads and branches. The Oak and Yew, on the contrary, may be drawn up in close companionship, bare as hop-poles, till they are thinned, and on the admission of light and air they will at once throw out laterals. If the wood were thinned the little old Yew, a century old perhaps, would throw out a leader, lose its abnormal shape, and become a tree of ordinary growth.

The house of Blair Drummond stands high, partly sheltered by shrubberies and open to the park in front of the principal windows. On a pond below there is an island with a group of high trees, and a heronry of thirty nests on their tops. The park timber and that in the woods and shrubberies is remarkably fine. An Oak on the east side of the house measures 15 feet 7 inches in circumference at 5 feet from the ground, which is the height at which all the measurements mentioned in this paper were made. That is not a great size for a squat or pollard Oak, but it is a large size for a bole which exceeds 20 feet in length. The best of the Silver Firs stands on some high ground, called Sand Hill. It is not remarkable in size, but, with a number of neighbours nearly as big, it is remarkably ornamental. It measures 11 feet 9 inches. A lofty Larch, with a bole like a Doric column, measures 11 feet. Below the house, which is the centre around which several groves gather without crowding it, is a black Italian Poplar, near the water, measuring 12 feet 3 inches, and gradually diminishing up to 60 feet in height, when it branches, attaining in all 90 feet, and exceeding all the other trees of this fertile spot in the quantity of timber which it has produced within three or four score years. Among the other interesting trees is a specimen of Picea Pinsapo, planted when a seedling, thirty years ago. It is now 40 feet high and 4 feet in the girth of the trunk, whose thick covering of foliage and stout branches rendered its measurement difficult. A Spanish Chestnut, 45 feet high, with a trunk of 7 feet 2 inches, is the offspring of seed ripened in this park in the hot season of 1826, since which time very little Chestnut seed has ripened here.

Blair Drummond House is a new and noble building, in the Scotch baronial style, four storeys high, with towers and turrets. On the east side, upon the lawn, there is a beautiful group of large Beeches, and outside the fence, near the Picea Pinsapo, is a Beech with a lofty bole, 15 feet 4 inches in girth. Near it is another almost as large, and a third, not far off, spreads its branches over a space 84 feet in diameter. The soil just here is especially suited to the Beech.

From the front windows there are distant views of Stirling Castle, Abbey Craig, and the country bounded by the Ochils. An older house stood till lately lower down, in a part of the park which is too low for health and scenery, and too much encumbered with big Limes, Scotch Firs, Chestnuts, and other trees.

The park is rather overcrowded with timber, and some very fine views of Stirling Castle and the distant country might be obtained by means of judicious thinning. And in order to avoid mistakes in this delicate work, maps should be prepared and flags affixed to the condemned trees, which should be looked at from every possible point, with a view to a reprieve if necessary. How often parks are overcrowded while the wind is the only agent employed upon the timber.

Near a fernery in the grounds Lord Kames erected an obelisk to commemorate his improvements, and from the midst of the shrubberies planted by himself you may see the reclaimed land, level as a table, stretching far and wide between the rivers Teith and Forth. There is a description of the process of removing the moss in Sir John Sinclair's *Statistical Account of Scotland*, under the head "Kincardine Parish, Perthshire." A path through the grounds, having the reclaimed land on the left, leads to the parish church and to the tomb of the improver, Ivy-covered, and within view of the farming land and fine estate which he who lies below created. *H. E.*

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FORSYTHIA VIRIDISSIMA.—In the conservatory at Kew several forced bushes of this Japanese shrub are beautifully flowered. The handsome yellow blossoms, freely set on the leafless twigs, attract the attention of every visitor. For decorative purposes during the dull winter or early spring months, this easily grown and readily procured plant comes in very useful.

## New Garden Plants.

ODONTOGLOSSUM ROSSII (*Lindl.*), *var.* RUBESCENS, *Rchb. f.*

Since I expressed my great pleasure at the sight of the beautiful inflorescences of several varieties of this species sent me by Mr. Alfred Borwick, I have not had such a grand sight in this way as I have now when seeing a two-flowered raceme of this showy variety sent to me by Mr. William Lee, Downside, Leatherhead, Surrey. Nobody would affirm the Odontoglossum Rossii majus of Van Houtte (*Flore des Serres*, xx., n. 110) to be a dwarf. Now Mr. Lee's flowers are larger still and far broader in all their parts, though this inflorescence is two-flowered, whereas Mons. Van Houtte's peduncles are one-flowered. Add to this the finest light rose of ground colour, and the rich marbling with dark purple turning to chesnut-brown, and you have one of the most glorious sights an Orchidist's eye could witness. I am informed there are two such grand plants in Mr. Lee's collection. *H. G. Rchb. f.*

MASDEVALLIA FASCIATA, *n. sp.**

This neat species is the first ally of M. heteromorpha that has yet appeared. It has the lip, not near the adhesion of ovary, but removed from it by a long production of the foot of the column, which forms a chin in connection with the sepals. The odd sepal is oblong, convex, hooded, with a filiform tail much surpassing its length. Even in the dry state there appear fine mauve bands on a light ground. The even sepals are narrower, and may have been totally mauve. The ligulate petals may have been white. They are simply cuneate, descendent at the base, bidentate at the top, the anterior tooth being acute. The fine lip is pandurate. It was found in the State of Columbia by my countryman, Mr. Schmidtchen, when collecting for Mr. F. Sander. *H. G. Rchb. f.*

ODONTOGLOSSUM DELTOGLOSSUM, *n. hyb. nat.* (?) †

This is no indifferent thing. It appears to be a natural mule between Odontoglossum leucopterum and odoratum. Sepals and petals spreading lanceolate acuminate undulate sulphur-coloured with brown blotches and smears. Lip deltoid with very short margin, lobed, wavy, toothletted, sulphur with an orange base and with little brown stripes on each side of the base, and a much larger brown obcordate blotch on the disk; two fleshy bidentate keels on the superior disk. Column slender with single tendril-like wings, as in Odontoglossum odoratum, whitish-yellow with brown in front. It appeared in a collection of Odontoglossum Alexandræ and gloriosum, in the establishment of Messrs. J. Veitch & Sons. *H. G. Rchb. f.*

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## STREET PLANTING.

I READ with much interest your remarks (p. 80) on planting new streets and new gardens, and fully endorse nearly all you state as to the miserable and wretched appearance presented in most of the newly-formed suburbs of London. You very correctly describe the pitiable spectacle of some in this parish (Chiswick). Bedford Park—that home, or supposed home, of æstheticism—is perhaps the greatest sinner in this respect. The picture is not a bit overdrawn; it is, I grieve to say, only too true, and I have not been altogether a silent spectator, but advice is thrown away and useless, and even example is lost.

There is, as you express it, "a rage" at the present time "for planting trees in streets and roads," and I rejoice to see it. It is a sign of improvement, at all events, but of course the trees should be properly planted and attended to. Many a bare, desolate-looking street or neighbourhood would be much improved in every sense by the judicious planting of suitable trees in the streets, or wherever practicable. Certain laws as to the width of new roads, drainage, &c., are in force, and the local authorities have control, so far, in their formation. The lighting, also, and planting of lamps, is under the supervision of these local magnates, and it is amusing almost to note their antipathy to trees, wherever placed. "They hide the lamps, and darken the roads," I was informed; forgetting, evidently, that when the dark nights come the trees are leafless, and do not obscure

* *Masdevallia fasciata*, n. sp.—Affinis Masdevalliæ heteropteræ: sepalo impari elongato oblongo fornicato, longissime caudato; sepalis lateralibus lanceis longicaudatis; tepalis ligulatis basi decurrentibus, apice bidentatis, dente altero acuto, altero obtuso; labello pandurato. N. Gran. Schmidtchen com. cel. Sander. *H. G. Rchb. f.*

† *Odontoglossum deltoglossum*, n. hyb. nat. (?)—Racemo gracili; floribus stellatis; sepalis tepalisque lanceis acuminatis undulatis, labello brevissime unguiculato deltoideo crispo lobato denticulato, acuminato, callis geminis carinæformibus antic ac ante apicem dentatis; columna gracili supra basin angulata, alis cirrhosis. *H. G. Rchb. f.*

the light. In the warm summer and autumn evenings the gentle shade imparted is extremely pleasant. There are very few of the newly-formed roads that are not wide enough, and that would not be improved by some trees judiciously placed. It is all a matter of selecting the proper kinds of trees, and planting at the proper distances apart. The wider the roads are, the greater their requirement of trees.

Unfortunately at present there is no power to regulate the planting of trees in newly-formed roads —no, not even to prevent their being planted. The speculating builder is generally master of the situation, and plants trees, or not, at his own sweet will. As a rule, he is mighty in his own conceit, and cares little for anything but bricks and mortar, or mud. As a bit of garnish a few sticks are occasionally stuck in—not planted—forming, as long as they may remain, an eyesore and a nuisance; and it is this sort of work that disgusts people with street planting. It is akin to street music—a nuisance.

As you very pertinently remark, the planting of trees in streets is an "expensive operation when well performed." But this is more particularly true in regard to old-established streets, &c., where the soil has to be removed and a fresh compost provided. In many instances, however, new streets are being formed through the very finest of cultivated land, and there, were the trees planted at the same time, a great portion of the expense would be saved. I would strongly urge upon owners of building estates to plant trees first of all, and build the houses afterwards, thereby lessening the expense, and enhancing the beauty and value of the property. True a certain amount of expense must be incurred. Trees for street or avenue planting require a special preparation, and that renders them expensive to produce; but the cost of the trees is, after all, comparatively nothing. It is the greatest folly to plant inferior and unprepared trees in such exceptional situations. Every tree should be a specimen in itself, capable of being looked at all round at the time of planting, and with good roots. It is here where many failures arise. The intending planter has no knowledge that there are trees and trees, and so trees at 1*s*. a-piece will suit his purpose well enough. If they are a little smaller, they will grow, and it seems absurd to tell him that that is the very thing they will not do. With a tree at 1*s*., what monstrous extravagance to expect him to spend 3*s*. or 4*s*. more to protect it! And so it is neglected. Now had a proper price been paid for a proper tree, it would have been considered worthy of proper care and attention.

I am somewhat at a loss to understand your meaning where you speak of trees "attaining their full development." Does this mean extreme size, or what? And how is the happy medium to be ascertained? We want the character of the trees developed certainly; that is, pleasant to look upon, but that may be so when small as well as when they are large. Trees are not planted in streets for a mere utilitarian object—as, for instance, to produce timber; they are planted for ornament, and I venture to say are fully more ornamental and beautiful in a small and young and growing state than when grown large and fully developed. Trees in streets, indeed, would look better, could it only be managed that they should be always young and vigorous, with plenty of green foliage; it is the green leaves that are wanted, not the colossal stem. Visitors to Paris are enraptured with the fresh young trees on the Boulevards; you somehow never see any old stagers. The periodical revolutions, I have been told, make another use of them, and it is good! There, in consequence, the trees are always young and beautiful.

The Plane trees on the Thames Embankment have been—and are still—many of them very beautiful, but their beauty individually is passing away; they look better at a distance than upon close examination. Whoever is responsible for the ruthless and barbaric manner in which every young shoot, except the tips of the branches, is cut away, leaving the trees mere skeletons, ought in all sincerity to be well birched—I had almost said planed. This is the grandest piece of street planting in this country. It was well done, and the trees would most of them have done well had they been properly managed. Many professed lovers of trees—pessimist beings, however—see no beauty in them. They are themselves—and they would make others—quite miserable in the prospective horror of these trees meeting each other through being too closely planted, and never being able to become fully developed; their sympathies and feelings are all with the inanimate trees. They would have left the Embankment unplanted, and deprived thousands of people of true enjoyment, rather than one tree should perish. There is a great deal of absurdity and false sentiment existing about trees and the sacredness of their being. Whoever dares to cut down a tree, let it be ever so ugly or obstructive, is accused of vandalism. How much better it would have been had the trees in Kensington Gardens been cut down, and others planted in their stead, years ago! And why not trees in streets? When they get too large cut them down and replant. It is a mere matter of expense. *A. F. B.*

(*To be continued.*)

## A WEST INDIAN SUGAR ESTATE.

A Day in the Fields during Crop Time.—The first faint ray of light is peeping in through the blinds of our wooden house as, after a sleepless night, I resolve upon leaving the luxuriant Sugar-cane leaf mattress which forms the bottom of an overseer's bed in the West Indies [see *ante*, p. 457, vol. xiii.]. It is 5 o'clock; up at the "house" a boy blows the morning signal on a large conch shell, whose wailing notes tell the people that work is to begin again. With my amiable companion, who has passed without a greeting, I descend the hill to open the cattle-sheds and works. Before the negro houses the men sit everywhere, waiting for the arrival of our old intendant, Murphy; and the cart-boys have their old sleepy look about them till the stentorian voice of our first driver, Harry, enlivens everybody. The cattle are driven out upon the place, and the curious milking operation is performed by two boys, the one holding a bottle in one hand and trying to fill it with the other, while his mate does his best to keep the calf from competition. Meanwhile the carts are made ready, with all the noise resulting from obstinate mules and impatient drivers, and the whole caravan at last takes the way to the fields. Our morning cup of coffee, with a piece of bread or biscuit (as it may happen), is settled, my long-legged mule, "Prince," ready, and the daily task begins.

Passing the negro houses and crossing the river, where a lot of women are washing their rags, I follow the Queen's Road between the green fields to look after the weeding gang first. Long before I see anybody I can hear the chattering of the girls and women hoeing among the young canes. There are only second and third-rate people here—boys, girls, and women—who, at the rate of sixpence a day, have to weed a length of 100 rods (900 feet). Old Billy Romeo acts as driver; with stick and rod the old man walks about his troop in a very dignified manner; he is one of the elders of the parish church, and a very religious man. To give an exact idea of the conversation going on among the weeders is beyond my descriptive powers. Criticising the new "bushy," narrating the *chronique scandaleuse* of the village, complaining of the heat, calling after the water-carrier, and singing one of Moody and Sankey's hymns—all this goes on at the same time, and much quicker than the work, too! What a curious sight to look at the strange figures in much stranger clothes destroying as weeds all these delicate little plants we grow with so much trouble in our gardens. A few cuts with the hoe bring down a magnificent Ricinus bush laden with fruits; here a woman kills a whole colony of an elegant little Phyllanthus, and there a boy tears up an Indigo plant just opening its tiny flowers.

Away from the crowd works the African Tunima; she was not born in the island, but has been brought here from a captured Portuguese slave-ship. She looks as fine a type of the Ethiopian race as ever you saw; between her short jacket and dress appears a broad strip of pure "ebony," and round the neck she wears a collar of large coloured beads. I take great care as a new comer not to interfere too much with the people's work, but after half-an-hour's time spent with the weeders take a gallop under the Cocoa-nut Palms down to the bay. Here lives the watchman Toby; at my call he comes out of his Palm-shaded hut and knocks down a Water-nut for me—my daily tropical morning refreshment. Past two enormous Terminalias, and following the sea with its white billows and curious coral reefs, I ride on beside an extensive swamp covered with tufts of the noble Acrostichum aureum, among which a few white swamp birds are feeding. Through thick bush wood I arrive at my favourite resting place—a quiet corner, where a half-rotten sluice serves as outlet for the swamp-water at ebb-tide.

A dense group of slender Pockandu Palms screens the swamp and its miasms; near the water stands a magnificent Manchineel tree covered with fruit. As far as the eye can see, an uninterrupted row of the Seaside Grape (Coccoloba uvifera, L.), with their purple berries; in a shrubby corner a gigantic Bromelia, with its spiny leaves standing 10 feet high, and its sessile flowers united, like the head of a large Cauliflower. A dead tree is overgrown with Æchmeas, whose flower-spikes bear brilliant red bracts; to an overhanging branch cling the long pseudobulbs of an Orchid, and in the trees creep the dense masses of climbing Aroids and Cacteæ. On the sand long lines of Algæ thrown up by the tide, and everywhere between them a lot of crabs running to the water in their comical way as soon as you make a step towards them. It is a charming bit of wild Nature, and how gladly would I abandon myself to the pleasure of collecting the botanical treasures heaped up around me.

Duty calls me away. I have to look up the men, who are stocking with cane a piece of land near the swamp. Riding through yellow-flowered Cannas and tall Montrichardias, I soon come to the place where the planters are at work. Cutting and planting 500 pieces is the daily task of a man. Here are the heaps of short cane pieces which, stuck upright into the ground, will throw up several vigorous shoots in a few weeks time. The men count their pieces while I am looking on, and I have to summon up all my presence of mind not to be cheated by the crafty old practitioners. Before evening I shall have the pleasure of going over the ground again to see that all the pieces have really been planted. As I am counting the last hundred the sound of the shell announces breakfast-time; it is nine o'clock, and the sun high up in the sky. Crossing the pasture-land, with the feeding cattle and the black cow-birds running about among the Guinea-grass, I come to the road which brings me back to the works. Here mill, steam-engine, boilers, and still, are in full activity; my Scotch friend and old Murphy exercise their authority over the mill-gang. Our breakfast is served in the works; salt-fish, Yams, and (as extra) a few roasted Cassava roots, compose our meal. A cup of tea will help us to get over this misery. One hour's rest for myself and "Prince," and our second turn—the real heavy work—will have to be done. *G. L. M.*

(*To be continued.*)

## THE COFFEE-LEAF DISEASE.

Two interesting papers on this subject were read at the last meeting (3d inst.) of the Linnean Society, the one treating of its ravages in India, the other its nature and spread in South America.

In the first Mr. Wm. Bidie, in a letter to Mr. J. Cameron, of the Botanic Gardens, Bangalore, refers to the Coorg country, situated in the Western Ghats, and where European enterprise in Coffee has been wholly developed within the last twenty-five years, and where no disease was observed till four or five years ago. The author mentions that the disease appears to have been imported from Ceylon by way of Chickmoorloor, a district of Mysore, 60 miles distant from Coorg. It seems worst in impoverished exposed fields, and least where there is shade and rich soil. A small red insect has been noticed feeding over leaves covered with the pest, but what the insect's relation is to the disease as yet remains undetermined. Plants grown from Ceylon seed suffer most, while those trees of Coorg origin and growth are least affected. A system of "renovation-pitting" has been successfully tried, pits being dug at short intervals, wherein, after judicious pruning, all the affected leaves are buried and this seems to check the spread of the disease, particularly among the Coorg Coffee trees.

In the second communication Dr. M. C. Cooke describes and summarises all the data extant up till the present time, of its progress in South America. Plantations in Venezuela, Costa Rica, Bogota, Caraccas, and Jamaica have been affected. He discourses on the nature of the blight, and is of opinion that the disease is a complicated one, being himself as yet unprepared to affirm that either the Septoria, the Sphærella, or the Stilbum (three so-called different kinds of fungi), or all together, is the true cause of the disease. At the same time he thinks it possible that none of these forms of fungus are autonomous,

and that all may be related to each other as forms or conditions of the same fungus, of which Sphærella is the highest and most perfect manifestation. He observes that the discoloured spots may be without any visible fungus upon them, and exhibit no trace of mycelium in the tissues, or they may nourish a Septoria, as seen by the Rev. M. J. Berkeley; or a Sphærella, as found by himself; or, finally, a species of Stilbum, as seen by Professor Saeux and himself. Further, the Stilbum may occur on the same spot as the perithecia of the Sphærella on both perithecia and Stilbum, the one without the other, may be found occupying different spots. He admits that altogether it is difficult satisfactorily to answer the question—What is the cause of this form of Coffee disease?

## ANEMIA ADIANTIFOLIA.

THE accompanying figure (fig. 37) represents a "lusus" or sport of a well known Fern, Anemia adiantifolia, Swartz, lately received from Mr. Morris, Director of Gardens and Plantations in Jamaica, in which the capsules are borne on the lower pinnæ of what is normally a sterile frond, instead of on a separate peduncle. Mr. Baker, to whom I referred the specimen, informs me that it is interesting from a systematic point of view, as bearing upon the genus Anemiobotrys of Fée, described and figured in that author's monograph of the *Ferns of Brazil* (p. 267, tab. 78, f. 2), in which the lower pinnule is, as is this, both abnormally compressed and fruit-bearing. It thus strengthens Mr. Baker's conclusions that Anemiobotrys aspera, Fée, is founded on an abnormal condition of Anemia tomentosa, as stated in the *Synopsis Filicum*, ed. 2, p. 525. *J. D. Hooker.*

## HORÆ HORTULANÆ.

### No. III.—ON LEAVES.

(*Concluded from p. 170.*)

So far of green leaves, but leaves are not always green. Sometimes an early frost, splintering their atomic machinery, brings them to a blackened untimely end. Even in fairest weather the time at last comes when by reason simply of old age the chlorophyll droops and dies, and the green pigment ending, like its master the sun, a long day of use in a death-bed of beauty, fades away through dying splendours of red and gold. As the work of the workmen slackens and stops, all the fruits of their labour, sap rich in sugar, dissolved remnants of protoplasm, soluble salts, and all good things, are carried away down the stem; and at last nothing is left in the dead, dry, sere and yellow leaf, but a skeleton of cellulose and insoluble salts.

Yet even in its death the leaf has its use. I will not here speak of the leaves which, scattered first by the autumnal blasts, and then swept into a heap and left to rot, have been slowly transmuted by microscopic ferments into that complex humic leaf-mould whose value every gardener knows; for the uses of these are familiar to all. I would rather say a word on uses which the modern gardener is not so apt to recognise. As the winter days draw in, I always observe a certain restlessness in my man Joseph; and I know that some day, as soon as I have passed the garden gate on my accustomed duties, he will take his barrow and his knife to the beds, borders, and shrubbery, and there spend a happy day stripping from my beloved perennials all the dead and half-dead leaves which cluster round their bases, digging or scratching the soil between them; and having done this he will think, or perhaps even say, that is very good, that he need no longer be ashamed of the borders' look. He will not see—or, seeing, will not heed—that these stringy, ragged leaves, and tufts of leaves, are Nature's best wrapping for tender roots.

If you look round your garden you shall find that these dead winter leaves are left exactly on those plants which need them most. Hardly any leaves mark the spot where the Lily bulbs are buried; but these bulbs are safe some inches below the soil, and the roots lower still. Over the Day Lily, on the other hand, whose finger-like roots and smaller rootlets are near the top, is a thick, non-conducting mat of leaves. Round the Iris too, whose roots run on the level, is spread a like warm blanket saved from last year's dead foliage, even though some leaves stand erect and green all the winter. Observe that Foxglove, with the precious burden of next year's spike, now dormant, resting on a thick cushion of dead and half-dead leaves; put your fingers under the brown nest, and you will find the soil beneath the thick mat soft and damp, while all around the ground is iron-bound with frost. And look on this Kashmirian Primrose, and on that. Around the one are obvious signs of Joseph's trail. You see an oval, nut-like, almost bulbous bud of turned-in, over-lapping baby leaves whose tips are pinched with cruel cold; and even without stirring the soil you may spy the tiny rootlets on the surface frozen hard, rootlets on which, as well as on the stouter thong-like roots striking deeper down, the plant had hoped to trust next spring, when it was working out its hemisphere of violet sheen. Where are those great foot-long leaves which a few weeks ago formed a verdant rampart round the heart? In the name of tidiness pulled away and barrowed off to the rubbish heap! Here, in a retired nook, unseen by Joseph's eye, is another; note how the brown and withered remnants of the once proud foliage form a close sheltering collar round the central bud; and confess that even dead leaves have their use.

FIG. 37.—ANEMIA ADIANTIFOLIA. FERTILE PINNA ON STERILE FROND.

You will tell me that all these clumps of dead leaves about the garden are untidy and unclean. It is, as we know, an old question, that of what is clean and unclean. For myself I must confess that I never look at the bareness and disorder of winter without seeing in it, as in a glass, dimly, the beauty and glory of the coming summer; and I am so far a slave to the beauty of the useful that I am loth to call that unclean which I know is working for good. To my mind no scene which Nature puts on the stage rivals in disorder that of a bed which the modern gardener has "done up" for the winter, where bared blanched stems, truncated leaves and shorn twigs, stand out here and there gaunt and desolate from a soil which indeed is raked smooth above, but below is full of bleeding roots and damaged bulbs. Where this is done year after year can it be wondered that things do not thrive? You may lessen the evil by digging in manure; but would you count it a wise thing to cut your child's throat every time you gave him bread? You may mulch instead of digging in; but the wind will blow away your cocoa-nut fibre, and no rotted leaves or half-rotted manure will wrap so closely round the bases of the plants as the decaying leaves which spring from them. Whereas if you let the dead leaves stay, when their work of shelter is over, the new shoots of spring will speedily hide them, the worms will carry their softened broken fragments underground, and before the beauty of summer is fully on you, all traces of them will be gone. Last, not least, you will have this also to reflect on, that you yourself having taken nothing away, the plant having given back to the soil in the winter much of what it raised into life in the summer, the ground at the end of the year is only the poorer by the permanent addition of substance to the plant; and that is so small that, unless other causes come into play, you may with safety leave your plant to flourish untouched for years.

Many other things I might write about leaves. I might insist that those which decay in summer if not removed serve like their winter brethren as the best of mulching, and the surest guard against drought. I might tell how seedlings of parents whose seeds when gathered germinate with difficulty, as of many Primroses, may often best be gained by searching in the varying shade of the broad radical leaves, where in damp, quietude, and darkness giving way to light as leaf moves or decays, the self sown seed is quickened into birth. But for fear of weariness I must end; and let me end saying yet once again that the green leaf is the measure of the plant's power, and should therefore be the constant object of the gardener's care. *Dietes.*

FLOODS.—The consideration of this subject is a matter of much and increasing importance. A writer, who signs himself "Aquarius," after stating in his pamphlet (Norwich: Fletcher & Son) how floods are caused, proposes, in suitable situations, to make tanks, ponds, and reservoirs for catching and storing surplus rainfall. In this manner the water which would otherwise run to the rivers and cause them to overflow, would be arrested, and the mud and silt would be caught also, and would, when dried, become available as a useful dressing to garden, farm, or pasture lands.

## BENTHALL HALL.

Benthall Hall, Shropshire, the residence of George Maw, Esq., well known to most readers of this journal as an enthusiastic botanist, horticulturist, and geologist, has claims upon the consideration not only of those who love plants and all connected with them, but also on the archæologist. As our illustration will show (fig. 39, p. 208), the mansion is a noble example of the early Tudor style of architecture (temp. 1535), which, if less florid than that which succeeded it, is at least remarkable for its fine proportions, substantial appearance, and convenience of arrangement. Its projecting bays, gables, and handsome chimney-shafts, render it a fine example of its style. The interior, with its noble oak staircase, panellings, and fittings generally, is in accord with the exterior. Room after room is filled with works of art, reminiscences of travel, pottery of all ages, countries, and variety of manufacture, sufficient to delight the connoisseur and attract the notice of every visitor. With such matters we have, however, here but little concern, but a word may be said of the library, because in it—to say nothing of other cognate matters—is gradually developing the material for what bids fair to be one of the most complete and beautiful botanical monographs we have ever been privileged to see. Mr. Maw is, as well known, a keen lover of hardy plants and bulbs, and spares nothing to collect and cultivate them. At present his main work in this direction is devoted to the lovely Crocuses, which we are apt in general to associate more particularly with spring and, in a less degree, with autumn. But at Benthall there are not many weeks in the year, if any, in which some one or more representatives of this genus may not be seen in flower. These plants are studied with earnest zeal and painstaking accuracy, not only in the herbarium, garden and library, but in their native haunts. Wherever a Crocus is to be found, he it in Spain, in Dalmatia, on the slopes of Olympus, in Asia Minor, it matters not where, this earnest student of their beauties remains unsatisfied till he has collected it *propria manu*, and studied its peculiarities and surroundings on the spot. Our columns have been enriched with the narrative of some of these delightful tours, not always unattended by adventures of a scarcely pleasant character; as, for instance, when the botanist fell into the hands of thieves in one of Ionian islands—an incident graphically narrated in our columns in 1877, December 1, p. 680. Foreign herbaria are ransacked in the course of these wanderings, and the studies thus inaugurated are followed up by the most careful and complete investigations made on the plants under cultivation. In this manner descriptive notes have accumulated, and exquisite drawings have been made by Mr. Maw of all or nearly all the species known to science, as well as of others of which he has been privileged to be himself the discoverer. To most of us, familiar only with the common species, the immense diversity in colour, form and period of blooming comes as a surprise. More especially remarkable is the great variety of the leaf structure. Most of us would probably say off-hand that the leaves of Crocuses varied comparatively little. To the ordinary gardener the "grass" of one Crocus would be very similar to that of another. A glance at Mr. Maw's drawings, however, reveals an amount of diversity that is rather astonishing,—and not only of diversity, but of beauty of form, which is almost wholly unsuspected by those who have not paid special attention to the matter. A good way of showing these diversities is to make a slice across the leaves, and then note the varied appearance of the sections so made. In this manner the wonderful variety and the beauty of outline become apparent. When these drawings come to be published, we doubt not that they will not only be treasured by the botanist, but will be seized on by the designer as affording numberless suggestions for decorative art. The variety and beauty of the arrangement of the fibrous investment of the corms are no less wonderful, though rather more familiar to growers of these plants.

Fig. 38.—HAMAMELIS ARBOREA: WINTER-FLOWERING HARDY SHRUB. FLOWERS YELLOW. (SEE P. 216.)

Our visit to hospitable Benthall was made on a frosty day in November, not altogether the best time to see a garden, the specialities of which are classed among hardy plants, but perhaps the more impressive from the very fact that so much was to be seen even under such relatively unfavourable circumstances. Here are to be found, besides the Crocuses, representatives of the hardy flora of Europe, of Asia Minor, and North Africa, not in twos and threes, but in hundreds, and a large proportion collected by the cultivator himself. What importance attaches to plants so collected, not merely by an enthusiast but by a critical botanist familiar with the details of their structure, their history, geographical distribution, and relation to surroundings, can only be fully gauged by a botanist, but some measure of the interest attaching to them may be experienced by any lover of plants. This Fern, for instance (Balantium Culcita), was collected in its only known European locality, Algecieras, opposite Gibraltar, the head-quarters of the species being in the Azores and Madeira. This curious plant, Boucerosia maroccana, representing, as it were, the Stapelias of the southern end of the same continent, brings to mind the adventurous journey in Marocco with Sir J. D. Hooker and Mr. Ball, which has proved so valuable in increasing our knowledge of the flora of that country. This Lily (L. albanicum), found wild on the mountains of Albania, is identical with L. pyrenaicum from the Pyrenees, and is found nowhere else in the intervening 800 miles. How is such a fact to be explained? This Lithospermum (L. graminifolium) was collected on the mountains of Carrara, hard by Lucca. Euphorbia myrsinites hails from the Apennines. Notholaena marantæ, Saxifraga florulenta, and Cystisus hirsutus, suggest reminiscences of the Riviera. Campanula isophylla brings to mind the same region, and excites speculation as to the cause why this beautiful little plant should be confined to so limited an area. Is it dying out by degrees? Is it an old species? Did it once spread over a wider area? If so, what has checked it? Is it spreading? If so, in what direction is it likely to develope itself? These and a score of similar questions suggest themselves in the case not only of the plants mentioned, but of many others here to be seen. A humble Crocus may thus throw light upon the most gigantic problems of the earth's history, may give a clue to the changes which have taken place in the climate and configuration of the globe, as well as furnish an indication of the climate at the present day. What a lexicon is to the student of philology and language, so in no stinted measure is a collection of plants to the student of the past history and present circumstances of our planet. Again, there are many examples here which have been utilised for artistic purposes, and which have suggested designs for the ornamental tiles and pottery for which the firm of Maw & Co. have won so enviable a reputation.

The alpines and hardy perennials are grown in open borders, in well-drained beds, on a loamy soil overlying Silurian limestone, or in pockets of rockwork; Saxifrages here—not omitting the beautiful S. lantoscana lately figured in these columns—Sedums and Sempervivums there, Narcissi and Snowdrops—with the beautiful Galanthus Elwesii among them—elsewhere. This bed is devoted to Primulas, Androsaces, and Cyclamens. Peat beds give shelter not only to "American plants," so called, but to lovely Trilliums, exquisite Cypripediums, and deep-hued Gentians. Lilies find a place, and a large one, of course, but all were below the surface at the time of our visit, and those which occupied a house to themselves were equally invisible at this season. As to the lovely Chionodoxa, Mr. Maw has a double claim on the gardening community; first, that he introduced it to their notice; and, second, that, after supplying his friends with the liberality of a true enthusiast, he has devoted the sums received from the sale of the surplus stock to the increase of the funds of the Gardeners' Benevolent Institution.

So far we have been speaking of that part of the

garden where the plants are grown, as it were, on the flat with occasional protection from masses of stone—a sort of civilised moraine. In another quarter of the garden is the rockwork proper, of which a portion is shown at fig. 40, p. 209. This may be roughly likened to a mountain slope of considerable length, moderate height, and varied and undulating outline. Here with bold-leaved Ivy (H. Rœgneriana) to cover projecting spurs, and with choice Conifers of varied and characteristic habit, Retinosporas, Thuiopsis, including the beautiful variety of T. dolabrata known as lætevirens, Irish Yews, Bamboos, and bold Yuccas to furnish an appearance of arborescent vegetation, are nooks and corners innumerable, affording every variety of aspect, exposure or shelter, as the case may be. Here Ramondia pyrenaica seeds freely as if it were quite at home. To mention the denizens of this rockwork, however, would be to write a lengthy catalogue. We must leave it to the imagination of the connoisseur, and the hints we have given will suffice to render the task not a very difficult one to the plant-lover. Tropæolum speciosum, which most people find it so difficult to grow in the South, is quite at home here. "It only wants to get established," says our host. No doubt; but it is the establishment that is the difficulty. It must not be supposed that the collections here are exclusively confined to alpines, hardy perennials, and bulbous plants, "American" and other evergreen and flowering shrubs are grouped here and there, and the collection of Conifers in small examples is a rich one. Here, for instance, in addition to the Retinosporas, and such-like plants, on the rockwork, are specimens of Abies Apollinis, orientalis, Hookeriana, Mertensiana, and inverta. Here are numerous representatives of Junipers, such as J. recurva, excelsa, venusta, viridis, pendula, and many others. "But where are the Crocuses?" An unreasonable question, some may think, at the end of November, with the thermometer down several degrees below freezing point. Not so, however; here are lines of large brick pits with the frost-laden lights made to open lengthwise by a hinge; under this shelter, planted out in the ground beneath a mulching of cocoa-nut fibre, are hundreds upon hundreds of these beautiful plants, as well as of Irises and bulbous plants generally, and no small proportion in bloom. Each species has its terra-cotta tally indicating the name, and often the place and date of collection. We can only cite the names of some that were in flower at the time of our visit, such as Crocus Elwesii, longiflorus, melitensis, tingitanus, ochroleucus, cancellatus, Clusii, asturicus, Pallasii, medius. But these names convey but little idea to the uninitiated, and we had neither the power nor the leisure to note the many beauties and the different appearances of these gems as they were revealed to us on that wintry morning. Very curious, however, was it to observe what our host called the parallel variations in different species; for instance, varieties of Crocus cancellatus, from Olympus, assuming the same tints and distribution of colour as C. aërius, from the same mountain. Several cases of this kind were shown to us, and set us speculating how or why this should be. No doubt when the promised monograph sees the light, these and other like questions will be discussed with that clearness of view and fulness of detail which a practised naturalist and observant traveller can alone supply.

And here for the nonce we must perforce bring our notes to an end. Suffice it now if we have said enough to give the reader some idea of the variety and interest of this remarkable garden, and to enable him to conjure up visions of the beauty of its occupants in what the French call *la belle saison*. Let no one think this is a mere botanical garden, with its formal rows of weeds diversified here and there by some plant of more attractive guise; let him think of it rather as a collection of the choicest, rarest, and most intrinsically interesting plants, selected with quite unusual care and knowledge, arranged with rare judgment and taste, and cultivated with no common skill.

## Florists' Flowers.

THE GARDEN ANEMONE (ANEMONE HORTENSIS).—The older florists give this species as the parent of the showy double Anemones so much valued by some of the early florists—how early it is impossible to say, as this and A. coronaria have been under cultivation in our gardens for at least 300 years. It is most probable that A. coronaria is the parent of the greater proportion of the named double varieties, the form of petal being more in the way of that species than the more starry shape of the other, of which A. fulgens may be taken as a good type. Like the Ranunculus, they are easily raised from seeds, if these are sown early in the year—say about the middle of April—on a bed of fine soil, which should also be well trenched and sufficiently manured to the depth of a foot or more. The surface of this bed should be good loam, sifted, and mixed with an equal proportion of well decayed leaf-mould. The beds should be not more than 4 feet wide, the seeds to be sown thinly and broadcast. Cover them slightly. The weeds should be picked out by hand during the summer, and under favourable circumstances the plants will have grown sufficiently to produce good flowering roots for next season. The single forms are very pretty, and by many persons more esteemed than the double. The old florists, who used to cultivate the choice named double varieties more than half a century ago, used a compost that was too rich in many cases, and in wet seasons a large proportion of the tubers decayed. One of the most successful growers prepared his beds in September by taking out the natural soil to the depth of 18 inches. In the bottom of his bed he placed 3 or 4 inches of good cow-manure; then the compost of good heavy loam, leaf-mould, rotten cow or horse-manure six parts, and two parts of clean sand. This compost was well mixed and thrown into the bed, where it was allowed to settle for a month. It is all very well to go to this expense and trouble if time can be afforded for it, and the materials are easily accessible; if not, good deeply trenched garden soil will answer very well; but I would certainly place on the surface 6 inches of good loam and leaf-mould. About the middle or end of October is a good time to plant them out. The tubers should be about 6 inches apart, planted in rows, such as are drawn to sow Peas. A little white sand should be placed under and over each tuber. It used to be customary—but it is probably not necessary—to shelter the beds from frost and heavy rains during the winter. If the weather is dry at the time the bloom appears, water between the rows, but do not water the leaves or opening blooms unless they are dusty and require cleansing. As soon as the leaves become yellow the tubers must be taken up and stored in a dry cool place. These Anemones also succeed well in pots. I have grown them well with three large, or about five small, tubers in 6-inch pots. They should be grown in cold frames, which ought to be freely aired, the lights to be taken off on all favourable occasions. *J. Douglas.*

## ARTIFICIAL MANURES.

### STANDEN'S GARDENERS' FRIEND.

[THE subjoined analysis of a popular garden manure should be read in connection with our previous remarks (p. 144). The proportion of ammonia and nitrate of soda seems satisfactory, but the amount of potash—a very important substance in plant nutrition—seems, from the analysis, to be very low. EDS.]

"COMPOSITION OF A SAMPLE OF MANURE MARKED 'NO. 1.' (STANDEN'S MANURE).

| | |
|---|---|
| Moisture | 3.13 |
| *Organic matter and ammonia salts | 40.50 |
| **Soluble phosphoric acid | 0.51 |
| ***Insoluble phosphoric acid | 14.66 |
| Lime | 19.45 |
| Potash | 0.20 |
| Nitrate of soda | 10.04 |
| Oxide of iron, chloride of sodium, &c. | 5.48 |
| Insoluble siliceous matters | 5 94 |
| | 100.00 |
| *Containing nitrogen | 7 63 |
| Equal to ammonia | 9.27 |
| **Equal to phosphate of lime | 1.11 |
| ***Equal to phosphate of lime | 32.01 |

BERNARD DYER, F.C.S., F.I.C."

## Notices of Books.

On the Art of Gardening. By Mrs. F. Francis Foster. Satchell & Co.

In this pleasant and original little book the authoress not only enters a vigorous protest against the bedding-out system and the so-called "natural" style of gardening, but gives very good practical advice for gardens of a different sort. Her ideal garden is planned on the lines of an Elizabethan or even a Chaucerian garden, but furnished with all the beautiful flowers that have been introduced since Chaucer's and Elizabeth's day. She is a strong advocate for walls and thick hedges, for the comfort and shelter they give both to plants and to the owners of gardens. She detests the ordinary bedding-out of summer plants, but gives very good counsel as to the orderly arrangement, and the perpetual ornament of her borders, with an especial recommendation of a free use of our fruit trees, not only for their use, but for their beauty on our lawns and walls. She is well read in the literature of gardening (though she will spell Gerard with a final e), and has so pleasantly mixed her practical hints with quotations from writers of many generations, that even those who do not feel inclined to follow her guidance in the arrangement of their gardens will thank her for a very pleasant addition to the books on gardening. To one class it may be especially recommended—that large class who own small suburban gardens of a stiff shape, and surrounded with walls; they will be surprised to find that, under Mrs. Foster's guidance, those are the very gardens that can be made attractive and pleasant.

The book is not quite free from errors, but they are very few. The Sternbergia lutea is not a "spring-blooming" plant, nor is it now considered the Lily of the field. There is no such a plant as a Yellow Musk Rose, and Lithospermum should not, as it is in many places, be spelt Lithospurmum.

Rambles among the Hills in the Peak of Derbyshire and the South Downs. By Louis J. Jennings. With Illustrations. (Murray.)

We are apt now-a-days to consider pedestrianism (unless performed as a feat of endurance or undertaken as a wager) as somewhat "out of fashion." Bicycles also have combined against it, and played a large part in rendering "walking tours" comparatively out of date and obsolete. That there is no more delightful way of seeing a pretty country to one in fair health, and who is not bored by his own society, Mr. Jennings proves very conclusively in the pleasant book now before us. Beginning with Chatsworth, the beauties of which, however, are very inadequately described, Mr. Jennings takes us many a pleasant ramble in the Peak; and after a walk through the "Dukeries," also very meagrely treated, he conducts us to Sussex and the South Downs, and after that into Kent, giving us a concluding chapter on "the finest seven miles in England," for thus it appears Cobbett in his *Rural Rides* describes the walk from Maidstone to Mereworth.

Mr. Jennings apparently differs in opinion with, and will have nothing more to say to Mr. Cobbett as "guide" for the future; but, knowing the country well between Maidstone and Mereworth, we are disposed to think Mr. Jennings under-estimates the district as much as Cobbett over-estimates it.

Perhaps the pleasantest portions of this agreeable book are those containing the characteristic and interesting "chats" which Mr. Jennings has with the folks into whose company his walks throw him for a time. For instance, on the way to Petersfield Mr. Jennings passes a house of the Queen Anne period, near the churchyard.

"A comfortable-looking old house," said I to a man who was trundling a wheelbarrow along the road, taking it in a leisurely manner, as they do everything in Hampshire.

"It is, sir; a farmer lives there. Did you ever hear of Gibbon, the historian?"

"I have."

"Well, he lived there, sir. The rooms are in there where he studied. I never read his book myself, but they say it's clever."

Some of Mr. Jennings' little adventures are full of true pathos, as, for instance, the meeting with the owners of the travelling Marionettes; the account of the poor foreigner with the bear, and three of his own small children; and the wretched gipsy woman sitting by the wayside, whose husband had just been giving her a "hiding"—"the second time to-day!" Mr. Jennings subsequently meets the husband and has a little conversation with him! He cannot resist a parting shaft, too, as he leaves him. "'I wish you all good-bye and good luck,' said I. 'I am looking for a man who has been drinking all the morning, and gave his wife a hiding this afternoon.' Thus saying I started off for the hill opposite the 'Robin Hood,' across the edge of the moor, and noticed that the gentleman who had been reclining on the ground was now sitting up and regarding me attentively."

It is a pity Mr. Jennings is not more of a naturalist, his descriptions of well-known places lack much which the trained eye of a lover of Nature would supply, and make his descriptions read somewhat bald to those who know the wealth of interest here scarcely even hinted at.

Enough has been said, however, to show that this little book is by no means without interest. It will also prove a useful guide to pedestrians, since not only the main roads are described but even field paths and narrow ways through woods and parks. The work is embellished with numerous illustrations, and we cordially recommend it either as a pleasant volume for a winter evening or as a gift book to a friend (or, still better, two friends) contemplating a walking vacation tour.

# Garden Operations.

## *HARDY FRUIT GARDEN.*

Strawberry plantations will now require attention, in order to get the mulching of fresh litter on in good time, so that the roots, which will be pushing vigorously from this time forward, may have the benefit of the manure washed down, and the litter itself have plenty of time to become thoroughly bleached and clean for the fruit to lie upon. Clear the plants from the dead leaves that have accumulated during the winter. See that the ground is free from bad weeds, then very lightly fork in the decayed manure remaining on the surface from last season; but on very light soils it is preferable to merely hoe between the rows. Mulch with long fresh stable manure applied in sufficient quantity to tempt the fresh roots to the surface, and effectually to protect them when a spell of dry weather sets in. Raspberry canes that were thinned to the requisite number in the autumn and have not yet been tied in must be secured firmly to their stakes or trellises, as the case may be, at once. The tips may be pruned off to the required length as growth commences. Autumn-bearing varieties may now be cut over close to the ground, and, if stakes are to be the means of support, see that good sound ones are provided that will not fail during the season. Iron stakes are the cheapest in the end. The manure that was wheeled on to the fruit quarters during severe weather can now be spread, and pointed in very lightly.

Those who do not prune and nail their Peaches and Nectarines in the autumn, but prefer to leave the pruning until the winter is past, will now require to turn their attention to getting this work commenced, in order to get all completed before the bloom-buds become so far developed as to be in danger of being rubbed off during the progress of the work. As the wood of Peaches and Nectarines on walls is in a better state than it was last season, an opportunity will now be afforded of leaving much more well-ripened wood and of furnishing the walls more effectually than they have been for the last year or two. Cut out, with a sharp knife, any bearing shoots of last year not required for extension; while the shoot retained, starting from the base of the one removed, can be cut to a triple bud. If the wood is well ripened the best general rule as to the length of shoot to be left is to cut it to the length required to reach to the next one above it in completely furnished parts of the tree. Points of leading shoots and branches wanted to furnish bare parts of the tree may be left nearly full length if the wood is ripe, but where gross or imperfectly ripened it will be to the ultimate benefit of the tree if such can be entirely removed and the next shoots, if of a better description, taken in their places. Occasionally, in order to have a sufficiency of bloom in thin parts near the base of trees, weak shoots are necessarily retained that show no triple buds; these must be left unpruned if, as is often the case, all buds except the point one are bloom-buds. If in disbudding last season two or three growths were left on one shoot do not risk crowding the tree by retaining more than one unless there is much space to be filled. Young trees may have the leader cut back to 6 inches in length, the well-placed shoots retained to as great a length as the hardness of their growth justifies, and the weak shoots cut well in. In nailing use no more nails than are absolutely necessary to keep the shoots straight; see that no shreds are too tight, as the shoots swell rapidly during the growing season on vigorous trees; and avoid ugly curves at the bases of shoots by drawing in with a matting-tie all shoots that do not start at a sufficiently acute angle with the branch. As the nailing progresses give a second look at the pruning, in order that any parts that have been left a little crowded may yet have some shoots removed, always retaining those lowest placed, and generally studying the future furnishing of the trees as well as the current crop. Prune accordingly. *R. Crossling, St. Fagan's Castle.*

## *FRUIT HOUSES.*

Vines.—The weather has become much milder since I last wrote, but we have had very little bright sunshine, consequently the growth of Vines only proceeds slowly. Give air for a short time daily when the temperature rises to 68°, and close early. For the earliest house the night temperature had better be 65° on mild nights, and 60° if cold, raising the temperature to 70° early in the day. Where Grapes are set and thinned examine the borders, and if at all dry water well with tepid manure-water at a temperature of 85°, taking care to give sufficient to go thoroughly through the soil. As a rule, after the Grapes commence to swell very little more stopping is required. The succession-house, started early in January, will now be breaking freely, and had better be kept a few degrees warmer, say 60°, raising it gradually a few degrees higher as the bunches show. Damp the border and paths several times daily with tepid water, but discontinue syringing the Vines overhead when the bunches show. This is a good time to start Gros Colmar, Lady Downe's, Mrs. Pince's Black Muscat, Alicante, and all thick-skinned Grapes, as a little fire-heat applied now is much more economical than having to hurry them on in the autumn. I find that late Grapes keep better if a little fire-heat is applied to them all the summer, except in the very hottest weather. Late houses of Black Hamburgh had better be kept as cool as possible to hold them back; they will then break freely by the end of April, which will give them plenty of time to ripen by the middle of September, and they will keep better than if they were ripened earlier. Muscats that are breaking will be better with a few degrees more heat than recommended for Hamburghs, gradually increasing it as the bunches show till it reaches 67° at night, with a rise of 10° by day, which will be quite hot enough for the present month. Give a little air through the top ventilators to the Grape-room when mild, and take care to keep the room as equable as possible in temperature, and to fill the bottles up with soft-water as required. Pot Vines swelling their fruit will now take liberal supplies of tepid manure-water; give it them often, of moderate strength, in preference to strong doses occasionally. If any signs of red-spider appear paint the pipes when very hot with sulphur, which is a safer plan than burning it on a hot brick, and will keep it down if taken in time and the atmosphere is well charged with moisture. Vine eyes, if not already put in, must be planted at once, or they will be of very little use this season. *Joshua Atkins, Lockinge Gardens, Wantage.*

Pines.

The newly-potted plants making their first growth, owing to the absence of sunlight, have a tendency to become drawn; therefore extreme caution is necessary to prevent this by keeping the glass clean both inside and out, and the plants ought not to be more than 2 to 3 feet from it. Never lose a single opportunity of giving a little air by day, when the temperature does not recede below 65° to 70°. Too much importance cannot be paid to this fact, that if plants are drawn at this stage they will never assume the robust and sturdy habit which is the best criterion of a well-grown plant. Those plants that were put into the fruiting pots last September, and kept steadily growing all through the winter in a light structure, will now require more room. This batch will show fruit about July and August, and succeed the summer fruit by ripening in November and December. The best method of plunging is to get a number of empty duplicate pots exactly the same size as those that are about to be shifted, place the empty pots at measured distances in the bed, of 2 feet apart each way in the places where the plants are intended to occupy; then tread and beat the plunging material firmly round the pots: when this is done remove the empty pots one at a time, then place the plants in the holes thus made, putting the largest at the back. Any plants that are one-sided should be placed with the leaning side to the north, when the action of the sun and light will draw them back into an upright position. If Oak bark that has been used for tanning can be procured in a fresh state it is a good material for plunging, especially over bottom-heat pipes; but one thing must be borne in mind, that the bark often becomes overgrown by a yellow fungus. When this appears keep the bark very dry, and move the surface occasionally, when it soon exhausts itself and seldom reappears. Fresh sawdust is also good for plunging, and for hotbeds, or where the bottom-heat is derived entirely from fermenting materials is better than tan. Now is a good time to examine those plants that have stood some time in the beds; see that the pots are level to take water, and if the tan has shrunk from the sides of the pots make it good. If the beds have shrunk generally make them up to their proper level with fresh tan. Pot the crowns of scarce kinds, also take off suckers from plants from which the fruit has been cut; give them a good bottom-heat, but do not overcrowd them. Some growers have an objection to suckers taken off below the soil; where this is the case a good way is, after the fruit is cut, to shorten back the leaves to within 8 inches of the stems, then plunge the old plants thickly together, when they will make suckers, which may be taken off in the usual way. *D. Wilson, Castle Hill, Devon.*

## *PLANT HOUSES.*

Stove.—With the gradual increase of temperature in this department (as previously recommended) Gardenias will now be swelling up their first bloom-buds somewhat rapidly; keep them well supplied with water, giving occasional doses of liquid manure, which will greatly aid in their development. Allamandas, and the climbing kinds of Clerodendrons that have been pruned and potted, should have all the light possible, keeping them near the glass to prevent them from drawing or producing spindly growth. The shrubby kinds of Clerodendrons are handsome subjects for the stove during the summer and autumn months, and C. fallax in particular. To keep them bushy, they should be pruned hard back into the previous year's wood. When commencing to grow they are disposed to concentrate their strength into one or two growths: this can easily be prevented by keeping them pinched until the requisite number of shoots is obtained, afterwards keeping them tied out as they increase in strength. Vincas are also most serviceable plants, especially V. rosea oculata, and where these are now breaking into growth they should be kept pinched after having made two joints. Ixoras should now be growing freely. I. coccinea is still one of the best when well grown, and I. Williamsii and Prince of Orange are also useful, being free-flowering. These, if not required to flower early, should be stopped. The first-named is disposed to grow somewhat leggy if not stopped when young. Where stove climbing plants are grown on wires near the glass no time should be lost in pruning and regulating them, at the same time keeping a close watch for insect pests. Passiflora quadrangularis, one of the most handsome of the species, will now grow rapidly; when commencing to show bloom keep it well supplied with water: this kind will thrive best if it can be grown in an open border. Where several plants of Stephanotis are grown in pots, and it is desired to lengthen the flowering season, some of them should be retarded in a cooler house, where the temperature does not drop lower than about 48°, giving only sufficient water to keep the leaves from shrivelling. If reintroduced into the stove later on, these plants can be depended on to be in bloom in three months from that time. This treatment will also cause the Stephanotis to flower, where a difficulty has previously been experienced through keeping them too much in the temperature of the stove proper, and in a growing condition. Seeds should be sown without delay of Torenia Bailloni and Fournieri, pricking them off as soon as they are fit to handle; keep them growing freely and good plants in 4½-inch pots may be had by the summer — these will be found most useful for conservatory decoration. Seeds sown now of Aphelandra aurantiaca Roezliana will make nice blooming plants, with one terminal spike to each for the decoration of the stove next winter. The general collection of Gloxinias should be repotted, and if any have by chance become somewhat too dry, it would be better to allow the tubers to soak in warm water a little time previous to potting them; but some of the stock should be retarded in a cooler house, where they can come on steadily. Gradually increase the temperature of the stove, closing early on sunny days.

Greenhouse.—Watch closely for the commencement of growth in Lilium auratum and other kinds; when the young growth is fairly above the soil give the pots a position near the glass, to keep the young shoots as dwarf and sturdy as possible. Plants of Richardia now advancing into flower will be benefited by an occasional dose of manure-water. Ixias, Sparaxis and Babianas grown in pots will be found most useful for cut purposes and for the conservatory. Now they are in free growth give them every attention. They will succeed well under the same treatment as Tritonia aurea, an often neglected plant. Bulbs of the commoner kinds of Gladiolus, such as Brenchleyensis, if potted now, one strong bulb in a 6-inch pot, will make good decorative plants for the conservatory when choice flowers are scarce. Plants of Vallota purpurea, if requiring to be fresh potted, should now be seen to, so that the plants may mature their growths early, thereby developing stronger blooming spikes. The general stock of Hyacinths, Tulips, and Narcissus will now require closer attention. Do not let them remain covered with ashes or other material after having fairly started into growth. The earlier kinds will now be in flower without any undue amount of forcing. Keep a regular supply of each introduced into a warmer temperature, giving them a position as near the glass as possible. Begonias of the tuberous kinds should soon be potted. When they are shifted they might with advantage be introduced into the temperate-house till they are fairly in growth, when they will be found to succeed better in the more airy atmosphere of the greenhouse.

Conservatory.—This structure should now be gay with the Camellias as permanent plants, and by the introduction of forced plants and bulbs from the other houses. Primula sinensis will still render good service till the main stock of Cinerarias are advanced. The early blooming kinds of Epacris will now be most attractive in the conservatory, but should not be allowed to remain there too long, to the prejudice of the plants. Keep all decaying flowers and foliage removed, and endeavour to have this structure as clean and attractive as possible now the outdoor enjoyment to be derived from our gardens is still at a minimum. As the conservatory will be one of the earliest houses to require shading by artificial means, the blinds should be got in order the first opportunity that may occur, so that they may be in readiness when (as is generally the case) they are somewhat suddenly required. *James Hudson, Gunnersbury House Gardens, Feb. 8.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| MONDAY, | Feb. 14 | Sale of Lilium auratum, &c., at Stevens' Rooms.<br>Sale of Lilies, Plants from Ghent, and Established Orchids, at the Auction Mart, by Protheroe & Morris. |
| WEDNESDAY, | Feb. 16 | Sale of Imported Orchids, Roses, Shrubs, &c., at Stevens' Rooms. |
| THURSDAY, | Feb. 17 | Meeting of Linnean Society, at 8 P.M.<br>Sale of the late Mr. C. Leach's Orchids, at Stevens' Rooms.<br>Clearance Sale of the Glasshouses at Henderson's Nursery, Thornton Heath, by Protheroe & Morris. |
| SATURDAY, | Feb. 19 | Sale of Hardy Plants and Bulbs, at Stevens' Rooms. |

THE disturbances which for a short space characterised the annual meetings of the ROYAL HORTICULTURAL SOCIETY have been, it seems, transferred to "another place." At any rate, nothing could be more quiet and orderly, not to say tame, than the proceedings at South Kensington on Tuesday last. The report, as printed in another column, was taken as read; the President delivered an address—congratulated the Society on its peaceful condition, pointed out how the stars had foughf in their courses against the Society in the last year—a favourite metaphor of the President's, alluded in complimentary terms to the Rev. GEO. HENSLOW'S lectures, congratulated the Society on the large addition of new Fellows, alluded to the balance-sheet and its admittedly and frequently explained fictitious items, touched npon the lawsuit going on, that is to say stagnant for the present, between Her Majesty's Commissioners and the Society; adverted to the success of the Society in securing the admission of the debenture-holders as parties to the suit; expressed ignorance as to when the decision would be made, but hoped that when it was made justice would be done to all parties. The President further expressed his confidence that the Society, "doomed to death but fated not to die," would survive to do useful work for a long time to come, as it was not to the interest of the Commissioners to carry on the gardens at Kensington on their own account.

So ran the President's discourse, which, if not very satisfactory from the horticultural point of view, was, under the circumstances, in no particular very unsatisfactory. Then, following the procedure in another place, but for very different reasons, a motion was made that a certain Life Fellow, having rendered himself amenable to a period of penal servitude, was no longer fit to be a fellow of the Society, and he was removed from the Society by virtue of a certain bye-law for such cases provided. Even this startling incident was received in perfect calm, and the voting was quite unanimous. The "scientific" operations of the Society during the year consisted, according to the report, in the testing of particular vegetables—Aubergines, Brussels Sprouts, and others—with a view to the discarding of inferior varieties and the correction of nomenclature: excellent work, but hardly scientific in the ordinary acceptation of the term. It is a pity that room should be given to ridicule such useful work by giving it an appellation the application of which is as much open to question as it would be to the game of lawn-tennis, for the prosecution of which healthful exercise, we are told, every facility is afforded to the Fellows and their friends. More to the point is the fact that 238 free monthly tickets have been issued to students in the Science and Art Schools.

Pending the result of the lawsuit, it would be scarcely legitimate to indulge in comment, but it is at least allowable to congratulate the Society on what it has managed to do under very adverse circumstances, and to hope that as prosperity returns, as there are some indications of its doing, the work of the Society may become not less technical or less concentrated on exhibitions, but more distinctly scientific; not less local and metropolitan, but more imperial, in a good sense, in character. There are so many questions now affecting the interests of horticulturists in all parts of the empire—and not of a few exhibitors only—on which guidance might be expected from the Society—such as the forest conservancy in our colonies, the education of gardeners and foresters, the spread of the Coffee-leaf disease, the plantation

FIG. 39.—BENTHALL HALL, BROSELEY, THE RESIDENCE OF GEORGE MAW, ESQ. (SEE P. 205.)

of Cinchonas, the Phylloxera laws—that it can hardly be said that the Society, by ignoring matters of this kind, at all rises to the level which a national horticultural society should attain to.

Under existing circumstances it may perhaps be said it is impossible to do otherwise, but, on the other hand, it should be remembered that if popular support is to be obtained good national work must be done, and the Society's labours not confined merely to flower shows at Kensington, however excellent, or to the trials of vegetables, however serviceable.

One other matter of congratulation remains to be noted, and that is the replacement of two ornamental members of Council by others whose names are a guarantee of [real] horticultural work. It is a genuine gain to have such men on the Council as Messrs. Dillwyn, Macintosh, and G. F. Wilson; in their hands the interests of horticulture in its widest sense are not likely to suffer.

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—— Frozen Potatos.—A correspondent sends us ths following cutting from a Scotch newspaper:—"Mr. Gordon, Curlusk, Boharm, last week opened up one of his Potato pits, when he found that the frost had penetrated through the earth and frozen the Potatos into a solid mass. He filled up about 40 bushels of them into bags and placed them in the bottom of his mill-dam, where he allowed them to remain three days. They were then taken out and put between layers of straw and dried, when they were found to be as fresh and good as ever."

—— Begonia socotrana.—We understand that the stock of this Begonia, which was brought home from the Island of Socotra by Dr. Bayley Balfour, and was figured and described at p. 8 of our present volume, has passed into the hands of Messrs. James Veitch & Sons, Chelsea, who hope shortly to be able to distribute it to the public.

—— The Royal Botanic Institution of Glasgow.—The Corporation of Glasgow have granted a loan of £25,000 to the Institution for the purchase of the Kibble Conservatory, the erection of new conservatories, and for other improvements. The Kibble Conservatory is to be converted into a temperate-house or winter garden, with space for promenade concerts.

—— Linnean Society.—The papers to be read at the meeting on Thursday next (17th) are:—"On Right and Left Hand Contortion of the Corolla," by C. B. Clarke; and "On the Reparative Processes which Occur in Vegetable Tissues," by Samuel G. Shaddock.

—— Begonia Schmidtiana.—Several specimens of this species, now flowering nicely in the T range at Kew, and also in the Cambridge Botanic Garden, prove that it is a desirable plant to grow for winter blooming. It makes a neat bush about 1 foot high, and produces a profusion of pretty white flowers. The leaves exhibit a dark green metallic hue on their upper surfaces, and below are deeply tinged with red. Messrs. Haage & Schmidt, of Erfurt, introduced the species from Rio Grande do Sul, and Dr. Regel named it in honour of the senior member of the firm.

—— New Sardinian Oak.—Sig. A. Borzì describes in a recent number of the *Nuovo Giornale Botanico Italiano* an Oak growing in Sardinia in association with Q. Ilex and Q. Suber. It resembles the latter, but differs in the duration of the acorns, and is possibly of hybrid origin.

—— Cobœa penduliflora.—Dr. A. Ernst, of Caracas, writes:—"In No. 361 of your journal there is a note on Cobœa penduliflora (p. 694), to which I desire to add that Sir Joseph Hooker's supposition on the fecundation of this plant has proved to be fully correct, as may be seen from a paper of mine published in *Nature*, vol. xxii., 148 (June 17, 1880)."

—— The Holly Stipulate.—In botanical works it is generally stated that the order Ilicineæ is exstipulate, but in an exhibition and short note on specimens of Ilex Aquifolium shown at the Linnean Society on the 3d inst., Mr. C. Craig-Christie pointed out the presence of what appeared to be small deciduous stipules. He also called attention to the extreme scarcity of Holly berries this last season in the neighbourhood of Linlithgow and Edinburgh.

—— "Eucalyptographa."—The seventh decade of this important publication has recently been

Fig. 40.—A corner of the rockery at Benthall Hall. (see p. 205.)

issued. In it Baron VON MUELLER gives figures and descriptions of the following species:—Eucalyptus Behriana, cosmophylla, ficifolia, gomphocephala, marginata, obcordata, Oldfieldii, oleosa, robusta and Watsoniana. E. marginata is the famous Jarrah tree of the Australian colonists. The timber is well-nigh indestructible, and yet easily worked. It exists in forests in South-west Australia near the coast, extending over an area of 14,000 square miles. For ship timber it ranks after English Oak and American live Oak, and takes precedence over Sal (Shorea), Teak and the Greenheart (Nectandra Rodœi). It is peculiarly valuable as not being injured by prolonged submersion or by the Teredo. As this work proceeds we can but confirm our previous opinion of its great value and interest.

—— PRESENTATION TO MR. FARQUHAR URQUHART.—Mr. FARQUHAR URQUHART was recently entertained at dinner in the Imperial Hotel, Kilkenny, and presented by a few friends with a valuable gold watch, as a mark of their friendship and regard on the occasion of his leaving Kilkenny. Mr. URQUHART has acted as manager during the past ten years in the seed establishment of Messrs. FERRIER BROTHERS, Patrick Street, and is now leaving for Inverness, where he is about to open an establishment of his own. We understand that Mr. URQUHART has purchased the valuable seed business of Messrs. MONRO BROTHERS, Inverness, and by this change he not only returns to his native town, but to the establishment from which he graduated some ten years ago. The name and style of his firm will be F. URQUHART & CO.

—— THE ROSARIAN'S YEAR BOOK.—After the wretched season of 1871, Mr. BAKER, whose paper on the effect of the severe winter on the unripened wood heads the present little book, speaks well of the plan of cutting the Roses under such unfavourable conditions down to the ground level. Dwarf Roses so treated late in February threw up strong growths with ultimately fine blooms. The same writer in another paper advocates the culture of Roses on their own roots, cuttings being taken in September, and planted out in summer. Mr. CANT commends the Brier cuttings as a stock as more easily obtainable than the seedling Brier, more certain and much earlier in producing blooms. The Manetti is specially recommended for light soil. Mr. MAWLEY contributes as usual a valuable paper on the weather of the past Rose year, a paper which confers permanent value on this little annual, edited by the Rev. H. H. D'OMBRAIN.

—— BROWNEA GRANDICEPS.—This handsome shrub is now in flower in the Palm-house at Kew. Its large drooping globose heads of red flowers, produced at the extremities of short branches, are very handsome. In its native haunts, the mountain woods of Caraccas and Venezuela, it is known by the inhabitants under the name of Rosa del Monte. The splendid coloration of the pendulous plume of young leaves before their full development would make this species worth cultivating, even without the flowers. In the No. 1 House a nice bush of B. coccinea is blooming freely; although this has less striking leaves and smaller heads of flowers than the first-named species, it possesses the advantage of being a freer flowerer, the blossoms, too, being more richly coloured—a brilliant vermilion-rose.

—— THE CONSTABLE-BURTON ORCHIDS.—The grand collection of Cattleyas, Saccolabiums, and other Orchids, which has been gradually formed during the past twenty-five years at Constable-Burton, near Bedale, by the late JAMES MACLAREN, Esq., has been recently purchased by Messrs. JAMES BACKHOUSE & SON, of the York Nurseries. Some idea of the character of the specimens may be drawn from the following illustrations:—Cattleya Trianæ Dodgsoni, a mass nearly 5 feet across, with twenty-one leads; C. Trianæ var., with 109 stems and twenty leads; C. labiata, old var., autumn-blooming, sixteen stems, 2½ feet across; C. Mossiæ, many fine vars., with thirty to sixty-five stems; C. Warnerii vars., one or two enormous plants, with fifty to seventy stems; C. Skinneri, masses with seventy to 100 stems, 2¼ to 3½ feet across; Dendrobium densiflorum—one plant has 250 stems, and is 4 feet across; Cœlogyne cristata—one is 4 feet across, and 2 feet high; Dendrobium moniliforme, same size; Saccolabium retusum, or præmorsum (?), marvellous plants, with twenty-eight to thirty-four leaves, 12 to 20 inches long, and masses of vigorous roots drooping and clustered round their stems, 4 feet or more downwards; S. guttatum, nine stems, seventy leaves; Dendrobium Pierardi latifolium, fifty stems, some of them 3½ feet long; D. Devonianum, thirty-five and forty stems, 3 to 4 feet. There are over 180 specimens in all, and they "speak for themselves" as to the energy, skill, and perseverance which have produced such results.

—— ROMAN HYACINTHS.—Specimens of this early-flowering variety have been sent to us this year, as often before, with the complaint that they do not flower. The bulbs seem in good condition, sound and well grown, but there is no trace of flower. We are unable to state a reason for this unless it be that the climate of Holland is not hot enough to ripen off the bulb completely, or that a longer period is required to enable the bulbs to flower. Thus the bulbs now flowerless might, if grown on for another season, produce flowers. It is only a certain proportion of bulbs, however, that disappoint growers in this way—a fact that increases the difficulty of explanation.

—— WINTER GREEN CROPS.—Very disastrous indeed have been the effects of the recent hard weather upon the field and garden green crops. So much are many large breadths decaying that the air literally reeks of the noxious odour generated, and there are few unpleasanter smells than that which emanates from rotten Cabbages. Whilst the frost has been generally impartial it has been least destructive amongst curled Kale and sprouting Broccoli, two of the hardiest of our Brassica tribe; but white Broccoli, Coleworts, Savoys, Cabbages, and even half-exhausted Brussels Sprouts have been cruelly served and are largely killed. Probably that fierce wind which swept over the earth on the 18th was the potent worker of all this ill, for it swept the snow from off the crops, and left them exposed to all its terrible intensity. The pith of the stalks was frozen and the stems almost burst. Wherever the snow offered no protection the work of destruction was accomplished, and rarely have there been seen such a general failure of all the Cabbage family as is now to be seen. It will perhaps be pleaded that the comparatively mild weather which preceded the storm promoted a late and too robust growth, and hence the mischief; that, however, is questionable, for plants that were stunted and hard from impoverishment of soil are served equally bad. It would be more exact to say and to admit that the winter weather proved harder than the Cabbage family is hardy, and for once in the struggle came off victorious. Just prior to the hard weather all kinds of green stuff were a glut in the London market. When the frost and snow caused a momentary rise in prices no efforts were spared to send stuff to market, but at once the prices fell to a figure that was almost absurd. Now the crops are almost gone no doubt there will be an upward tendency, and lucky will be the grower who can take advantage of that. There is too much reason to fear that next season's seed crop must be largely affected also.

—— SHEEP AND TREES.—A correspondent of the *New York Tribune* recommends the following wash as a sure preventive of sheep barking or gnawing fruit or any other trees:—Take soap, the dirtier and more stinking the better, and make a very strong suds; dissolve ¼ lb. of whale-oil soap in every 6 gallons, and into this stir sheep-manure until it is as thick as good whitewash, with which mixture wash the trees as high as the sheep can reach, and no sheep will come near enough to rub against them for at least two months, the time depending on the amount of rain. "We keep the mixture handy, and repeat the application as often as necessary, usually not more than twice in a summer. Sheep running among fruit trees should have plenty of good fresh water; it is thirst that first induces them to gnaw the bark, but after they have once got a taste they eat because they like the bark."

—— FREESIA REFRACTA ALBA.—In the T-range at Kew this lovely Cape Irid is now in flower. It is a compact-growing bulbous plant, with light green grassy foliage, and handsome pure white nicely scented blossoms.

—— THE EPPING FOREST NATURALISTS' FIELD CLUB has begun its work well. The part of its *Transactions* now before us contains the record of several excursions devoted to exploring the fossils, archæological remains, and living denizens of the forest—excursions evidently well adapted to create interest and diffuse valuable information on the points in question. It may be hoped that another season may be more favourable to the Naturalists than the past, who seem to have borrowed Woolhope weather, as well as some other portions of the programme of that famous field club. Mr. ENGLISH describes a method of preserving flowers by embedding the freshly gathered blossoms in ordinary plaster of Paris heated to about 100° F. After about twelve hours the plants are taken out, brushed over with a camel's-hair pencil to remove the dust, and then painted over with petroleum. When the colour of the flowers becomes too purple, as it does in some cases, the dried plants are immersed in the vapour of hydrochloric acid, a teaspoonful of the acid being placed in a wide-mouthed bottle and the flowers suspended over the acid without touching it; when the proper shade of colour appears they must be quickly removed. Plants so dried can be pressed as usual for the herbarium.

—— OSTEND RABBITS.—Figures extending into hundreds of thousands quite fail to convey the enormous extent of our trade with and through Ostend in Flemish rabbits. It is a curious fact that whilst we have been engaged in the production of legislation that must of necessity tend to the considerable curtailment of our home stock of rabbits, we are fast increasing our trade in foreign ruminants. It would seem to be our policy to restrain the production of rabbits here and to encourage their production in enormous numbers abroad; in fact, we seem to think it is better to buy what the town dweller esteems to be a valuable article of food rather than raise it for ourselves. It happens that here unfortunately the rabbit is not regarded as presenting any place of importance in food statistics. We have made the pretty little creature partly vermin and partly game, and between the two characters he has got to be regarded as a pest and a nuisance; yet the rabbit must have, during the past twenty years, either become a much scarcer article or the demand for him by the public has largely increased, for the price of a single one is just double what it was a generation since. Under the new Rabbits and Hares Act we may soon find that the rabbit has at home become almost as scarce as the fox. When that is the case we shall have to purchase from the Lowlanders more largely than ever. The question naturally arises, If the Flemings can grow these in myriads at a profit, why also cannot we? If the wild rabbit must go, let it go, but before it goes let us get from it some hardy crosses with our big fancy breeds, and, regarding rabbits no more as vermin, but as articles of food, raise millions for ourselves. We can see now in market-gardens and fields on every hand vast breadths of food being wasted that would feed and help to fatten rabbits wholesale. Is it wise, is it sound economy, to permit all this food to lie waste and valueless, whilst we expend vast sums to purchase rabbits from Flanders we might so well raise for ourselves?

—— CHRYSANTHEMUM FRUTESCENS, ETOILE D'OR.—When this plant was distributed early in the past year there were some who thought they recognised in it the yellow Marguerite that has been known for some time. Comtesse de Chambord, we believe, is the name which the first variety received from France was known by; yet the new form is so different, even in its foliage, from the other kind, that no close observer could mistake one for the other. The flower also when in character is quite different in both form and shade of colour. Its free habit of growth and continuous disposition to bloom make it valuable as a summer decorative plant either out-of-doors or in the greenhouse, but its greatest merits turn out to be as a winter flowerer. The freedom with which, in a little warmth, it produces flowers from every bit of growth it makes constitutes it one of the very best winter blooming subjects that have ever been brought into use. We do not know of any plant that promises to yield such a long succession of bloom. Being an unusually free grower, making its roots faster than most things, it requires a plentiful supply of water, and assistance in the shape of manurial stimulants in some form. Its colour is fashionable, and its lasting properties when cut all but unequalled. It is as easily propagated from cuttings as are ordinary Chrysanthemums; plants struck during the

winter or spring, and potted on as they need more room, stopping the shoots to further encourage the natural bushy habit, should be stood out-of-doors in the full sun through the summer, during which time if plunged they will not so often want water. The flowers should be picked off towards the end of the season; in short, to prepare this Daisy for winter blooming it requires to be treated much in the same way that Zonal Pelargoniums often are when intended for flowering in warmth during winter. The stalks being a good length the flowers are very serviceable for filling vases mixed with others that do not permit of being used with much length of stem. Being a quick grower, if large examples are wanted it is only a question of propagating early enough, and giving it plenty of pot-room. It may be had in bloom of any size, small plants in 6-inch pots flower just as freely as larger ones. Treated as above, the plants are as sturdy as a miniature Gooseberry bush, standing without so much as a single stick to support them. Those who do not appreciate a flower unless it is double, do not like these Daisies on account of their single Daisy-like form, but combined with double flowers or flowers of any other shape they much improve the effect of the whole. In the white, as in the yellow Daisy, there are several forms differing much in the effective character of their flowers as well as their foliage. They do not require much heat to bloom them—a temperature of 50° will answer. As conservatory plants for either summer or winter blooming they are most useful, especially where there is a little heat kept on all through the winter. Large plants prepared as above described do well for standing on the floors where anything of a more delicate nature would suffer; still, to have the flowers in their best condition, they like plenty of light.

—— Orchids in Flower at Upper Holloway.—Although during the last few weeks the weather has been more trying to plants and plant-growers than we have experienced for some years, the Orchids in Mr. B. S. Williams' nursery have never before been seen in better condition at this season. We append a list of the species and varieties now in bloom.

Angræcum citratum
,, eburneum superbum
Arpophyllum spicatum
Calanthe vestita lutea
,, ,, rubra
,, Veitchii
Cattleya Trianæ, nine flowers
,, ,, tyrianthina
,, ,, rubra
,, ,, Stewartii
,, ,, superba
,, ,, nivea
,, Warscewiczii superba, ten flowers
,, ,, delicata
,, marginata
Cœlogyne cristata, 100 spikes
Cymbidium eburneum seventeen flowers and buds
Cypripedium barbatum
,, Boxallii
,, Dautherii
,, Harrisianum
,, Haynaldianum
,, niveum
,, venustum
,, ,, speciabile
,, villosum, sixty-six flowers and buds
,, Warneri
Dendrobium Ainsworthii x
,, bicolor
,, crassinode
,, Freemani
,, luteolum
,, macrophyllum
,, ,, giganteum
,, ,, pallidum
,, Pierardi
,, thyrsiflorum, four spikes
,, Wardianum
,, Ruckeri
Dendrochilum glumaceum, forty spikes
Epidendrum paniculatum
Lælia anceps, ten spikes
,, Barkeri, four spikes
,, harpophylla
Lycaste Skinneri, thirteen flowers
Masdevallia bella
,, Estradæ
,, ignea, 150 flowers and buds
,, ,, Massangeana, five flowers
,, polysticta
,, radiosa
,, tovarensis, twenty-eight spikes
,, Wagneri
Maxillaria venusta
Odontoglossum Alexandræ, twenty spikes
,, blandum
,, cristatum, six spikes
,, Cervantesii, five spikes
,, cirrhosum
,, maculatum
,, Rossii majus, several varieties
,, Rœzlii
,, ,, album
,, gloriosum, five spikes
Oncidium cheirophorum
,, cucullatum, eight spikes
,, pubes
,, Weltoni
Phalænopsis amabilis, fifteen spikes
,, grandiflora, twenty spikes
,, leucorrhoda, one spike
,, Mannii, three spikes
,, rosea
,, Schilleriana, twenty spikes
Phajus grandifolius, twenty-seven spikes
Sophronites grandiflora
,, violacea, fifteen flowers
Saccolabium giganteum, sixteen spikes
Vanda tricolor, two spikes
,, ,, insignis, five spikes
,, suavis, seven spikes

—— The Meteorological Society.—At the ordinary meeting of this Society, to be held on Wednesday, the 16th inst., at 7 P.M., the following papers will be read:—"Relative Humidity," by Charles Greaves, M. Inst. C.E., F.G.S., F.M.S.; "The Frost of January, 1881, over the British Isles," by William Marriott, F.M.S.

—— The Weather.—General remarks on the weather during the week ending February 7, issued by the Meteorological Office, London:—The weather has been dull in all parts of the country, with much rain, sleet, or snow. At the close of the period a severe storm of snow and rain was prevailing, accompanied by heavy south-westerly gales, lightning in several places, and thunder at Dublin and Hastings. The temperature has been much higher than of late, but was still slightly below the mean, except in the eastern, southern, and south-western districts of England, and in the South of Ireland. The minimum readings occurred generally on the 7th, and ranged from 20° or 21° in Scotland, to 23° or 24° in nearly all other parts of the kingdom. The rainfall was more than the mean in all districts, the excess being least in "England, S.," and the greatest in "Scotland, W." Bright sunshine was very little prevalent, the percentage of possible duration ranging from 25 in "Scotland, E." and "Ireland, S.," to 11 in "England, E." Depressions Observed.—The principal depressions observed were as follows:—No 1 appeared off the West of Ireland early on the 2d, and gradually spread over the kingdom, causing southerly (south-easterly to south-westerly) winds; its centre reached Scotland on the 4th, whence it travelled south-eastward, and strong northerly to north-easterly winds set in for a time in its rear, blowing a gale in the north-west and north-east. No. 2 was very deep; it advanced very rapidly to our western coasts near midnight on the 6th, then moved slowly towards Scotland. It brought with it very severe southerly to westerly gales, much rain and snow, followed by lightning, and in some places thunder.

—— Gardening Appointments.—We are much pleased to hear that Mr. Robert Bowie, who for over thirty-eight years has been Head Gardener to the Earl of Tankerville, at Chillingham Castle, has been promoted to the office of Land Steward, and on the same estate. Mr. Bowie, whose portrait was published in our issue for March 4, 1876, is succeeded in the management of the garden at Chillingham by his son, Mr. T. Bowie.—Mr. William Roger, late Foreman to Mr. Kingston, at Brantinghamthorpe, East York, has been appointed Head Gardener to Major Marton, Capernwray Hall, Burton, Westmoreland.—Mr. Robert Shaw, late Foreman at Coleorton Hall Gardens, has been appointed Gardener to A. L. P. De Lisle, Esq., Garendon Park, Loughborough, Leicestershire.

## Home Correspondence.

The Decadence of the Rose.—I think you are somewhat too severe on Mr. William Morris, "the Art poet," whatever that may mean (see p. 114); for I have found botanists as a rule very much of Mr. Morris' opinion. I seldom meet them but they are full of alarm about their pet plants. Horticultural improvements are their special horror. Double flowers and variegated foliage affect them as a red rag a bull in a certain condition. [No, no.] And provoking and discouraging as all this is to the florist, the botanist and artist are still right from their points of view. With both form is the main thing. He that touches alters that, confuses if he does not overthrow the bases of their art or science. The horticulturist, on the contrary, delights to alter, enlarge, transform the different parts of plants. He strives to develope the ornamental and the useful at the expense of their essential and vital organs. In pursuit of such objects he necessarily runs in opposition to this accepted canon of both botanists and artists. The first cry out that the very permanency of species is endangered by the modern mania for monstrosities, and the second that the flowers—Roses of the day—have grown away from all the ancient rules of art. And so they have—deny it who can! We have gained size, substance, form, fragrance, but have lost much of the ancient grace and simple beauty of our Roses. In proof of this, were proof needed, what modern artist would choose any of our exhibition Roses for a group on canvas?—and if we want a spray for a lady's hair or dress, we have to hie away into wildland, wood, and hedgerow to find it. Garden Roses have thus become well nigh useless for purposes of art, and in this sense have declined. I think, too, that the artists' protest might teach all lovers of Roses a useful lesson. The call for size has existed too long and led us too far. Some of our Roses are already as big as Pæonies, and not a few of the largest are no whit better shaped or sweeter than these. Better grow more Pæonies than multiply such huge masses of mere Rose leaves pitched together anyhow, rather than moulded into exquisite form. Mere size is about the least important quality in Roses, and has probably been carried too far; at all events it would be far too dearly purchased at the sacrifice of most of the flowering grace and simple natural beauty of the Rose. It is doubtful whether we have made much advance in colour, rich and varied though our modern Roses are in this quality. In fragrance the modern Roses are assuredly more rich and full than the older ones. But I would not be understood to disparage modern Roses: quite the contrary. They are glorious triumphs of cultural skill, the pride and glory of our gardens, exhibition tents, and houses. But for the sake of the botanists, artists, all lovers of Nature, and also the more devoted rosarians, I wish to put in a plea for all the old-fashioned and modern small, double, semi-double, and single Roses—alike for the sake of contrast with the larger ones, and for their own irresistible grace and intrinsic beauty. *D. T. Fish.*

Peaches and Nectarines.—The Goshawk Peach is a worthy companion of the Dymond Peach, so worthily eulogised by your correspondent, Mr. W. G. Pragnell, at p. 762, vol. xiv. I have grown this variety several years, and find it to be in every respect as described by your correspondent. I have not seen the Goshawk in any garden that I am acquainted with, nor have I heard the name of it mentioned when discussing the merits of Peaches generally, but I am not sure whether it is not the best Peach of the two. The Goshawk, like the Dymond, is, with me at any rate, a really first-class mid-season Peach. It possesses all the characteristics of the Dymond as being a free-bearing mid-season Peach. The fruit is very handsome when well exposed to the sun, and resembles very much the Royal Kensington, if I mistake not, in its general appearance. And for packing to send by either rail, road, or river, it is unsurpassed by any other Peach I am acquainted with. The tree is a vigorous grower, and quite free from the ravages of mildew. It is, I believe, one of the many excellent Peaches raised by the late Mr. Thos. Rivers, from whom I obtained the trees some years since. The Golden Eagle is another excellent Peach, raised by the same gentleman; it is a very handsome orange-coloured fruit, with a rich piquant flavour, but requires heat, and deserves it, for it is worthy of a place in every garden where Peaches are in demand. It is a free-bearing tree, with fine healthy foliage and wood. The Humboldt Nectarine is also a seedling from the Sawbridgeworth nurseries, and ought to be in every collection, for it is a very fine, handsome, and exquisitely flavoured Nectarine, with a fine vigorous constitution. I would strongly advise intending planters to give this a trial also. *F. Everson, The Gardens, Ford Place, Thetford.*

Saxifraga lantoscana (pp. 108, 151).—Of the beauty of this Saxifrage there can be no doubt; but it is not an easy one to grow on the open rockwork. It is associated in my mind with an amusing mistake in the name. I once saw some beautiful pot specimens in a well-known nursery (which shall be nameless). The man who wrote the labels was probably a Cornishman, who had never heard of the valley of Lantosca, but had a warm affection for Launceston, so he boldly labelled all the pots "Saxifraga launcestona." *Henry N. Ellacombe, Bitton Vicarage.*

Increase of Tidal Floods in the Thames and other Rivers.—In the tidal parts of those rivers which, like the Thames, run through, in their approach to the sea, a gradually widening channel, the tides in the river rise higher than in the sea, because the impetus which the water gains in the wider portions of the mouth pushes it up when the narrower parts, where there is less room for it, is reached. The most natural way to protect lowlands lying near the river from becoming submerged by high tides is to raise embankments for the purpose of confining the water to the river itself; but every piece of land so protected tends to increase the height to which succeeding tides must rise. The water, no longer allowed to spread itself out over a vast area of level marshes, becomes confined to a comparatively narrow channel, and hence is driven up to an abnormal height by the before-mentioned impetus gained by the vast volume which rushes in at the wider parts of the mouth. Every fresh embankment raised tends to increase the evil. There are yet other causes tending to increase floods along the courses of our rivers, and these affect all parts of them, tidal and otherwise. They are, first, the vast and ever-increasing area of country which is made, so to speak, rain-proof by being built over, or by being covered with streets and roads, so that the rain which falls upon it, instead of sinking gradually into the soil, rushes quickly off through gutters, drains, and water-courses, to the nearest stream; and, second, by wet farm and other lands and marshes being so thoroughly drained that instead of holding water as formerly, they now "shoot" it, as it were, with the greatest dispatch into the streams. The rivers by these means, therefore, suddenly become overcharged with surplus water. Sometimes it happens that a flood produced by rainfall or melted snow, from the upper parts of the river, meets in the lower parts an exceptionally high spring tide from the sea, the latter driven

up to an unusual height by strong winds; and then ensue along the banks of the greatly narrowed channel, especially where it happens to pass through a town, very distressing results, such as great loss of property, occasional loss of life, and a great amount of subsequent ill-health from damp, &c. There are two remedies for this state of things, and I believe two only. One—to prevent floods from rainfall—is to make tanks, ponds, and reservoirs in convenient and suitable positions over the face of the country for the purpose of catching and storing the water after it has fallen, but before it reaches the larger streams. In places where the water caught is not likely to be required for use during dry periods, the ponds or reservoirs should be made in such a manner as to part with the water gradually. If the remedies here pointed out be not adopted, both floods and droughts, now one and now the other, will continue to increase in severity exactly in the same ratio with increase of population and modern improvement. *J. E. Ewing, Eaton, Norwich, Feb. 3.*

**Abnormal Cone of Araucaria excelsa.**—A cone obtained by me of A. excelsa from Quinta do Monte, the residence of Leland C. Cossart, in Madeira, presents the following abnormal structure. The scales are seedless, without wings and either inflated or attenuated, floating for days or even weeks in fresh water. In place of the usual central axis there is a small internal cone about 2¾ inches in length, composed of normal scales and seeds with perhaps exceptionally developed wings. The only noticeable departures in it are that the scales towards the base are larger than the rest, and that there is a deep spiral depression round the lower portion of it as if it had been tightly bound in that direction. On the journey to England, although the scales were more than usually adherent, the scales of the outer cone fell apart. From the pointed projections of the apices of the scales of the inner cone being sub-erect and incurved as usual, it seems that there must have been a space between the two, which appears to have contained a little dried pulpy matter similar to that composing the axis of the normal cone. The outer cone was of full size. Whether the inner cone, deprived of light, would have developed further it is difficult to say, but the seeds, although small, appear to have reached maturity. I have made inquiry, but no similar instance appears to have been recorded. *J. Starkie Gardner.*

**Date Palm from Seed.**—A relative of mine, whose word I cannot doubt, found, in the early autumn of last year, a seedling of the above growing on a somewhat sunny slope of a Strawberry field at St. Andrews. It, he is assured, must have come in street manure; and, from the fact of the ground being undisturbed, must have lain there all the previous winter. When lifted it was in vigorous health, with a growth above the seed of 6 or 7 inches. He sent it to me, and I showed it at the monthly meeting of the Scottish Horticultural Association, and the exhibit was mentioned in the report which appeared in your columns of Oct. 23, not, however, without a qualifying (!). *John Wilson, Royal Botanic Garden, Edinburgh.*

**Tree Carnation La Belle.** — This charming free flowering variety cannot be too highly recommended to those who appreciate white Carnations for button-holes, &c., during the winter months. From about thirty good-sized plants introduced into gentle heat about the middle of October last, we have continued almost daily to cut several nice blooms. There are yet a quantity of unexpanded buds, which will continue to give a supply during this month. A good companion to the above is A. Alegatière, a free-blooming variety, with bright crimson flowers, and very fragrant. *Thomas Carlton, Wildernesse Park, Sevenoaks.*

**Cauliflower Carter's Defiance.** — There are several varieties of Cauliflower at the present time worthy of notice, but none more so to my mind than the above; it is really a first-rate variety for general use, more especially for spring use, for if sown any time during the present month, it can be had fit for table in June under the ordinary course of treatment, whereas if grown in pots in frames or orchard-houses, it may be got in much quicker. It is of dwarf, compact habit, producing heads of medium size, beautiful in colour, and perfect in outline. Last year I grew it side by side with Sutton's First Crop, and Dean's Early Snowball, both good Cauliflowers; but I am inclined to give the palm to Carter's Defiance. I may also add that this variety last year came into use with me a fortnight before the autumn-sown plants of Early London. *E. Morgan, The Butts, Harrow-on-the-Hill.*

**The Gardeners' Royal Benevolent Institution.**—A large number of readers interested one way or another in this Institution will, I am sure, thank you for showing with such special emphasis its true character. No doubt there are some gardeners who have stumbled across the notion that the Gardeners' Benevolent Institution was really a sort of benefit society, such as the Oddfellows' and Foresters' bodies are, and who have held the belief that their annual subscriptions made them members eligible to receive the Society's benefits when the need came. It now would appear that no such thing as "beneficial" membership exists, and that every gardener who contributes, however humble his position and poor he may be, is but a benevolent donor giving his guinea as a charitable contribution just as the rich men of the fraternity and the trade give their five and ten guineas at the annual festival, and get as a reward at each announcement the welcome round of applause. I am far from being sure that gardeners generally will be gratified when they understand this; probably some may feel that they have been deceived. None the less if they have been they have been so with their eyes open. The fact undoubtedly is that the Gardeners' Royal Benevolent is a charitable institution and nothing more. It seems to give no rights to its subscribers beyond apparently an annual vote in the election of officers or in the selection of suitable objects for the charity. If there are those in the profession who can afford thus to be charitable, let them be so by all means; but it is only the few who can, whilst the many who may pay similar or perhaps greater amounts in other directions cannot afford thus to be liberal without obtaining for it some tangible *quid pro quo*. Contrast this benevolent institution with the huge benefit societies of the kingdom. The former offers no encouragement to saving or thrift, or the investment of money for beneficial purposes. It is simply a charity (perhaps a very good one), and nothing more. The latter encourages thrift, and the practical enforcement of the proverb, "Lay by for a rainy day;" and they do this not as "charities," with the demoralisation incidental to all such bodies, but as "self-helpers," promoting in spirit and in practice independence and self-reliance. If gardeners want "benefits" for their annual subscriptions why do they not form a gardeners' friendly society, upon the Oddfellows' basis; or, perhaps better still, join either of the great friendly societies that are so well self-governed, so independent, and so safe. Perhaps many gardeners are not aware that in these societies every penny contributed for benefit purposes is applied as such and in no other way; there is no unreasonable cost for management, and the small costs so created are paid out of a special fund. I advise those gardeners who can afford to be "benevolent" to subscribe to the "Royal Benevolent," and those who feel they must first be just before being generous to pay into a friendly society; they will then find that without canvass, without favour, and without charity they will get the benefits they are entitled to when the hour of need comes. *Z.*

—— I most certainly agree with your correspondents in the last two numbers of the *Gardeners' Chronicle*, that subscribers ought to have the preference on voting days. It was quite excusable when this Society was young for people to fight shy of it, but now that it is fairly established, every year becoming stronger and relieving a larger number of pensioners, surely there can be no excuse for gardeners holding aloof until the evil day comes and then claiming kindred with their self-denying provident brethren. In the future I shall give my votes to subscribers only, and I know for certain that I speak the mind of a great number of the Society's members. One man is frugal and prudent, and perhaps has a large family to keep and educate, but still manages to subscribe his guinea; another is thoughtless—perhaps extravagant, caring only for himself, living from hand to mouth. If "old age and want, oh, ill-matched pair!" come to these two men, which of them, think ye, first deserve our consideration? Unquestionably the former. Once more I call upon my brethren to join this Society; there is no knowing who will require its assistance. Every year, as I said before, it is getting stronger, and although we have no wish to Boycott non-subscribers, still I know the minds of gardeners are made up on the subject. *J. Rust, Eridge Castle.*

—— I grant the justice of your editorial remarks at p. 180, but we must go further than that to find out the evil, which lies in the fact that if a man has plenty of friends he is as much sure of getting the pension as if he had been a subscriber the whole term. It is the unlimited power left to the discretion of those that have influence which I complain of, and which to some minds is quite sufficient to smother any charitable feeling that we should all possess in some measure to stimulate us to help those who cannot help themselves. Surely there is some means of so altering the rules that, while it may still remain a charitable institution, there may be some better guarantee that those who have done something to support it should be placed on a different footing to those who have not paid a penny to its funds. *J. Clarke, Cothelstone.*

**Petasites fragrans alba.**—I enclose some blooms of this plant, which I imagine is very little known, or it would be more grown than it is where white flowers are wanted in quantity; and it is very useful—at Christmas time especially. I lift them from the ground in November into pots or boxes, and place in an intermediate-house. The enclosed are not at all fair specimens, being the fag-end of what I have had flowering at Christmas; good early crowns throw up flowers as large again. *Richard Maries, Mythop.*

**The Frost among the Trees, Roses, and other Shrubs.**—Much injury has been done here and there by winds and snowdrifts, but less from the actual severity of the frost than might have been anticipated. It is doubtless rather too early to make a correct list of either gains or losses, but, nevertheless, it is easy to tell at least that certain plants ruined or killed in the awful weather of 1859-60 have escaped now. We lost all our Pinus insignis then, hundreds of evergreen Oaks and Laurels, and we have lost none of these by our late zero frosts. The whole of the Laurustinus were killed to the ground then; now the flowers and about 9 inches of the young wood are killed. Roses were killed in batches then of 500 at a time; though somewhat early to write of these as yet, it is easy to see that there is no such slaughter among them this season. Not a few of them look queer. A good many of the Teas where unprotected are black as one's hat back to the Brier, and consequently dead; and several forward vaulting Maréchal Niels are slain, but the rank and file of hybrid perpetuals are yet safe, and so seem all the Briers. A few hybrid Rhododendrons, with rather too much scarlet blood in them, are killed back, and that with the Laurustinus is about the sum-total of injury to our shrubs and trees. The Arbutuses killed in 1859-60 look fresh after the zero frosts of this winter. Those exposed to the terrible wind of Tuesday, December 18, are whipped and burned a good deal, but the trees and shrubs fairly sheltered have passed through the winter apparently unscathed. Tender plants on walls also seem safe in wood and bud. A careful examination since the thaw shows no such wreckage as everywhere met our eyes in the spring of 1860; so that, should the spring now prove propitious, there seems little reason to doubt that a full fruit-basket may be one of the welcome gifts of the year 1881. *D. T. Fish.*

**Effects of the Frost.**—Very low temperatures for Devonshire were registered here in January. All kinds of vegetables are very much cut up, but shrubs, of which we have a good collection, do not appear to be injured as much as they were in 1879-80, owing in a great measure to the protection of the snow. A large Photinia serrulata that has stood through several years is killed to the ground, and several small Laurustinuses and Garrya elliptica are slightly cut above the snow line. Berberis Darwinii, of which we lost a great many in 1879-80, is scarcely touched this time, although we had a great deal more frost. Berberis Bealii and B. stenophylla appear to be the hardiest of all the Berberis, and the latter is also one of the handsomest flowering shrubs we have. Camellias have proved to be quite hardy here, a great deal more so indeed than some of the so-called hardier subjects. We have some that have been planted three years last autumn that have stood the last three severe winters unscathed, and at the present time are looking a beautiful green, while Laurustinus and even some of the common Laurels look as if they had passed through some scorching process. *J. W. Sedgley, Gr. to the Right Hon. Lord Coleridge, Heath's Court, Ottery St. Mary.*

**Double Petunias.**—It was my good fortune last summer to see a splendid collection of these in the nursery of Messrs. Stuart, Mein & Allan, which included the cream of a set which was awarded a Silver Medal at the Paris Universal Exhibition. I noted at the time the annexed fifteen varieties as being genuine double Petunias of great merit:—Cratère, Dr. Guerineau, Eureka, Le Niagara, Madame de Pontlevoy, M. Bradshaw, Mrs. Webb, M. de Rochebouet, M. E. Larronde (Mdlle. Marguerite Suahn). Paul Bellain, Phosporescent, Trocadero, Sir John Murray, and T. M. Usborne. Some of these varieties are exceedingly fine; in a word, they are all something splendid when well grown. The colours of the flowers would require a deal of description, all being so varied and so choice. In a cut state they are admirably adapted for travelling by rail, and for decorating a drawing-room or sitting-room, and they last over a week in water. *W. Muir, Kelso.*

**Spring Flowers.** — I was very glad to see your note of recommendation anent the lovely old Iris chinensis ( = Iris japonica = Iris fimbriata, &c.). Quite young plants are now flowering here, and in flower and leafage it is very welcome. Rarely more than one blossom opens at one time on the spike, but the individual flowers are so beautiful that one does not regret that the blossoms are solitary. Another old favourite—

Iris persica—is also in bloom, and is much admired. I think it well worthy of a place among early-flowering spring bulbs. It is interesting as being the first plant honoured with a portrait in the *Botanical Magazine*, tab. 1. Scilla sibirica is lovely in small pots, and the old Hooped Petticoat Narcissus will soon bear it company. Two of the prettily little Corbularias, collected and kindly presented to me by the Rev. H. Harpur-Crewe, are now showing their flower-buds. N. Grælsii is also in bloom, and I see that Narcissus Bulbocodium var. citrinus is starting very strongly. This is the large Sulphur Hooped Petticoat Daffodil, introduced by Mr. J. D. Llewellyn some years ago. Some clumps of the common Hooped Petticoat in the open borders, which were entirely dormant all last season, are now growing vigorously after their long rest. May I say a word in favour of Rumex sanguineus, the "Red-veined Dock"? In the open border it contrasts well with Snowdrops and Croci, and Mr. Smith, of Newry, who sent it to me, recommends it for pot culture as an effective foliage plant for a cool house during the winter months. The leaf-green is so bright, and the crimson veining so distinct, that for indoor culture I am sure it would be very attractive at this season. *F. W. B.*

**Double Lychnis.**—This name includes several very ornamental and very hardy garden plants, which are of easy cultivation provided that they are frequently renewed by cuttings or layers; otherwise the shoots become so crowded as to exhaust one another, and the plant dies. The best is the double scarlet L. chalcedonica; the double white is not so good, not being pure white. They should be treated like tall Phloxes, and increased by cuttings, which will strike at any time; the best are those taken off to the root in spring, when about 3 inches high. The plant is so hardy that the young shoots taken from the base of the stalk at any time during the autumn or winter may be placed in the open ground, and will take root and grow in spring. The other kinds I grow are all varieties of native plants, except the double L. coronaria, good in exposed dry spots and rich soil. The double of the common rose Campion, L. diurna or dioica, makes luxuriant growth anywhere, but flowers best on a rockery; but the double white Campion, L. vespertina, is less free in its growth. The double white Ragged Robin, L. Flos-cuculi increases fast, and is a very neat and elegant plant, and the same may be said of the double red, L. Viscaria. There is in cultivation a double red L. Flos-cuculi, as well as a double white L. Viscaria, but I have for long looked out for them in catalogues and gardens without meeting with either, and I wish some reader of the *Gardeners' Chronicle* would help me to find them. *C. Wolley Dod, Edge Hall, Malpas.*

**"Wanted, a Gardener."**—I was somewhat surprised and amused at the letter of "T. Reid" on the above advertisement, but was more surprised to see the one written by "W. W." (p. 180). The requirements are certainly not to be undertaken by a numbskull, nor yet by an ordinary gardener—one who contents himself with being simply able to supply his employer's table with fruits, flowers, and vegetables, and does not take the trouble to study book-keeping and the market value of garden and nursery produce; but neither T. Reid nor "W. W." will make me believe that there are not scores of men capable of undertaking a situation of the kind. A "nervous man" would not do, for the requirements are not suitable to a nervous temperament. The situation is one that I should have applied for without hesitation, had I not got one quite equal or rather better than it, financially. The requirement that is "preferred but not essential" seems to weigh heavily with "W. W.," "but let us charitably hope" that that is not a requirement he cannot comply with, and that he was not "half seas over" when he wrote his letter. I think that a man would not be "lowering himself," but rather stepping up a grade in society, by accepting such a situation, and a good energetic business man would never see the shadow of "a cabbage on a pole," or of being "frozen out," but would see the substance ahead of him of gaining honours and the esteem of his fellow men (by living a useful life) and finishing his career leaving a good name behind him. *J. Kent.*

**Cutbush's Giant Brussels Sprout.**—In your advertising columns I notice Messrs. Cuthush & Son, of Highgate, are offering their Giant Brussels Sprout as being the finest possible strain of this very desirable winter vegetable. Having grown this variety now for several years past I am in a position to endorse fully this flattering description, having never been able to meet with its equal, producing, as it does, along the entire length of the stem sprouts of unusual size and extraordinary solidity; but perhaps the greatest point in favour of this Sprout is its capability of withstanding the test of the recent severe weather better than other sorts. This being the best time to sow, I would advise all who are anxious to secure a reliable variety of Brussels Sprout to test it for themselves. *E. Morgan, The Butts, Harrow-on-the-Hill.*

**Setting Boilers.**—I am convinced that there is very much to be found out yet in regard to the setting, and also the stoking of boilers, for horticultural purposes. When I was obtaining estimates for building a range of new houses a few months back, I read an interesting account in your paper of the houses built for Mr. Ladd, of Bexley Heath. I went over and saw them, and asked who the builder was. At this time I had received estimates from several of our principal constructors, but the prices were so high that I could not entertain them. I took not only Mr. Ladd's hothouses, but also those constructed for the market growers at Chelmsford—which have much more finish than those at Bexley Heath—as of the most approved pattern. Upon receiving the estimate of Mr. Ayers, of Bexley Heath, I was so struck with the low price that I showed it to my surveyor, and after going into the details critically with him, the houses have been constructed most satisfactorily, and are in full work. Fortunately, before the severe frost set in, we discovered that the boiler did not (I considered) satisfactorily heat the 700 feet of piping. We

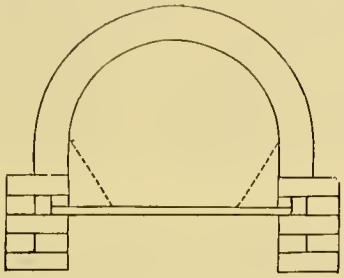

Fig. 41.—Boiler as first set.

therefore had it partially re-set. The accompanying drawing (fig. 42) will show you what a slight difference caused 10° higher temperature in the two houses, and during the severe frost the boiler has not been in any way forced. This shows how important it is to thrash out the subject of setting as well as stoking. One further fact is worthy of interest, and that is, that if builders when they are setting these boilers

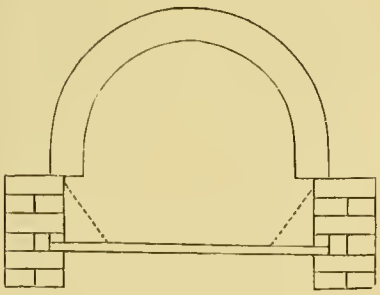

Fig. 42.—Boiler after second setting.

would only mix in with the mortar a good supply of cow-dung or horse-dung, it will tend to create a perfectly solid interior to the furnace. *Thos. Christy, F.L.S.*

**Dryas octopetala.**—This pretty native rock plant turns brown and looks sickly in my damp garden in winter, and its recovery in spring is slow. I have observed, however, that if the long shoots are pegged down in summer and induced to root, the part beyond the fresh roots invariably retains its healthy green through the winter, whether the newly rooted piece is transplanted or not. Dryas Drummondii and Dryas tenella also turn brown, but did not make enough growth last year to enable me to try whether the young plants of the year have the same habit. *C. Wolley Dod, Edge Hall, Malpas.*

**Proposed Boiler Trial at Manchester.**—The schedule of prizes to be given at the International Show at Manchester next August, referred to at p. 178, reminds me that your remarks at p. 660, Nov. 20 last, as to the desirability of a public trial there of boilers and fittings have not been responded to (so far as I know) by those best fitted to carry out such a useful work. As you say, "its importance entitles it to be a leading feature of the exhibition," and if £2000 can be raised as prizes for flowers and fruit, it should not be difficult to get £500 more to cover the expenses of a boiler competition, of which sum a large amount would certainly be received back by the increased number of visitors specially interested in hot-water heating. The difficulty, it seems to me, lies in the unwillingness of boiler-makers to go into the matter, as many of them now make the Gold Medal or flued saddle or some other form of boiler, and if a trial took place some patented or protected boiler might win, and their occupation would be gone. Still the question is most important to the thousands of persons who have to buy and use boilers of some kind, and who are sorely puzzled to judge between the contrary claims of so-called unparalleled or unsurpassed boilers with their achievements and statements of facts, testimonials, &c. At the present time, or more particularly before next autumn, there will be a greater demand than ever for good boilers, as probably every form has failed somewhere or other during the recent terrible weather. Before discussing the best method of carrying out such a competition "so as to make it indisputable and conclusive," we ought to know whether the Manchester Botanical and Horticultural Society is willing to take the matter up at all; as there would not be many competitors if each had to find and fix at his own cost the pipes as well as the boiler, as Mr. Makenzie suggested on January 1, though probably a score or more would pay £5 each towards the expenses. Supposing that the Society agree to it by offering space, and the question of cost can be arranged, I would suggest that there be six sets of piping, 1000 feet each, laid exactly alike in every particular (except possibly their respective levels) so that six boilers might be working at once; and if every set had duplicate connections, 6 feet apart, other boilers could be attached by their side ready for next day, while the first ones were being taken down and a third lot of boilers erected in their place. In this way eighteen different boilers would be tried in three days. I name 1000 feet now as the greater number of boilers in use average under that size, but for those requiring much more powerful ones, three of the sets should be connected by mains and boilers of 3500 feet power erected side by side with duplicate connections ready to start directly the pipes are at liberty from trying the smaller boilers; thus three more days would test six of these large boilers. I do not think the pipes ought to be run for 250 feet long in a direct line from boiler, as almost any boiler of less calculated power would heat in that way; but some approach to an ordinary working apparatus should be attempted by tees or bends—say 90 feet long with six pipes, then bending at right angles, as four pipes for 10 or 20 feet, and along another side of 90 feet, equal to a house 90 feet by 20 feet. This would be especially advisable for the large boilers, the average heat of the three sets being taken. But the mere arrangement of pipes is not so important as the standard by which boiler power is to be calculated. I have worked out the estimated power of a few boilers sold by one firm according to the general rule given, viz., 50 feet of 4-inch pipe to each square foot of surface exposed to direct action of fire, with 17 feet added for every foot of flue surface, and find such differences as the following:—A 350 feet list boiler should heat 470; 450 feet should be 480; 2000 feet should be 1850; in two boilers of different forms to heat 1000 feet each one has a third more heating surface than the other, and so on. If one firm cannot supply their own boilers to a fixed rule, what must we expect from others but endless variety, and—in a public trial—dissatisfaction, unless a definite rule is given and accepted by every one competing? How is this rule to be arrived at? was the question asked in a second letter of Jan. 1 issue, still unanswered. The rough and ready standard of price, including setting, proposed, will hardly satisfy people as to the best form. Could not two awards be given, one for greatest heat in least time (or whatever is considered the best result to be aimed at), and another for the cheapest make that gets a specified degree of heat up in a given time, the preliminary conditions as to pipes and measurement being the same. In this way those who go in for rapid and great heat simply, and those who wish for the cheapest boiler, would be able to choose, and there would not be too great jealousy excited by the results unless it happened that one boiler carried off both honours, when that inventor would be the best abused man in the boiler-making world. If only one award is to be given, some scale of points must be settled to arrive at a grand total for best—say, for greatest heat at three intervals of an hour each, and again at eight hours after the fire was last attended to; also points for lowest selling price, with actual cost there of the setting and chimney added, such as so many for £25, and twice as many for £20, with varying degrees between, and finally points for economy in fuel. The pipes to be all alike and supplied from one foundry, for if each competitor finds his own some will be thick and others thin, according to the method of taking temperatures, whether on the surface of the pipe or in the water inside, and many will try to get an extra inch rise in the length. Allowances will have to be made for difference of air temperature chilling the pipes on different days. After all, the difficulty is to get the best boilers tried at all, and so I suggest that all inventors or makers be asked to send one boiler only, and if no

response is made by firms owning well-known forms the committee should get any such boiler and try it also, not publishing the results unless the owner afterwards permits it, but announcing that such a boiler had been tried in the same manner with the others, and that certain firms have declined. Many smaller matters connected with successful heating could be noticed and reported on, such as, Is the heat given off by three rows of two pipes as great as from four flows side by side over two returns?—or will not the middle row be much cooler than upper flows? What is the heat given off from boilers at 6 inches from outer casing and at 1 foot above damper in chimney? &c. For my part I wonder these practical contests are not oftener carried out, as they affect the wasting or saving of many thousands of pounds yearly, while thousands of pounds are given as prizes for good fruits and showy flowers, and the results do not effect the saving of one penny to any one engaged in them. Medals and awards which mislead the public are lavishly given for new boilers or glasshouses because they are new and seem serviceable, but no test is applied as in tasting fruit or examining a flower for certain points. I hope you will be able in some way to call further and immediate attention to this subject, as it will take some time to arrange all details, and after April many who might assist will be too busy with summer work to give the time necessary. *Ben.*

**The Early Bird Potato.**—This variety should, I think, be more generally grown. I purchased a peck last spring, the produce of which was over 5 bushels, and not one was diseased. The quality was of the finest description, and it is at least a week or ten days earlier than Ashleaf. *Thomas Bailey, Shardeloes Gardens, Amersham.*

**Echeveria retusa.**—This is a most useful and free-flowering winter plant, and is especially valuable as a house and conservatory decorative plant as also one to cut from, inasmuch as the flowers, owing to the nature and substance of the footstalks, keep fresh for several days after being cut. It is of good habit, and when well grown throws up several flower-spikes from each rosulate plant, which again branch out from the axils of their leaves, and thereby considerably prolong the flowering period of the plants. The flowers, which are of a deep orange colour, and hyacinth-like in shape, are borne in trusses on the top of the individual spikes, each truss having from twelve to sixteen flowers. The leaves, which are of a fleshy nature, and, as the second part of the name implies, blunt, are of a bluish-grey colour. This Echeveria is of easy culture, and propagates freely from offsets taken off with an inch or two of heel when the plants have done flowering, and inserted singly in 60-pots filled to the rim with an admixture of nearly three parts light loam, and one of leaf-mould, with a dash of sand. They will root freely if then placed on the staging over the front pipes in a vinery and damped overhead two or three times a day with the syringe when the house is being damped, which, the plants being succulent, will be sufficient to keep them fresh until they have emitted roots, when they should have water in the usual way when necessary. When the plants have partly filled the cutting-pots with roots they should be shifted into 48's (their flowering-pots) and stood on sifted coal ashes in a cold shallow frame in a warm aspect, and kept rather close for a few days, being syringed at shutting-up time, until the plants have made fresh growth, after which they should be ventilated freely on all favourable occasions, and the sashes tilted up a little at night, and subsequently (about the middle of July) removed altogether, which will not only afford the plants head room, but also cause them to make a good sturdy growth; moreover, the plants as they increase in growth should have more superficial room given them in the frame. Upon the approach of frost the plants should be removed to a pit or house where they can have plenty of light and air (say the same position which they occupied in their cutting-pots) and a minimum temperature of 40° or 45°, which, with a rise of 10° or 15° during the day, would enable them to commence flowering about the New Year and continue in flower for three or four months onwards. However, the plants may be had in flower if necessary five or six months by introducing a small batch into the forcing-house in October and at short intervals till Christmas. I may remark that from the time the plants commence throwing up their flower-spikes they should have liberal supplies of weak liquid manure three or four times a week to the roots. In conclusion I may be allowed to state that we have now in flower several dozen plants—real gems for decorative purposes—from 15 to 20 inches high and nearly a foot through, which have been grown exactly in the way I have endeavoured to describe in this paper; and which I hope may be the means of inducing those of your readers who have not yet grown Echeveria retusa to give it a trial, and then, I have no doubt, the result will fully bear out all that I have here stated in its favour. *H. W. Ward.*

**Early Snowdrops.**—A good deal that is both seasonable and interesting might no doubt be learnt from a discussion upon the point suggested by Mr. D. T. Fish, viz., whether the Snowdrop blooms earlier in Scotland than in England? If we accept the note from Chiswick in evidence, we shall say they do not, because we find nivalis blooming as early in England as at Dunrobin; but Mr. Fish evidently holds to the belief that the Snowdrop, as a species, and not with reference to any one variety, is later in the South than in the North. It is not for me to question the assumption. I have no means of knowing how far it may be correct beyond the partial evidence that in the South the common Snowdrop does not as a rule get well into bloom until February, and generally towards the end rather than the beginning. Now, taking what Mr. Fish assumes as a fact, I submit that this difference in the blooming period may be due in the South to the later action of the sun and earth's warmth upon the bulbs in the autumn, for we know that with the Snowdrop warmth seems to conduce to rest, whilst cold acts reversely. Then, perhaps, the greater degree of cold in the North is promotive of that very precocity which seems to characterise the Northern bulbs. A week since, when the snow disappeared, I found some flowers had peeped up from the soil just as though the snow had acted as a forcing element. Did the snow and the colder temperature conduce to that result? Have these things any bearing upon the question? *A. D.*

**The Araucarias at Ingestre Hall.**—The young Araucarias at Ingestre Hall are easily accounted for. Lord Talbot's eldest son, the late Earl of Shrewsbury, was a lieutenant of the ship which conveyed the bodies of the King and Queen of the Sandwich Islands in 1824, and I have no doubt that he brought the seeds. *H. K.*

**The Frost Among the Vegetables.**—It has hit them so hard that in general terms all above the snow line may be said to be dead or uneatable. Never was the conservative power of snow, and the practice of inlaying Broccoli, more vividly illustrated or powerfully enforced. The wind sifted the fine snow in among the protected Broccoli until it covered their crowns, and they lay in that state for more than a week—frozen in, however, not out; and in this difference of a single word lay also the difference between their absolute loss and perfect safety. I do not notice a single loss under the snow, nor a single escape above it; a few that were left upright, protected with Asparagus tops, are killed like the others. Not only the centre, but a large portion of the stem is in most cases frozen into a whitened mass of rottenness. I hardly ever remember perfect putrefaction of tissue follow so closely on the heels of a thaw. The few Broccoli not inlaid have had to be carted right away and buried to get rid of their putrid odour. Even tall Kale and upstanding Brussels Sprouts are also much injured; any Savoys that remained are also quite rotten. Where young Cabbages were planted in exposed allotments the wind swept the snow off clean, and the plants are either very much injured or wholly killed. It is quite refreshing to hear there are nice breadths of inlaid Broccoli as green as Leeks and with all their crowns intact. Young Cabbages and crops of Spinach and Parsley snowed up are also safe, as are young plants of Brown Cos and hardy Hammersmith Lettuces; but wherever the snow was blown off the latter they are killed to the ground. Celery, too, where the protection was blown off, is much injured; but young Celery to come in during March, being snowed up, is safe. The gradual thaw was also most favourable to vegetables. Had it been more sudden many more would have doubtless been killed or injured; but the exposure to the light, and also the unfreezing were gradual—a little at a time. The sap was not stimulated with a rush through tissues in a frozen state, but gradually made its way, unfreezing without rupturing them, and hence no doubt no small portion of their safety. Still it may be doubted whether our Broccoli and other vegetables may yet be pronounced perfectly safe. The wintry weather threatens to return, and should it, I fear that this long covering of snow is not one of the best preparations for a severe frosting afterwards. It would, therefore, be well to be ready with a few boughs, some rough litter, bracken or Asparagus tops to strew over Broccoli, &c., in case of need, as there can hardly be a doubt that vegetables will be scarce and dear this spring. *D. T. Fish.*

**Gishurstine.**—You did me the favour to publish the opinion on Gishurstine of a very high professional gardening authority (p. 153), may I beg for space for the opinion of an amateur, the well-known talented authoress, Miss Frances Power Cobbe, just received? The present weather gives so good a chance for testing boot preparations that I am anxious to make Gishurstine known as widely and quickly as possible. Miss Cobbe writes:—"To-day I sallied forth over swamps and morasses on Wisley Common for hours, and here I testify that though my boots were already rather worn and last week decidedly let in damp, I have returned this evening with my feet warm and dry as if I had never stepped but upon a wooden floor. Gishurstine is admirable." I, myself, have just come in after much walking in mud, slush, and snow, in quite old boots and yet with dry socks. *T. I. O. G. C.*

**The Two Tacsonias, Van Volxemii and exoniensis.**—Permit me to endorse all that "J. S." says on p. 119 in favour of these two splendid climbers. I also agree with him that exoniensis is by far the best. It flowers four months earlier as well as more freely; in fact with us it is seldom out of flower. A plant on the conservatory roof here has been in bloom since last February, and had still many flowers on it when cut the other day to keep it within bounds. Like "J. S." and "H. W. W." we mix the two together on the roof, and by way of contrast introduce a Mandevilla suaveolens. The three make a very rich combination, and the Mandevilla adds a most welcome and delicious perfume. I, however, much like "J. S.'s" idea of adding the long sprays of Lapageria rosea to the mixture, and could the white variety of this hold its own and thrive with the Tacsonia the combination of form and colour would be perfect. Perhaps "J. S." would favour me with some practical details of how he manages to get the Lapageria to hold its own against the strong and rampant competition of the Tacsonias. We have tried for this mixture several times but have not succeeded with the Lapageria, the other robbing their roots and checking their growth so much as to make the roof nearly all and wholly Tacsonias. *D. T. Fish.*

## Reports of Societies.

**Royal Horticultural:** *Feb.* 8.—At the annual general meeting, held on Tuesday afternoon, there was but a small muster of Fellows, and but little interest was manifested in the proceedings. The President, the Right Hon. Lord Aberdare, took the chair, and was supported on the platform by the following members of the Council:—Sir Trevor Lawrence, Bart., M.P.; Sir Charles Strickland, Major Mason, Dr. Denny, Mr. Henry Webb, the Rev. H. Harpur-Crewe, Mr. W. Haughton, and Dr. Hogg, secretary. The minutes of the last annual general meeting having been read and confirmed, Mr. John Lee and Mr. James F. West were appointed scrutineers of the ballot; and the following report of the Council was taken as read:—

ANNUAL REPORT, 1880.

The Council congratulate the Fellows on the steady improvement of the Society during the past year. The number of Fellows and the receipts from all sources have increased.

The efficiency of the Chiswick garden has been maintained during the past year, and an increasing interest is taken by the Fellows and visitors in the work that is carried on there.

Under the direction of the Fruit and Floral Committees, the experiments in the garden at Chiswick have been conducted with favourable results, which have been received by horticulturists, both at home and abroad, with the interest and approval which attach to the scientific operations of the Society. In the vegetable department collections of Aubergines, Capsicums, Brussels Sprouts, and Parsnips, have been grown, and the examination of them enabled the committees to correct erroneous nomenclature, and to discard many varieties that are worthless, while those of superior merit have been brought into prominence. Collections of Pelargoniums, Fuchsias, Gloxinias, Begonias, Pompon Dahlias, and a number of miscellaneous plants have also been examined. For some time past special attention has been given to the varieties of tuberous-rooted Begonias as decorative plants, and Mr. Barron, the garden superintendent, has succeeded in producing a number of varieties, which have created much interest and been greatly admired. Ten of the seedlings raised by him have received First-class Certificates.

The Society now possesses perhaps the most extensive and complete collection of the species and hybrid forms of the genus Pelargonium that is to be found in this country, and these interesting plants have been objects of admiration and curiosity to a large number of visitors to the garden and the exhibitions.

A desire has been shown by the inhabitants of the neighbourhood of Chiswick Garden for the resumption of flower shows there. During the past year a local organisation was formed, which received the support of the Council, and a very successful exhibition of flowers was held for the benefit of the West London Hospital, the garden being thrown open to the visitors. The profit derived from this exhibition realised upwards of £80, which was handed over to the hospital. It is in contemplation to hold another exhibition this year, and a similar organisation has been formed to carry out the arrangements, the object being to encourage the horticulture of the district and to strengthen the Society.

Some rearrangement of the garden has been deemed necessary, and a considerable portion, which was for-

merly occupied with "bedding plants," has been converted into a broad lawn.

The crops of outdoor fruit were very short, the trees not having recovered from the injuries of the disastrous season of 1879. Peaches on the open walls were very scarce. Pears were more numerous and generally of good quality, but the crop of Grapes in the large conservatory was not so good as in previous years. The Vines in the long glass wall, which were planted two years ago, have been a great source of attraction, from the luxuriance of their growth and the high development of their fruit, which illustrate the excellence of Gros Colmar and Alicante as late varieties.

It being deemed advisable to discontinue the cultivation of orchard-house trees, the system having been thoroughly tested and established, it is proposed to plant the large orchard-house with a collection of Tea Roses, and the Council will be happy to receive any contributions in plants which the Fellows may wish to make towards this object.

The sales of garden produce during the past year amounted to £641 1s. 10d., being £17 in excess of last year, and the total receipts of Chiswick Garden amounted to £709 4s. 1d., being nearly £100 in excess of last year.

The distribution of plants and seeds to Fellows far exceeded that of any previous year; 1020 Fellows were supplied with 19,622 plants and 8424 packets of cuttings of fruit trees, and 40,559 packets of seeds.

The Society is indebted to many of the Fellows for liberal donations of seeds and plants to the garden, among whom are J. T. D. Macintosh, Esq., Colonel R. Trevor Clarke, H. H. Gibbs, Esq., Sir Charles Strickland, Bart., G. T. Clark, Esq., Sir Bartle Frere, Dr. Regel, of St. Petersburg, for bulbs and hardy plants; Mr. Herbst, of Richmond, for 300 Palms for distribution; Sir George Macleay, Baron Mueller, &c.

At South Kensington the fortnightly and monthly meetings of the Scientific, Fruit and Floral Committees have been well attended, and the lectures which have been delivered by the Rev. George Henslow at the general meetings have been most attractive, and have given general satisfaction.

The great summer show, which extended over four days, was one of the finest ever held in the garden, and but for the wet weather on the first two days it would have proved financially a great success. The special thanks of the Society are due to the exhibitors, and especially to the leading nurserymen for their never failing support of the Society.

The Auricula Society's Exhibition in April was very well attended, and excited great interest.

The Society's Rose show and the Pelargonium Society's show were held in conjunction, and were in every respect a success, the show of Pelargoniums being the best hitherto held.

The Carnation and Picotee Society's show, and the exhibition of the British Bee Keepers' Association, which were held simultaneously, attracted many visitors. Besides these there were exhibitions on Whit Monday and on the Bank Holiday in August. The former, for flowers grown specially for Covent Garden Market, was visited by upwards of 19,000 persons; and the latter, for flowers grown by artisans and cottagers, was attended by 11,370. The Council, being desirous of fostering and encouraging the love of flowers among the masses, have made arrangements to continue the great summer show this year over Whit Monday and Whit Tuesday.

The *Conversazione* held on May 26, and the Evening *Fête* on July 21, were numerously attended, and gave great satisfaction to the Fellows and visitors.

The garden at South Kensington has been maintained in the highest state of keeping which the means of the Society allowed. Some of the larger trees, which were overcrowding those of greater value, have been removed, and a greater extent of grass lawn has been obtained. The Council trust that the returning prosperity of the Society will enable them to make it still more attractive.

The game of lawn-tennis has become very popular in the garden, and every facility is afforded to the Fellows and their friends to indulge in that healthful exercise.

The action between Her Majesty's Commissioners and the Society is still pending in consequence of the opposition of the plaintiffs, the Commissioners, to the debenture-holders being made parties to it. The Court of Appeal, to which the plaintiffs carried the point, unanimously decided against their contention that the debenture-holders had no right to be heard, and ordered Mr. Percival De Castro, as their representative, to be added as a defendant. This decision gave Mr. De Castro the right, of which he has availed himself, to counterclaim against the plaintiffs, and all questions between the Commissioners, the Society, and the debenture-holders, can now be decided.

As was last year explained to the Fellows, the presence before the Court of the debenture-holders was absolutely necessary to relieve the Society from the grave risk which it would have incurred if it had voluntarily surrendered the South Kensington Gardens, or left it open to the debenture-holders to contend hereafter that it had not raised in the action every defence open to it, and so occasioned the destruction of their security. The Council have no reason to anticipate further delay in the proceedings, and hope the case will come on for hearing soon after the return of Mr. Justice Fry from circuit.

During the past year 238 free monthly tickets have been issued to students in the Science and Art Schools, with permission to sketch in the gardens and conservatory.

The Society has lost during the past year twenty-nine life Fellows and thirty-two annual Fellows by death, and eighty-two by resignation. Two hundred and seven new Fellows have been elected during the year.

The roll of Fellows now consists of—

808 life Fellows.
435 Fellows paying £4 4s. annually.
860 " " £2 2s. "
2103

The number of members paying 1 guinea annually is eighty-seven.

Balance-sheet, December 31, 1880.

| Dr. | £ | s. | d. |
|---|---|---|---|
| To sundry creditors on open account .. .. | 830 | 10 | 8 |
| Life composition account .. .. .. .. | 930 | 16 | 9 |
| Additional debenture—C. J. Freake .. .. | 5000 | 0 | 0 |
| Legacies received .. .. .. .. .. | 1887 | 8 | 9 |
| General revenue account balance carried forward .. .. .. .. .. .. | 1278 | 11 | 6 |
| | £9927 | 7 | 8 |

| Cr. | £. | s. | d. | £. | s. | d. |
|---|---|---|---|---|---|---|
| By capital expenditure account .. | | | | 7130 | 12 | 2 |
| Annual subscriptions—outstanding .. .. .. .. | | | | 351 | 15 | 0 |
| Sundry debtors— | | | | | | |
| Garden produce .. .. | 120 | 15 | 3 | | | |
| On open account .. .. | 126 | 9 | 3 | | | |
| | | | | 247 | 0 | 6 |
| Investment— | | | | | | |
| 3 per cent. Consols .. .. .. .. | | | | 1892 | 11 | 3 |
| Cash at bankers .. .. .. .. .. | | | | 239 | 4 | 4 |
| Petty cash in hand .. .. .. .. | | | | 66 | 0 | 5 |
| | | | | £9927 | 7 | 8 |

We have examined the above accounts with the books and vouchers, and we find the same correct.

John Lee, Jas. F. West, R. A. Aspinall, } *Auditors.*
Jan. 29, 1881.

Annual Revenue Account for the Year Ending December 31, 1880.

| Dr. | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|
| To establishment expenses— | | | | | | |
| Salaries .. .. .. .. | 340 | 18 | 8 | | | |
| Wages .. .. .. .. | 180 | 2 | 0 | | | |
| Printing, stationery and cards .. | 207 | 4 | 11 | | | |
| Postages .. .. .. .. | 50 | 14 | 11 | | | |
| Gas .. .. .. .. .. | 32 | 9 | 7 | | | |
| Miscellaneous .. .. .. | 113 | 8 | 0 | | | |
| Law charges .. .. .. | 125 | 0 | 0 | | | |
| | | | | 1049 | 1 | 1 |
| To special expenses in relation to horticulture— | | | | | | |
| Journal .. .. .. .. | 48 | 8 | 11 | | | |
| Fruit and Floral Committees .. | 83 | 7 | 1 | | | |
| Grants in aid .. .. .. | 30 | 0 | 0 | | | |
| | | | | 161 | 16 | 0 |
| To Chiswick Garden expenses— | | | | | | |
| Rent, rates, taxes, and insurance | 296 | 5 | 3 | | | |
| Labour .. .. .. .. | 1061 | 1 | 10 | | | |
| Implements, manure, &c. .. | 178 | 16 | 2 | | | |
| Coal and coke .. .. .. | 182 | 4 | 0 | | | |
| Repairs .. .. .. .. | 196 | 4 | 6½ | | | |
| Trees, plants, seeds, &c. .. | 55 | 0 | 9 | | | |
| Superintendent's salary .. .. | 150 | 0 | 0 | | | |
| Water .. .. .. .. | 16 | 18 | 5 | | | |
| Miscellaneous .. .. .. | 128 | 3 | 1½ | | | |
| | | | | 2264 | 14 | 1 |
| To Kensington Garden expenses:— | | | | | | |
| Rates, taxes, and insurance .. | 510 | 10 | 1 | | | |
| Superintendent's salary .. .. | 1 | 0 | 0 | | | |
| Labour .. .. .. .. | 450 | 18 | 3½ | | | |
| Repairs .. .. .. .. | 190 | 7 | 9 | | | |
| Coal and coke .. .. .. | 65 | 8 | 6 | | | |
| Implements, manure, &c. .. | 32 | 13 | 3 | | | |
| Water .. .. .. .. | 42 | 8 | 4 | | | |
| Reading room .. .. .. | 26 | 5 | 9 | | | |
| Bands .. .. .. .. | 20 | 5 | 0 | | | |
| Miscellaneous.. .. .. .. | 51 | 7 | 2 | | | |
| | | | | 1500 | 4 | 1½ |
| To *Conversazione* and Evening *Fête* .. .. | | | | 415 | 6 | 6½ |
| To Exhibitions— | | | | | | |
| Advertising .. .. .. | 417 | 17 | 9 | | | |
| Prizes and medals .. .. | 658 | 11 | 6 | | | |
| Bands .. .. .. .. | 103 | 18 | 6 | | | |
| Superintendent of flower shows | 25 | 0 | 0 | | | |
| Labour .. .. .. .. | 127 | 4 | 11 | | | |
| Judges' fees .. .. .. | 18 | 18 | 0 | | | |
| Sundries .. .. .. .. | 199 | 17 | 5 | | | |
| | | | | 1551 | 8 | 1 |
| To balance to general revenue account .. .. | | | | 437 | 12 | 10 |
| | | | | £7380 | 19 | 9 |

| Cr. | £ | s. | d. |
|---|---|---|---|
| By 1/15 life compositions as at January 1 .. .. .. .. .. | 560 | 14 | 8 |
| Annual subscriptions .. .. .. .. | 3897 | 12 | 0 |
| Exhibitions .. .. .. .. .. | 1288 | 5 | 6 |
| *Conversazione* and Evening *Fête* .. .. | 463 | 2 | 6 |
| Daily admissions .. .. .. .. .. | 258 | 17 | 4 |
| Garden produce .. .. .. .. .. | 665 | 12 | 1 |
| Packing charges .. .. .. .. .. | 43 | 12 | 0 |
| Miscellaneous receipts .. .. .. .. | 140 | 16 | 10 |
| "Davis bequest."—Interest appropriated under provisions of trust towards prize-money .. | 62 | 6 | 10 |
| | £7380 | 19 | 9 |

We have examined the above accounts with the books and vouchers, and we find the same correct.

John Lee, Jas. F. West, R. A. Aspinall, } *Auditors.*
Jan. 29, 1881.

General Revenue Account, December 31, 1880.

| Dr. | £ | s. | d. |
|---|---|---|---|
| To balance carried forward as per balance sheet .. | 1278 | 11 | 6 |
| | £1278 | 11 | 6 |

| Cr. | £ | s. | d. |
|---|---|---|---|
| By balance of revenue account brought forward, January 1, 1880 .. .. .. .. .. .. | 840 | 18 | 8 |
| Annual revenue account—balance for the year 1880 .. .. .. .. .. .. .. | 437 | 12 | 10 |
| | £1278 | 11 | 6 |
| By balance carried forward .. | £1278 | 11 | 6 |

We have examined the above account with the books of the Society, and we find the same correct.

John Lee, Jas. F. West, R. A. Aspinall, } *Auditors.*
Jan. 29, 1881.

Lord Aberdare, in moving the adoption of the report, reminded the Fellows that last year was one of considerable financial difficulty, in which considerable expenditure was incurred to put the Society in a better position; but the weather was most adverse, and the receipts fell far short of what they had expected. Although the Society had been accused of holding too many shows, and neglecting the scientific interests of horticulture, he believed that those who were anxious for the scientific character of the Society had underrated the importance of those shows. A very large number of persons added to their stores of science by means of the collections of so many beautiful objects, and were stimulated to a study of horticulture. At the same time, the Council were not insensible to the fact that, as compared with some three years ago, the efforts of the Society in a scientific way had fallen short of the past. They had, however, entered into an arrangement with the Rev. George Henslow for the delivery of lectures at the general meetings, and these had been attended by a larger number of persons than were ever gathered together before by any lecturer on behalf the Society. With regard to the administration of the Society, one thing that struck him when he first became connected with the Society was the rapid diminution of its receipts and the necessity of making the receipts and expenditure balance each other. The diminution of the receipts was no doubt due to the internal dissensions which had been long raging within the Society, and also to the fact that they had a formidable rival in the Royal Botanic Society; and that there were flower shows at the Crystal Palace and other places. They had also been suffering from a prolonged depression of trade, and he referred to these things because he was anxious to show what had been their financial position during the past three years. In 1878 the Council made a determined effort to balance receipts and expenditure, and were obliged to act in a somewhat shabby manner to keep down expenditure and out of debt. The receipts in 1878 were £6171, and the expenditure £6187. In the next year they listened to those who told them that if they only spent a little more they would have a better harvest; but, unfortunately, the seasons were so bad that, although they sowed more liberally, their harvest was spoiled by the weather. In 1879 the receipts rose to £6542, but the expenditure increased to £7198, being a deficiency of £656. Last year they said they should endeavour, in spite of the lawsuit, to keep the expenditure within proper bounds; and they did their best to have good exhibitions, but were again unfortunate in having extremely bad weather to contend against. The receipts of 1880 were £6820, and the expenditure £6943, or an excess of £123. With respect to the lawsuit, their legal adviser told them he had every reason to believe the decision would soon be given. He did not, however, believe that the existence of the South Kensington Gardens depended upon the issue of the suit. He believed that for a long time it would be to the interests of Her Majesty's Commissioners that the Horticultural Society should continue its operations. No doubt they might wish to appropriate the gardens to certain purposes, but he thought the Commissioners would be anxious to accommodate the Society as long as it fulfilled its functions as a scientific society. They had heard doleful prophecies as to the future of the Society, but he thought they were like that they read in Dryden—

"Doomed to death, but fated not to die."

He believed they were gradually recovering their position; their receipts were gradually increasing, they had brought their finances within a manageable position, and he therefore ventured, without hesitation, to move the adoption of the report, which was seconded by Mr. John Lee, and carried unanimously.

Mr. Haughton said he had the painful duty of bringing before the meeting the following facts:—On August 14, 1876, a Fellow of the Society was sentenced to five years' penal servitude; he was now at liberty, and had applied to the Council to send him his Fellow's ticket. Under all the circumstances he moved, under the twenty-fifth byelaw, that the person referred to be removed from the roll of the Society; and Sir Trevor Lawrence, M.P., seconded the motion, which was unanimously carried.

The scrutineers then announced the result of the ballot—the unanimous election of Mr. J. T. D. Llewelyn, Mr. James Macintosh, and Mr. G. F. Wilson, F.R.S., as members of the Council, in the place of Sir H. Scudamore Stanhope, Bart., Lord Sudeley, and Mr. H. J. Elwes; and of the following gentlemen as office-bearers for the ensuing year—President, Lord Aberdare; Treasurer, Mr. Henry Webb; Secretary, Dr. Hogg; Expenses Committeemen, Mr. Arthur Grote, Mr. Henry Webb, and Mr. William

Haughton; and Auditors, Mr. R. A. Aspinall, Mr. John Lee, and Mr. James F. West.

A vote of thanks to the President was accorded by acclamation, and in reply his Lordship congratulated the Fellows upon their unanimity.

Scientific Committee.—Sir J. D. Hooker, K.C.S.I., in the chair. Comparatively few subjects were brought before the committee on this occasion.

*Phylloxera in the Crimea.*—Dr. Masters read a letter from M. Wolkenstein relating to the measures taken to prevent the spread of the Phylloxera in Russia, and announced that the following resolutions had been agreed to by a committee of the Imperial Horticultural Society of Russia:—1. The importation of Vines, either as plants, cuttings, or eyes, shall be strictly forbidden. 2. The introduction of plants of all kinds without a ball of earth, except Vines, shall be freely permitted. 3. The introduction of plants with a ball of earth from localities where the Vine is not cultivated shall be freely permitted; but the introduction of plants coming from localities where the Vine is cultivated shall only be permitted on the production of a certificate stating that the plants in question are derived from districts or gardens where the Vine is not grown. The acquisition of such certificates shall be facilitated as far as possible. 4. The importation of fruits of all kinds from any locality (excepting Grapes) shall be permitted. The importation of Grapes from the South is forbidden to all parts of Russia south of Moscow. 5. The importation of plants of all kinds from the Crimea shall be provisionally strictly forbidden. 6. The idea of a quarantine station is rejected as absurd and impracticable.

*American Blight in Russia.*—The presence of this insect (Schizoneura lanigera) on an enormous scale in the orchards of the Crimea is announced, and the committee of the Imperial Horticultural Society recommend the disinfection of the gardens invaded by this insect, and the prevention of the importation of Apple trees.

*Insects on Wheat Culm.*—Dr. Masters also showed, from M. Wolkenstein, samples of gall-like structures produced by insects. The specimens were referred to Mr. McLachlan for examination and report.

*Fungus on Wood-boring Beetle.*—Mr. McLachlan showed specimens of a fungus, Cordyceps, growing from the neck of the larva of a beetle in a manner similar to the Sphæria which attacks caterpillars in various countries.

"*Zulu*" *Pelargonium.*—Mr. Cannell sent a young plant, probably of Pelargonium Cooperi, collected by the Empress Eugènie on the spot where the late Prince Imperial fell.

*Hybrid Frogs and Toads.*—Mr. Boulger called attention to this subject, in the desire of obtaining satisfactory evidence on the matter. Rev. H. Harpur-Crewe from personal observation was enabled to testify as to the very great probability of such an occurrence.

*Camellia Leaves.*—Specimens of Camellia leaves with a thick fungus outgrowth were submitted to Mr. W. G. Smith for examination and report.

*Miscellaneous Objects.* — Rev. George Henslow showed Bamboos with oblique, and others with the ordinary horizontal leaf scars; also a lichen from the Cheddar Cliffs, disposed in elegant concentric bands, each band separated from its fellow by a considerable interspace. A piece of common earthenware pottery was also shown, with a curious dendritic pattern thereon, said to be produced by dropping tobacco juice on the clay before burning.

Some discussion then arose as to the effect of the late frost, it being mentioned, amongst other things, that Aucubas had even suffered in some places, and that Veronica Traversii was much hurt.

Floral Committee.—Dr. Denny in the chair. A sharp frost on Monday morning, and a gale of wind and rain on Monday night, had a marked effect in limiting the number of plants brought forward on Tuesday; yet, with a liberal contribution from Chiswick, the Council-room was gay with flowers, which were much appreciated by the few Fellows who came to attend the annual meeting. Messrs. James Veitch & Sons were awarded a Silver Flora Medal for a very charming bank of Orchids, which included fine flowering plants of such showy Odontoglossums as O. Alexandræ, O. cirrhosum, O. Pescatorei, O. Roezlii, O. blandum, and O. tripudians; the brilliant Ada aurantiaca, with seven good spikes; Lycaste Skinneri, &c. Along with these also came a nice young plant of Anthurium Andréanum, with one spathe. To Mr. B. S. Williams a Silver Banksian Medal was awarded for a choice group of well-flowered Chinese Primulas, which consisted of a number of plants each of P. sinensis fimbriata rubra, a fine bold flower, rich purplish-violet in colour; P. s. fimbriata alba, a very fine strain, the flowers being large, of good substance, very pure, and thrown well up above the foliage; P. s. fimbriata alba magnifica, a very beautiful, heavily-fringed flower of great substance but not thrown sufficiently above the foliage to prevent them having a greenish cast; P. s. fimbriata Chiswick Red; and P. s. fimbriata coccinea, a good dark rosy-crimson. Mr. Williams also had a select group of Cyclamens. First-class Certificates were awarded to Messrs. James Veitch & Sons for the fine Hamamelis arborea (figured on p. 205). This was introduced originally from Japan, and is a near ally of H. virginica, but has larger and more showy flowers. The blooms, which are yellow with a purple eye, are produced in winter while the tree is still leafless. It is a desirable hardy shrub, not only of considerable beauty, but of much structural interest, and interesting, moreover, as furnishing an additional link between the flora of the eastern United States and that of Japan. To Mr. William Bull, for Maranta crocata and Vriesia Falkenbergii, the former being a small tufted species with rather broad obtuse leaves of a deep velvety green with a silvery lustre and with a short spike bearing a terminal head of densely packed orange bracts concealing the flowers—and the latter a tufted Bromeliad with oblanceolate recurved leaves and an erect two-edged flower-spike with numerous crowded boat-shaped bracts, crimson with a broad green edge; to the Rev. J. G. Nelson, Aldborough Rectory, Norwich, for Lachenalia Nelsoni ×, a fine bold flowering hybrid, raised between L. luteola, female, and L. aurea as male parent, but a larger and finer plant than either; to Mr. Cannell for Primula sinensis Dr. Denny, majenta, shaded in the centre with violet; and to Mr. James, Redlees, Isleworth, for Cinerarias Master Colvin and William Jennings, the latter a fine crimson self, and the former crimson, with a white ring round a black disk—a very fine flower. Mr. Taylor, gr., Longleat, Warminster, received a vote of thanks for a couple of dozen bunches of cut blooms of the fine double violet, shaded scarlet, double Zonal Pelargonium, Guillon Mangilli; and Mr. Boller had a similar vote for a group of Cactuses, &c.

Fruit Committee.—Mr. William Paul in the chair. Mr. G. T. Miles, gr. to Lord Carrington, exhibited three fine fruits of the Lord Carrington Pine-apple; four brace of Petch's Favourite Cucumber, a good white-spined variety, averaging in length from 12 to 15 inches, and having a very short shoulder; and examples of new and old Grapes, in good samples of well-kept Lady Downe's Seedling, and small but well-coloured new Black Hamburghs, which were awarded a Cultural Commendation. Mr. J. Wallis, gr., Keele Hall, received a similar award for a box of Gros Colmar, Lady Downe's, and Golden Queen Grapes, of very superior quality; and Mr. James Hudson, gr. to H. J. Atkinson, Esq., Gunnersbury House, Acton, a vote of a like character for a dozen well-finished bunches of Lady Downe's. Mr. Gilbert, gr., Burghley, sent a brace of the Montrose Seedling Cucumber, said to be the result of crossing Syon House and Kenyon's Free-bearer, and to be a vigorous grower and free winter bearer. It much resembles the Syon House variety, and the fruits measured 10 to 11 inches in length. Mr. J. McIndoe, gr., Hutton Hall, Guisborough, sent fruit of his seedling Cucumber, Verdant Green, measuring about 13 inches in length and 1¾ inch in diameter from shoulder to point, and white-spined, but almost smooth. Mr. S. Lyon, The Gardens, Sundridge Park, Bromley, received a Cultural Commendation for a capital dish of Mushrooms; and Messrs. James Backhouse & Son, York, sent examples of what was said to be a new variety of Onion, but which the committee considered to be only the Brown Spanish or Deptford Onion, a very good late keeping old variety.

## Forestry.

Where the Wood Goes.—The *Fishkill Standard* has taken rather to heart the deplorable extent to which American forests have of late been disappearing, and has been endeavouring to ascertain what becomes of the vast stores of timber that are every year hacked down in all parts of the continent. It finds that shoe-pegs and lucifer matches make important items in the continual draft on forest trees, the matches alone demanding no less than 300,000 cubic feet of the best Pine every year. Lasts and boot-trees require an amount of Birch, Beech, and Maple annually sufficient to cover more than 12,000 acres of land, while another 12,000 acres have to be stripped to supply the handles of tools. Brick-baking consumes 2,000,000 cords of wood, or enough to clothe 50,000 acres of land. The repair of telegraph poles every year requires 300,000 trees, while the number actually established represents some 800,000 more. The sleepers, or "ties," and fences of railways, as may be imagined, make an enormous demand on American woodlands. The "ties" alone consume annually as much wood as 75,000 acres will grow in thirty years. American railways, we believe, are not fenced throughout their length, but it is estimated that if they were to be it would entail a cost of 45,000,000 dols., and would of course accelerate wonderfully the disappearance of forests. The repairing of such fences alone would cost 15,000,000 dols. a-year. During the year 1874, 12,000,000 dollars' worth of wood was employed in making packing-cases; and every year it is estimated that waggon-building, and the making of various kinds of agricultural implements, require a supply of wood worth more than 100,000,000 dols. It appears that the invention which brought pegged boots and shoes into fashion is responsible for the stripping of its forest clothing of no less than 2500 acres of American land annually. *Globe.*

## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, Feb. 9, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Feb. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 3 | 29.44 | −0.33 | 52.1 | 44.0 | 8.1 | 47.7 | + 8.9 | 44.9 | 91 | S.: S.W. | 0.02 |
| 4 | 29.23 | −0.53 | 49.9 | 43.1 | 6.8 | 46.3 | + 7.4 | 42.1 | 87 | S.: S.W. | 0.04 |
| 5 | 29.33 | −0.44 | 48.0 | 38.0 | 10.0 | 41.9 | + 2.9 | 35.5 | 83 | W.S.W.: W. | 0.00 |
| 6 | 29.77 | + 0.01 | 38.7 | 32.8 | 5.9 | 35.2 | − 3.9 | 27.7 | 75 | N.W. | 0.00 |
| 7 | 29.50 | −0.27 | 46.1 | 29.0 | 17.1 | 37.3 | − 1.8 | 33.5 | 86 | E.: S.E. | 0.32 |
| 8 | 29.14 | −0.63 | 50.2 | 41.8 | 8.4 | 46.0 | + 6.9 | 38.9 | 77 | W. | 0.01 |
| 9 | 29.41 | −0.36 | 45.4 | 39.3 | 6.1 | 42.5 | + 3.4 | 41.8 | 97 | W. | 0.20 |
| Mean | 29.40 | −0.36 | 47.2 | 38.3 | 8.9 | 42.4 | + 3.4 | 37.8 | 85 | S.W.: W. | 0.59 |

Feb. 3.—A dull damp day; occasional light rain.
— 4.—Generally very gloomy and dull; a little rain.
— 5.—Overcast sky all day; a few spots of rain afternoon.
— 6.—A fine day, rather cold. A strong wind.
— 7.—A fine but cold and dull morning. Snow began to fall at 11 A.M., and continued till 3 P.M., the amount melted equal to 0.071 inch; the temperature of the air increased, and the maximum took place at midnight.
— 8.—A heavy gale of wind, sun shining occasionally; nocturnal rising temperature, highest temperature at midnight.
— 9.—A strong wind in the morning, lulled afternoon; rain at night.

London: *Atmospheric Pressure.*—During the week ending February 5, in the vicinity of London, the reading of the barometer at the level of the sea increased from 29.02 inches at the beginning of the week to 29.95 inches by midnight of the 1st; it then decreased to 29.76 inches by midnight of the 2d, and fell to 29.37 inches by the afternoon of the 4th; after this the reading increased, and was 29.58 inches by the end of the week. The mean reading at the level of the sea was 29.62 inches, being 0.02 inch higher than last week, and 0.33 inch below the average for the week.

*Temperature.*—The highest reading in the week was 52°.1, on the 3d. On the 1st the highest reading was only 37°.1, being 10° less than any of the other six high day readings. The mean of the seven high day temperatures was 47°. The lowest reading occurred on the 1st, and was 32°.3. On the 2d the lowest was 32°.6, and the lowest on the 3d was 44°. The mean of the seven low night temperatures was 38°.4. The greatest range of temperature in one day was 14°.5, on the 2d, the next greatest being 11°, on the 31st; and the least being 4°.8 on the 1st. The mean of the seven daily ranges was 8°.6.

The mean daily temperatures were 44°.5 on the 30th, 41°.7 on the 31st, 34°.2 on the 1st, 42° on the 2d, 47°.7 on the 3d, 46°.3 on the 4th, and on the 5th was 41°.9, On January 30, 31, and February 2, 3, 4, 5, the mean temperatures were respectively 6°.1, 3°.2, 3°.3, 8°.9, 7°.4, 2°.9 above the average; on Feb. 1 the mean temperature was 4°.4 below the average.

The mean temperature for the week was 42°.6, being 10°.3 higher than last week and 3°.9 above the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, was 99° on the 31st; the next highest in order being 78°, on the 5th, and 70°.6 on the 3d; the lowest reading was 38°, on the 1st, being only 1° higher than the maximum temperature on that day. The mean of the seven daily readings was 46°.3.

*Rain.*—Rain fell on the 31st, 2d, 3d, and 4th, the greatest amount was 0.08 inch on the 31st and 2d, the least being 0.02 inch on the 3d; the total amount in the week was 0.20 inch.

The weather during the week was generally dull. On Saturday, January 31, there was a fine display of red aurora borealis seen in the evening.

ENGLAND: *Temperature.*—During the week ending February 5 the highest temperatures were 54° at Truro, Cambridge, Hull, and Sunderland, 53° at Bristol, and the lowest of the high temperatures was 49°.5 at Norwich. The mean from all stations was 51°.7.

The lowest temperatures were 27°.1 at Nottingham, 28° at Hull, and 29° at Truro, Cambridge, and Norwich. At Plymouth, Bristol, Blackheath, Birmingham, and Sunderland the temperature never fell below 32°. The mean from all stations was 30°.5.

The range of temperature during the week was greatest at Hull, 26°, the next in order being 25° at Truro and Cambridge, and 24°.9 at Nottingham, at no other station did the range exceed 22°. The least range was 17°.7 at Plymouth. The mean from all stations was 21°.2.

The mean of the seven high day temperatures was the highest at Truro, 51°.7; the next in order being 51° at Plymouth, 48°.9 at Bristol, 48°.5 at Cambridge. At Leicester, Wrottesley, Hull, Bradford, Leeds, and Sunderland, the mean did not exceed 46°. The mean from all stations was 46°.8.

The mean of the seven low night temperatures was least at Hull, 33°.7, the next in order being Bradford, 34°.5, Nottingham, 34°.6, and Wrottesley, 34°.8. The mean was highest at Plymouth, 40°.6, at Truro it was 40°.3; the mean from all stations was 36°.8.

The mean daily range was greatest at Truro, 11°.4; Cambridge, 11°.3; and Plymouth, 10°.4. It was smallest at Blackheath, 8°.6. The mean from all stations was 10°.

The mean temperature for the week was highest at Truro, 45°.7; the next in order being Plymouth, 45°.4; and Bristol, 43°.8. At Sheffield, Hull, Bradford, and Leeds it did not exceed 40°. The mean from all stations was 41°.5.

*Rain.*—Some fell at all stations, the greatest quantities being 1.52 inch and 1.13 inch at Truro and Plymouth respectively, the smallest amounts being 0.20 and 0.25 inch at Blackheath and Sunderland respectively. *Snow* fell at Bradford on the morning of the 2d, and hail fell at Hull on the night of the 5th. *Fog* prevailed at Wrottesley and Birmingham on the 1st, Plymouth on the 5th, Cambridge on the 30th and morning of the 1st, and Hull on the 2d.

SCOTLAND: *Temperature.*—During the week ending Saturday, February 5, the highest temperatures recorded were 51° at Paisley, 48°.8 at Edinburgh and Leith; at Dundee the temperature never exceeded 44°. The general mean from all stations was 47°.1.

The lowest temperatures were 30° at Dundee, 31° at Paisley; at Glasgow the temperature never fell below 40°. The general mean from all stations was 30°.9.

The mean of the week was highest at Glasgow, 40°, the next in order being Edinburgh, 38°.7, and Leith, 38°.6. The general mean from all stations was 38°.2.

*Rain.*—The largest amount fell at Greenock, 1.86 inch, the next in order being Paisley, 1.74 inch; the smallest was 0.84 inch, at Leith. The mean from all stations was 1.39 inch.

JAMES GLAISHER, F.R.S.

## Obituary.

WE regret to record the death, on the 3d inst., at his residence in Charlotte Street, Bedford Square, in his seventy-seventh year, of Mr. JOHN GOULD, F.R.S., the distinguished ornithologist. A native of Lyme, in Dorsetshire, he was born in 1804, and at an early age showed a strong taste for the study of Nature. Between the ages of fourteen and twenty he spent most of his time under the care of the late Mr. J. T. Aiton, at the Royal Gardens, Windsor, where he soon acquired a taste for botany and floriculture. He afterwards continued his studies in London. In 1830 Mr. Gould became possessed of a fine series of birds from the hill countries of India, and in the following year he proceeded to illustrate the more important species in a work which he published under the title of *A Century of Birds from the Himalaya Mountains.* This was followed by a work of more extensive character on the birds of Europe. In 1838 Mr. Gould paid a visit to Australia for the purpose of studying the natural productions of that country, the result of which was the publication of *The Birds of Australia*, a work in seven folio volumes, containing figures and descriptions of upwards of 600 species. Besides the above, Mr. Gould has also published numerous other works on birds, and in particular a *Monograph of the Humming Bird. Times.*

—— The Rev. JOHN BROOKE died on January 27, at Haughton Hall, near Shifnal, aged seventy-eight. Mr. Brooke was a keen and accomplished botanist, and an enthusiastic horticulturist. For many years he and his sister, who predeceased him, kept up at Haughton one of the largest and most interesting collections of hardy herbaceous and greenhouse plants and bulbs in the Midland Counties. They were especially fond of those good old-fashioned things which the bedding mania wellnigh extirpated; and many a garden has been re-stocked with the grand old perennials of the past from the glorious clumps which grew in the gardens at Haughton. Mr. Brooke was an English gentleman of the good old type, now, alas! somewhat rare to find; and every one who knew him deplores the loss of a friend whom it would be difficult, if not impossible, to replace. *H. H. C.*

## Enquiries.

*He that questioneth much shall learn much.*—BACON.

PANDANUS UTILIS.—Has Pandanus utilis been known to flower under glass in this country? *W. H. L.*

## Answers to Correspondents.

AZALEAS: *J. F. R.*—The specimen you send is an example of fasciated growth, such as is seen to occur on many other plants occasionally. We cannot explain why this kind of growth should be developed, but it is often an indication of over-luxuriance.

BLACK FLY ON PEACH TREES: *A. M. M.* Boil 4 oz. of Quassia chips (procurable at any chemist's) in 1 gal. of soft water ten minutes, and dissolve in it, as it cools, 4 oz. of soft soap. Stir it up well when cool, and syringe the trees two or three times with it, subsequently cleansing them with pure water.

CHINESE PRIMULAS: *J. Leeson.* A good strain of flowers, including the usual run of colours—white, blush, rosy-purple, crimson, carmine, &c.—but containing nothing exceptionally fine; indeed, your brightest flower is superseded by Chiswick Red and Dr. Denny. We have seen something like the lilac-edged one, but a better flower; the seed may, however, produce something good. The variety of colour which is being obtained in this family is most remarkable. Your double flower is in the way of Earl of Beaconsfield, but not so full.

COLONIAL APPOINTMENTS: *F. G. Andrews.* Put yourself in communication with the Director or Curator of the Royal Gardens, Kew.

DOUBLE CINERARIAS: *R. H. Vertegans.* Some of the flowers sent are very fine, especially a rosy-purple, and a purple-tipped flower which appears to be a purple self in consequence of the white bases of the florets being hidden. These were fully 1½ inch across, half-globular in outline, with densely packed florets. We notice that they are not fully double, but that the inner florets are so closely inflexed as completely to cover and hide any trace of the disk. There is amongst them a semi-double white, which may eventually yield a full double flower, and if so will be very useful for cutting. These doubles must eventually become very useful for decorative purposes on account of the endurance of the flowers.

GARDEN LABOUR, &c.: *K. G.* Such questions as you put are most difficult to answer with any degree of satisfaction; but we should say (1), that six pairs of hands would be none too many to keep the place in the condition you describe; and (2) that £80 a-year and a cottage is the lowest wage that a head gardener in such a place should be offered.

HOTBED: *N. E. S.* Make the bed in the manner described at p. 20 of our number for January 1 last.

HOT-WATER APPARATUS: *W. A. & Sons.* What you describe is the original form of hot-water apparatus, designed, if we mistake not, by W. Atkinson, Esq., an authority in these matters some half century ago. There is one in use in the Chelsea Botanic Garden. We do not know of any other.

INSECTS: *J. C.* We have examined carefully the earth from the pots of your young Vines, which have been eaten through about 2 inches from the original eyes, and have found a number of insects of different kinds—namely, one small wireworm and portion of a second, a considerable number of larvæ of several kinds of dipterous flies, and a number of very minute white woodlice. We do not believe any of these to have caused the mischief, which we think was more probably produced by the brown weevil (Otiorhynchus sulcatus. *I. O. W.*

LAPAGERIA: *J. F. R.* The Lapageria often produces seeds. That you send appears to be good, but the best way to test it would be to sow it.

LYCOPODIUMS: *C. M. Owen.* The specimen picked up some years ago on the north-east coast of Wexford is Lycopodium complanatum, not L. alpinum. No. 1, from New Brunswick, is the same. No. 2 is L. dendroideum. The L. alpinum from Scottish Highlands is correct; as also is the L. clavatum from New Brunswick.

NAMES OF PLANTS: *J. F. R.* We cannot name the Salvia without flowers.—*James Waddell.* Dendrobium primulinum; a very well known species.—*H. H. D'O.* The yellow flowered Crocus from Smyrna is C. chrysanthus; the other, with striped white flowers, is C. Fleischeri. *G. M.* — *W. T. T.* Acacia pubescens. — *W. G.* 1, Pilea muscosa; 2, Reinwardtia trigyna.—*W. Adams.* Brassavola tuberculata.—*H. J. R.* Certainly nothing more than Dendrobium primulinum. — *G. L.* 1, Adiantum hispidulum tenellum; 2, Davallia elegans; 3, Dendrobium Linawianum.—*Preston.* 1, Cypripedium insigne; 2, Zygopetalum crinitum; 3, Epidendrum cochleatum.—*W. D.* 1, Selaginella Brownii; 2, Santolina incana; 3, Heeria mexicana; 4, Selaginella Kraussiana; 5, Adiantum diaphanum? 6, Asplenium trichomanes.—*Therlewood.* Asplenium flaccidum.—*H. Kelsall.* 3, Begonia argyrostigma; 4, Leucopogon Richiei.—*T. J. & Sons.* Camellia Sasanqua rosea—a very old species; known also as maliflora.

POTATO: *J. S. C.* We cannot undertake to name a Potato from a single tuber. It is beyond our power to do so.

PRIMULAS: *J. F. R.* By all means save seeds of both, as the colours are good, and select improvements from them. The darkest flower wants substance, and the other size.

STANDEN'S MANURE FOR HEATHS: *O. B.* You cannot use anything better; but of course you must apply it with judgment.

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## CATALOGUES RECEIVED.

E. G. HENDERSON & SON, Pine-apple Nursery, Maida Vale, W.—Flower, Vegetable, and Agricultural Seeds.

HARRISON & SONS, Leicester—Seeds for the Garden and Farm.

B. K. BLISS & SONS, 34, Barclay Street, New York—Garden, Field, and Flower Seeds.

E. B. SPENCE, Victoria Road, Darlington—Vegetable and Flower Seeds.

ORMISTON & RENWICK, Melrose, N.B. — Vegetable, Flower, and Agricultural Seeds.

BENJAMIN CROSLAND, 37, Norfolk Market Hall, Sheffield—Vegetable and Flower Seeds.

JOSEPH GREEN & SON, 44, Vicar Lane, Leeds—Garden and Agricultural Seeds.

W. SAMSON & Co., and W. & J. SAMSON, Kilmarnock, N.B.—Seeds and Plants.

EDWARD SANG & SONS, Kirkcaldy—Vegetable and Flower Seeds, &c.

PHILIP H. SHAW, Tenby—Vegetable and Flower Seeds, &c.

R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston—Vegetable and Flower Seeds.

WILLIAM J. WATSON, Fenham, Newcastle-on-Tyne—Vegetable and Flower Seeds.

R. CLEAVER, Bore Street, Lichfield—Vegetable, Flower, and Agricultural Seeds.

THOMAS IMRIE & SONS, Ayr—Vegetable and Flower Seeds, General Nursery Stock, &c.

W. W. JOHNSON & SON, 5, Bridge Street, Boston—Vegetable, Flower, and Farm Seeds, &c.

COMMUNICATIONS RECEIVED.—W. Campbell.—C. B. S.—W. M.—W. S.—An Old Subscriber.—C. Borgia.—A. M.—D. S.—A. M. P.—H. H.—R. I. L.—E. L. F.—H. J. C.—A. Lawson.—G. N.—J. Harris.—G. G.—J. D.—W. B.—J. B.—P. W.—E. H.—P. B.

## Markets.

*COVENT GARDEN, February* 10.

Our market remains much the same, with scarcely any alteration to quote. Large amounts of St. Michael's Pines are now reaching us, making it a difficult matter to clear home-grown fruit. Trade very quiet. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 1 6– 5 0 |
| Grapes, per lb. | 3 0–10 0 | Pine-apples, per lb. | 1 0– 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Asparag., Fr., bndl. | 25 0– .. | — Cos, each | 0 6– 1 0 |
| — Sprue, per bund. | 1 6– 2 0 | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Parsley, per bunch | 0 4– .. |
| Celery, per bundle | 1 6– 2 0 | Radishes, per bun. | 0 2– .. |
| Chilis, per 100 | 3 0– .. | Rhubarb, per bund. | 1 0– .. |
| Cucumbers, each | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| Garlic, per lb. | 1 0– .. | Spinach, per busbel | 4 0– .. |
| Herbs, per bunch | 0 2– 0 4 | Tomatos, per lb. | 0 9– 1 0 |
| Horse Radish, p. bun. | 4 0– .. | Turnips, new, bunch | 0 4– .. |

POTATOS:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ficus elasticus, each | 1 6– 7 6 |
| Begonias, per doz. | 6 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cineraria, per doz. | 10 0–12 0 | Genista, per doz. | 12 0–18 0 |
| Cyclamen, per doz. | 12 0–24 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cyperus, per dozen | 6 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Dracæna terminalis | 30 0–60 0 | Myrtles, per doz. | 6 0–12 0 |
| — viridis, per doz. | 12 0–24 0 | Palms in variety, each | 2 6–21 0 |
| Epiphyllum, per doz. | 18 0–30 0 | Primula, single, per dozen | 5 0– 6 0 |
| Erica hyemalis | 9 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Tulips, 12 pots | 6 0– 9 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | | |
| Ferns, in variety, per dozen | 4 0–18 0 | | |

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Azalea, 12 sprays | 1 0– 2 0 | Pelargoniums, 12 sprays | 1 6– 2 0 |
| Bouvardias, per bun. | 1 0– 3 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Poinsettia, 12 blooms | 3 0– 6 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Primula, double, per bunch | 1 0– 1 6 |
| Cyclamen, 12 blms. | 0 3– 0 6 | — single, 12 sprs. | 0 6– 1 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Roses (indoor), doz. | 3 0– 9 0 |
| Eucharis, per doz. | 4 0– 9 0 | — yellow Fr., doz. | 2 0– 4 0 |
| Euphorbia, 12 sprays | 3 0– 5 0 | — red French, doz. | 3 0– 4 0 |
| Gardenias, 12 blms. | 15 0–30 0 | — Christmas, 12 bl. | 0 9– 1 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Hyacinth, Roman, 12 sprays | 1 6– 2 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Tuberoses, per dozen | 4 0– 8 0 |
| — red, 12 blooms | 1 0– 3 0 | Violets, 12 bunches | 1 6– 2 6 |
| Lilac, Fr., per bunch | 8 0–10 0 | — Neapolitan, Fr., per bunch | 5 0– 7 0 |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | — Czar, Fr., bunch | 2 6– 3 0 |
| Marguerites, 12 blms. | 0 4– 0 9 | | |

## SEEDS.

London: *Feb.* 9.—There is now an improved demand for farm seeds, and considerable quantities have this week changed hands at full rates. Choice samples of red Clover seed continue in short supply. There is more inquiry for Alsike, and white Trefoil keeps quiet. For spring Tares there is a better sale. Canary is in fair request at last week's rates. The stock of fine Blue Imperial Peas is getting into narrow compass. Haricot Beans and split Lentils are now obtainable on very moderate terms. From the Board of Trade returns just published it appears that the imports of Clover and Grass seeds were last month 29,893 cwt., against 41,727 cwt. for January, 1880. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CATTLE.

At Copenhagen Fields on Monday trade in beasts was very dull. Prices were lower, and a good many useful animals remained unsold. Choicest qualities of sheep were scarce, and trade was active for them at fully late rates; in some instances they made rather over our top quotations. Good calves were scarce and dear. Quotations:—Beasts, 4*s.* 4*d.* to 4*s.* 8*d.*, and 5*s.* to 5*s.* 8*d.*; calves, 5*s.* 6*d.* to 6*s.* 8*d.*; sheep, 5*s.* 4*d.* to 5*s.* 10*d.*, and 6*s.* 4*d.* to 6*s.* 8*d.*—On Thursday the cattle market was firm, but quiet. Beasts were steady at Monday's prices, and sheep were quite as dear. Calves and pigs were well held.

## HAY.

Tuesday's Whitechapel Market report states that the supply on offer was moderate, and as to trade that the best sorts were in demand. Quotations:—Prime Clover, 100*s.* to 115*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 102*s.* 6*d.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 40*s.* per load.—On Thursday there was a moderate supply on offer. Trade was dull at Monday's rates.—Cumberland Market quotations:—Superior meadow hay, 95*s.* to 105*s.*; inferior, 50*s.* to 78*s.*; superior Clover, 112*s.* to 126*s.*; inferior, 88*s.* to 95*s.*; and straw, 36*s.* to 42*s.* per load.

## POTATOS.

The Borough and Spitalfields markets reports state that moderate supplies were on sale, but trade was dull at the annexed rates:—Scotch Regents, 90*s.* to 110*s.* per ton; Champions, 90*s.* to 100*s.*; Victorias, 110*s.*; German reds, 4*s.* to 5*s.* per bag; Belgian kidneys, 4*s.*—Last week's imports consisted of 50 tons from Barfleur, 59 tons St. Nicholas, 39 tons Brest, 100 tons Boscoff, 612 bags Antwerp, 300 bags Boulogne, and 75 bags Malta.

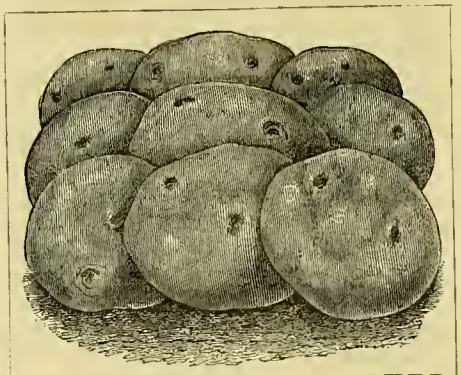
## COALS.

The following are the quotations current at market during the week:—Bower's West Hartley, 14*s.* 9*d.*; Holywell Main, 15*s.* 6*d.*; Bebside West Hartley, 14*s.* 9*d.*; East Wylam, 17*s.* 6*d.*; Walls End—Easington, 17*s.*; Haswell, 18*s.* 6*d.*; Hetton, 18*s.* 6*d.*; Hetton Lyons, 17*s.*; Hawthorns, 17*s.* 3*d.*; Lambton, 18*s.*; Original Hartlepool, 18*s.* 6*d.*; Wear, 17*s.*; South Hetton, 18*s.* 6*d.*; Tunstall, 17*s.*; Caradoc, 18*s.* 6*d.*; South Hartlepool, 17*s.* 9*d.*; Salvin's Hutton, 17*s.* 3*d.*; Thornley, 18*s.* 3*d.*; Tees, 18*s.* 3*d.*; Radford Navigation, 17*s.* 6*d.*

**Government Stock.**—The closing prices of Consols on Monday were, for delivery, 98½ to 98⅜, and 98⅝ to 98¾ for the account. Tuesday's prices were, for delivery, 98⅜ to 98¾, and 98¾ to 98⅞ for the account. The final figures on Wednesday were, for delivery, 98½ to 98⅝, and 98⅝ to 98¾ for the account. The closing figures on Thursday were, for delivery, 98⅝ to 98¾, and 98¾ to 98⅞ for the account.

*These Collections combine*
EXCELLENCE with ECONOMY.

WEBBS'
SEED POTATOS

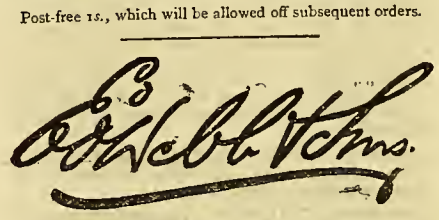


WEBBS' SCHOOLMASTER
(*Improved*). *The Best Potato in Cultivation.*
3s. per peck, 10s. per bushel, 27s. per sack.

WEBBS' MAGNUM BONUM
(*Improved*). *The Great Disease-resister.*
2s. 6d. per peck, 9s. per bushel, 23s. per sack.

WEBBS' SPRING CATALOGUE
is
The Best Guide for the Amateur Gardener.

Post-free 1*s.*, which will be allowed off subsequent orders.




THE QUEEN'S SEEDSMEN,
WORDSLEY, STOURBRIDGE.

AZALEA INDICA, with buds.—A large stock of the above still on hand, which can be supplied at a very moderate price.
JULES DE COCK, The Ornamental Plant Nurseries, Ghent, Belgium.

A Large Quantity of
ENGLISH and IRISH YEWS, all recently transplanted, to be Sold cheap. No reasonable offer refused.
HY. GODFREY, Nurseryman, Stourbridge.

CLAYWORTH PRIDE CELERY has proved to be the hardiest and best in cultivation. It blanches very readily, and will stand the frost and wet better than any other variety. In packets, 13 stamps; per ounce, 5*s.*
R. OGLEV, Clayworth, Bawtry, Yorkshire.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts, have a large and fine stock of Pyramid and Standard FRUIT TREES, of which a Descriptive CATALOGUE will be forwarded on application.

R. AND G. NEAL have to offer fine Dwarf-trained APPLES, PLUMS, and MORELLO CHERRIES; also 1-yr. ASPARAGUS. Price on application at The Nurseries, Wandsworth Common, S.W.

QUICKS.—Many hundred thousand extra strong 5-yr. old gap Quicks, many times transplanted. GOOSEBERRIES, Lancashire Show, very fine.
Samples and price on application to
B. WHITHAM, The Nurseries, Cheadle, Cheshire.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12*s.* per dozen; other varieties, 15*s.*, 18*s.*, and 24*s.* per dozen.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

CUCUMBER, ROLLISSON'S TELEGRAPH IMPROVED.—This strain is, without exception, the finest variety of Telegraph extant. The seed has all been saved from handsome well-grown fruit. Per packet, 1*s.* Price to the Trade on application.
EDMUND PHILIP DIXON, Seed Grower, Hull.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Samples and Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

Grapes this Year.
FRUITING CANES, thoroughly ripened without bottom-heat, 7*s.* 6*d.* to 10*s.* 6*d.* each. PLANTING CANES, 3*s.* 6*d.* to 5*s.* each. Leading kinds.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

To the Trade—Broad Beans.
H. AND F. SHARPE have very fine samples of Green and White Windsor, Monarch Longpod, Green and White Longpod BEANS, to dispose of at very reasonable prices, either picked or unpicked. Samples on application.
Seed Growing Establishment, Wisbech.

RICHARDIA HASTATA (the yellow CALLA).
We hold a fine Stock of this rare and elegant plant. See Coloured Plate and Description in the *Garden*, No. 473.
Price, 3*s.* 6*d.* each.
JOSEPH TREMBLE AND SONS, Victoria and The Castle Nurseries, Penrith.

Hooper's—
The Covent Garden
Seed Warehouse
SUPPLY EVERY GARDEN REQUISITE
In the Highest Quality.
Also every Good Thing Advertised.
*CATALOGUES READY.*

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DEPTFORD and EAST GREENWICH, LONDON, S.E.,
HAVE APPOINTED
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COVENT GARDEN, LONDON, W.C.,
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CONCENTRATED POTATO MANURE.

LANDSCAPE GARDENING
GARDEN PLANS.
Before Laying-out a Garden a Plan should be had, showing how the Grounds will appear when finished. This prevents disappointment and unnecessary expense.
Designs and Estimates given for artistically Laying-out Gardens of all sizes.
E. CHAMBERLAIN, Landscape Gardener.
NURSERIES:—{ Haverstock Hill, N.W. / Fitzjohn's Avenue, Hampstead, N.W.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1*s.* 15 bags, 12*s.*; 30 bags, £1, bags included; or vanload of loose about 100 bushels, delivered free within 4 miles of London Bridge, 15*s.*; truckload of about 250 bushels, free on to rail, £1 3*s.*
J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

## GARDEN REQUISITES.

**COCOA-NUT FIBRE REFUSE,**
3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
H. G. SMYTH,
17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons, Invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1*s.* each; 15 Sacks, 12*s.*; 30 Sacks, 20*s.* (all Sacks included); Van-load at Works, 4*s.*; ditto delivered within 5 miles, 10*s.*; Truck-load (about 300 bushels when dry), free on rail, 25*s.* Terms cash with order.
CHUBB, ROUND AND CO.,
Fibre Works, West Ferry Road, Millwall, London, E.

FOR SALE.—About Half a Ton of pure FOWL MANURE, collected every morning, and kept in covered tubs.—Apply, stating price per cwt., to W. PINDER, Ropsley, near Grantham, Lincolnshire.

PEAT.—Superior Black or Brown Fibrous PEAT, for Rhododendrons, Azaleas, Orchids, &c., same as supplied to Messrs. John Waterer & Son, and other noted growers, 6 tons, loaded on trucks at Camberley Station, S.W.R., £4 4*s.*—Address,
Mr. W. TARRY, "Golden Farmer," Farnborough Station.

**Fibrous Peat for Orchids, &c.**
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.
Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per bag.
WALKER AND CO., Farnborough Station, Hants.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen in Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*
**GISHURSTINE.**
Preserves Gardeners' Boots; keeps Feet Dry; is perfect Dubbin. In Boxes, 6*d.* and 1*s.* each. Wholesale by
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ARCHANGEL and ST. PETERSBURG MATS, RAFFIA, SEED BAGS and SACKS, &c. Prices on application.
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RAFFIA FIBRE.—RUSSIA MATS.—We beg to offer to the Trade Raffia direct from Madagascar, at wholesale price. We can offer Russia Mats to the Trade at very low prices this season.
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CUBA BAST.—A few Bales at 6*d.* per pound. The ordinary import price is 1*s.* It is generally preferred to Raffia, standing the wet much better. Bales about 100 lb. each.
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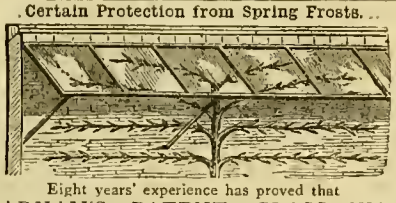
COVERING MATS.—A quantity of good Heavy full-sized PETERSBURG MATS for Sale, at 50*s.* per 100, cash. Sample 100 sent on application to J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, City, E.C.

FRIGI DOMO.—Is the best material for the Protection of Plants from Cold Winds and Frosts. A perfect Non-Conductor of Heat, keeping, wherever it is applied, an even temperature. "It proves a great saving in the way of artificial heat." "It lasts twice as long as mats."
To be obtained of all Nurserymen and Seedsmen.

**Certain Protection from Spring Frosts.**



Eight years' experience has proved that
PARHAM'S PATENT GLASS WALL COPING secures a certain crop of Apricots, Peaches, Pears, and all other Wall Fruit, on the Trees protected by it.
Price, in painted Iron Framing, with 21 oz. Glass, and Rods for front Curtain, 2 feet wide, 2*s.* 6*d.*; 3 feet wide, 3*s.* 9*d.* per foot run.
Testimonials, References, and Prospectus free.
WM. PARHAM, Northgate Works, Bath; and 280, Oxford Street, London. Specimens may be seen at either address.

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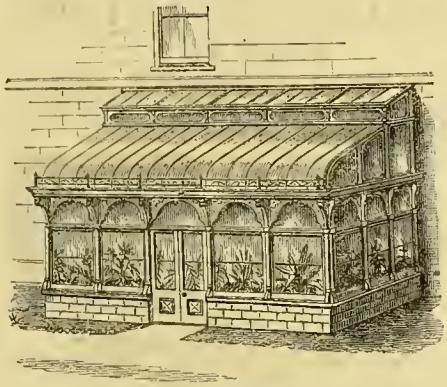
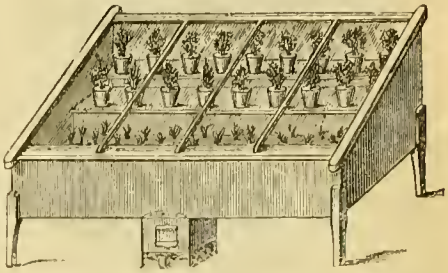
Special DESIGNS and ESTIMATES given for Ornamental CONSERVATORIES, without charge, and for all Horticultural Work of all kinds.



GARDEN BOXES and LIGHTS are generally kept in Stock, and WOODEN HOUSES suitable for Store-houses, Tool-houses, &c.
Illustrated Sheets sent, post-free, on application.

**RIPPINGILLE'S PATENT**
## PROPAGATING PLANT FRAME.
**Heated by Patent Stove, to Burn Petroleum and other Mineral Oils.**

*The Simplest and Best Invention ever introduced for*
**RAISING SEEDS, STRIKING CUTTINGS, &c.**



**The only Frame of the kind for Outdoor Use.**
The above Illustration represents Rippingille's Patent Outdoor Plant Frame, which is so constructed that it will not blow out during the roughest weather; it is made upon the most scientific principles, but is so simple that it is impossible to get out of order, and in economy is unequalled, the cost of burning being only FROM A FARTHING TO A HALFPENNY PER DAY.
The Stove will burn from thirty-six to forty hours without attention. The products of combustion do not enter the Frame at all, but at the same time all the heat is completely utilised. It is disconnected from the Frame for trimming the wick, lighting, replenishing with oil, &c. The top of Frame slides off either way, and is entirely removable; this is very convenient for Planting or removing Cuttings, Watering, Ventilating, &c. The heat attained is from 70° to 90° Fahrenheit, which is considered the best temperature for Forcing or Propagating purposes.

**PRESS OPINIONS.**
*The Journal of Horticulture.*—"A valuable aid to Amateur Gardeners."
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*The Horticultural Record.*—"This Frame ought to be in every small Garden, so that its owner could raise his or her flowers from seeds and cuttings, which gives so must greater zest to the pleasures attached to Amateur Gardening."
*Sent packed free and carriage paid to any Railway Station in England.*
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## HYDRAULIC ENGINEERS,
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**THE IMPROVED SELF-ACTING HYDRAULIC RAM.**
This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance without cost for labour or motive-power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

No. 37. DEEP WELL PUMPS for Horse, Hand, Steam, or other Power.
No. 63. PORTABLE IRRIGATORS, with Double or Treble Barrels for Horse or Steam Power.
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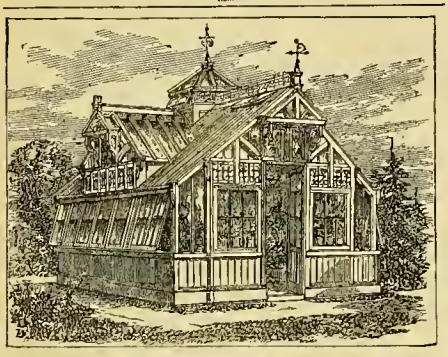

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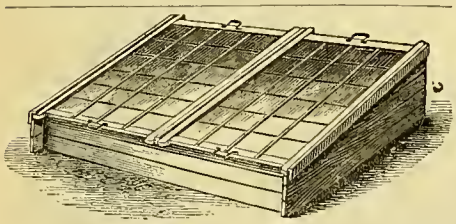

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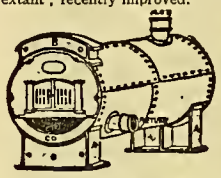

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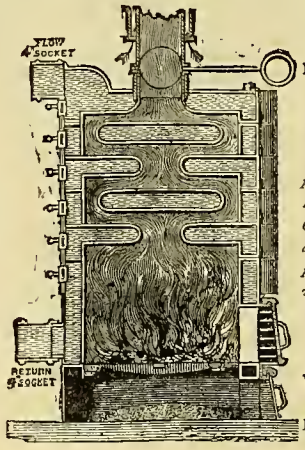


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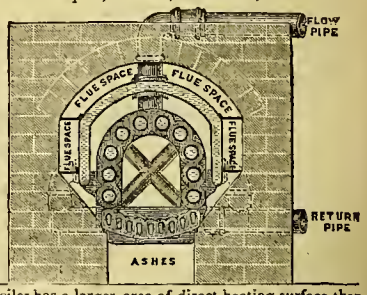


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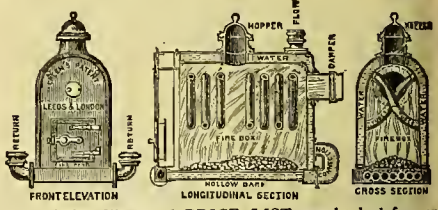


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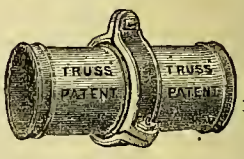


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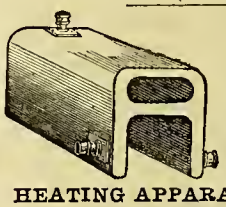

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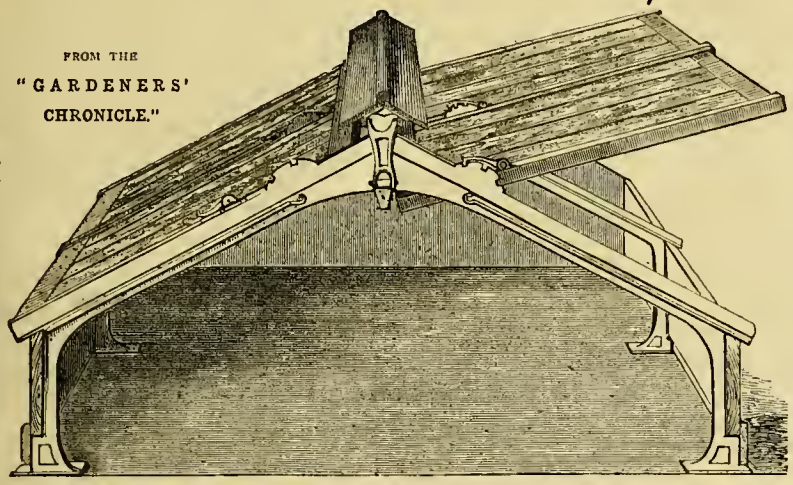


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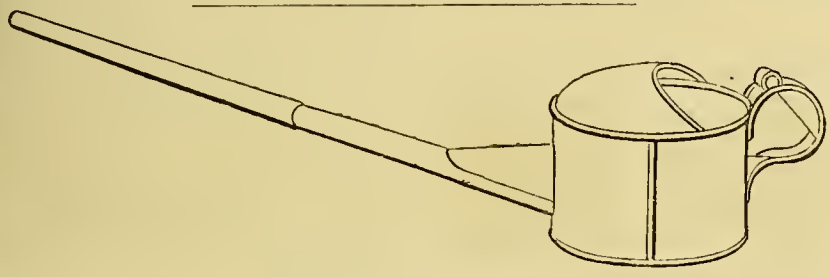

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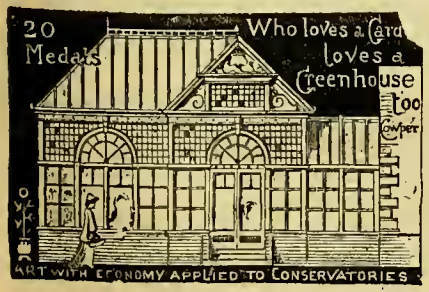


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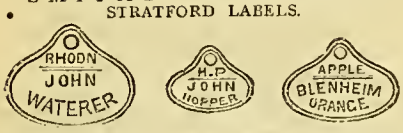


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We also adopt every possible scientific means to raise them to the highest standard of perfection and beauty, and the many First-class Certificates awarded by the highest Tribunal in the World, proves our success, and we beg to draw special attention to the following unsolicited Testimonials;—

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Mr. CHAMPION, *Black Lake Cottage, Farnham, March* 6, 1880.—"The Balsams and Solanums from your seed are looking splendid, and I think every seed must have germinated."

Mr. MATTHEWS, *Hagley, November* 26, 1880.—"Many thanks for the plants, which came to hand quite safe. I must also congratulate you on the excellent strain of Balsam I had from your seed last year, and likewise Begonia."

Mr. J. CLARKE, *Plough Road, Wellington, Salop*, 1880.—"It is with pleasure I again write for one of your Catalogues. Your seeds last year gave the greatest satisfaction; the Asters produced flowers which secured first honours at Shrewsbury, French Marigolds were grand specimens, and the Hollyhocks most beautifully double."

Mr. OXFORD, *Stud Hill, Harrietsham, Maidstone, March*, 1880.—"I send you a Seedling Auricula from a packet of your seed, which is in 60's. I can hardly imagine what the size would be grown in larger pots, it is now marvellous."

Mr. REID, *The Gardens, Norbury Hall, Ashbourne, August* 7, 1880.—"The Calceolarias I had from you were really magnificent, by far the best strain I have ever seen."

Mr. COLE, *Fairfield, October* 7, 1880.—"I wish to inform you that the Perfection Aster Seed I had from you is now in full bloom, and the admiration of the district."

Mr. E. EADE, *Gardens, Edenthall, Penshurst*.—"The Balsams from your seed are the finest I ever saw, measuring 3 inches in diameter. My employer is well pleased."

Mr. G. BOND, *Walcot Gardens, Lydbury North, Shropshire*.—"I feel bound to tell you that, late as my Balsams were sown from your packet of seed, they have far exceeded my expectations; beautifully double, and are decidedly the best I ever saw."

Mr. C. BROWN, *Gardener, South Field House, Louth, Lincoln, February* 24, 1879.—The packet of Begonia seed I had of you last year gave me many seedlings far better than those in my named collection. One had six petals, measuring 4 inches over—the grandest I ever saw."

Mr. YEO, *Bailey Cottage, East Molesey*, 1880.—"The Cyclamen and Balsam seed you sent me has come up beautifully. I think every seed must have grown."

Mr. TREDENNICK, *Camlin Castle, Belleek, Ireland*.—"The Cineraria seed from you produced most magnificent flowers."

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Mr. WILSON, 16, *John Dalton Street, Manchester, May* 11, 1880.—"Allow me to say that the flower seeds arrived all safe, and are giving great satisfaction."

Mr. NEWCOMEN, 17, *Market Place, Warwick, June* 8, 1880.—"The Polyanthus seed has done especially well, as I have twelve dozen good plants."

Dr. W. BROWN, *The Laurels, Aldbro', Hull, January* 28, 1880.—"Your seeds gave me great satisfaction; the Mimulus were one blaze of flower all through the summer and autumn. I consider your Guide a boon to the tyro. Wishing you every success."

Mr. GIBBON, *St. Thomas' Green, Haverfordwest*.—"Allow me to inform you I took 1st prize with your Petunias and Marigolds last year—in fact the Marigolds were the best ever seen here; and two 2d prizes for Pansies from your seed."

Mr. E. YEATMAN, *The Gardens, Sunbury House, Waterford, August* 16, 1880.—"I write to inform you the Petunia seed supplied by you has turned out grand; never was there such a sight seen about here before. My border, which is 90 feet long by 5 feet wide, is one blaze of every colour imaginable."

Mr. ANDREWS, *Gardener, Burnham Overy, Norfolk, February* 2, 1880.—"The Zinnias from your seed were magnificent. People remarked they were the best they had ever seen."

Mr. ELLIS, *Gardener, Summer Hill, Pendleton, Manchester*.—"We have at the present time about 100 plants of Primulas from your seed; the colours are very fine, and some of them measure 27 inches across the plant."

Mr. LOACH, *Spring Vale, Penistone, near Sheffield*.—"I shall be glad if you will let me have the Primula seed as good as last year, as my plants now are beautiful, and have been for weeks. I got 137 plants from your 2s. 6d. packet. I am very pleased."

W. KITTO GIDDINGS, Esq., *Shaftesbury House, Calverley, near Leeds*.—"My bed of Antirrhinums last year from your seeds was delightful."

J. WILKINSON, *The Gardens, Firle Place, Lewes, November* 13, 1880.—"I am delighted with your deep bright-coloured Swanley Red Primulas; they are first-rate I can assure you. I have at the present time a grand lot out in bloom, making up a splendid show. I never did see the like for pureness of colour and eye. Every one admires them, and asks me where I procured the seed from. I will send you some blooms to judge from."

Mr. A. MACKIN, *Town Hall Buildings, Banbury*.—"The Balsam seed I had of you in the summer has turned out well. We have had some beautiful flowers."

Mr. J. EVERETT, *Wood Lane, Handsworth, Birmingham*.—"Your Hollyhock seed has turned out really beautiful double flowers."

Mr. FOSTER BERRY, *Nab Mirfield*.—"The Marigolds from your seed are coming splendid. I am more than pleased with them."

Mr. JOHN KING, *Brizlincote House, Burton-on-Trent*.—"The Asters and Marigold seed I had from you have turned out very good. I took the 1st prize last week at Burton Show with the Marigolds."

Mr. J. LITCHFIELD, *Gardener to Lord Chas. Russell, Woburn, Beds*.—"I thank you very much for sending me seeds of such good quality."

W. C. KEY, Esq., *Cypress Lodge, Walton-on-Thames*.—"The Petunia and Primula seed I had from you came up capitally, and I have, from the Primula seed, 200 nice young plants, in 60's."

Mr. J. BOX, *Carr Nursery, Doncaster*.—"The Primula seed you sent, every one has grown. I have a grand lot."

Mr. W. CORDEN, *Penistone, near Sheffield*.—"Out of the 2s. 6d. packet of Primula seed I got for my friend from you, he had 130 plants, and, at the present time, they are really magnificent. The Petunias and Balsams also turned out first-class. We had some splendid things amongst them."

CHARLES ATHERILL, *The Woodlands, Colne, Wilts, December* 14, 1880.—"The seeds I had from you gave the greatest satisfaction."

Mr. A. GAULD, *Netherurd, Dolphinton, N.B., December*, 1880.—"The Primulas and Polyanthus from seeds I had from you have proved superior to anything I have ever seen, and admired by every one who saw them. Calceolarias and Cinerarias also grand."

Mr. STEVENS, *Glamis-by-Forfar, September* 14, 1880.—"Be sure and send the Sweet William seed as good as last year. They took the 1st prize at our flower show."

Mr. GEO. ROBINSON, *Abbey Close, Bedford, September* 16, 1880.—"The Hollyhock seed came in due course, was sown at once, and there is 90 per cent. up already."

Mr. FLETCHER, *The Gardens, Moss Bank, Bolton, Lanc*.—"I had a packet of Cyclamen from you about this time last year, and I now (October 27) have a splendid lot of plants in bloom some carry forty to fifty flowers, some of the bulbs 5 inches round them. Cyclamen growing is only in its infancy. I would not have thought it possible twelve months ago. Some people will not believe the time they were sown."

Mr. KING, *Hanover Gardens, Kew, July* 12, 1880.—"Your seed have come up beautifully; it is quite a treat now-a-days to find young plants the result of sowing."

Mr. GIRLING, *Union House, Gressenhall, E. Dereham, May* 7, 1880.—"The flower seeds I had of you last year turned out very good, the flowers from which were all that could be desired, particularly the Pansies, which are now in perfection. Such fine flowers and variety of colour were never seen here before. They are the admiration of all those who have seen them."

Colonel MANSEL'S Gardener, *Meadmore, Wareham, November* 3, 1880.—"The flowers from your seed are first-rate."

Mr. GLOVER, *Hill House Gardens, Streatham, January* 22, 1881.—"I never saw anything equal to the depth of colour in your Primulas: Reds are magnificent. I do wish I could see your houseful of them. I am an old Primula grower, and should like to know how you got such a break."

S. BARLOW, Esq., *Stakehill House, Castleton, near Manchester, February* 4, 1881.—"The pink and red colours of your Primulas are simply delicious."

H. WORTHINGTON, Esq., *Glen-y-Mel, Fishguard, S. Wales, Jan.* 26, 1881.—"The Primulas from your seed gave me great satisfaction, the colours being very bright and varied. The Cinerarias were also good."

Mr. R. GILBERT, *Gardener to the Marquis of Exeter, Burghley*.—"Your two Primulas, Swanley Red and Purple, are simply magnificent. The brightness of the red variety is most telling; coupled with their floriferous character and dense foliage, which quite envelopes their pots, renders them plants for the million."

Mr. UNWIN, *Gardener, Langwith, Mansfield, January* 10, 1880.—"The Primulas and Cinerarias from your seed were very fine."

## H. CANNELL & SONS, THE HOME FOR FLOWERS, SWANLEY, KENT.


Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, February 12, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 373.—Vol. XV. { New Series. } SATURDAY, FEBRUARY 19, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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*IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.*

Now Ready, in cloth, 16s.,
*THE GARDENERS' CHRONICLE,*
Volume XIV., JULY to DECEMBER, 1880.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.
GRAND SUMMER SHOW, SATURDAY and MONDAY, July 30 and August 1.
CHRYSANTHEMUM, FRUIT, &c., TUESDAY and WEDNESDAY, November 22 and 23.
Very liberal List of Prizes. SCHEDULES will be ready by the End of the Month.
C. S. FUIDGE, Secretary.
39, York Street, Lower Avenue.

CLAY CROSS HORTICULTURAL SOCIETY.—TWENTY-FOURTH ANNUAL EXHIBITION, AUGUST 16, 1881. PRIZES, THREE HUNDRED AND FIFTY POUNDS. Schedules ready shortly.
J. STOLLARD, Secretary.
Clay Cross, near Chesterfield.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

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FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

CALCEOLARIA, Golden Gem, splendid cuttings, 25s. per 1000.
HENDER AND SONS, Nursery, Plymouth.

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THE BUSINESS will be carried on by Mrs. ELIZABETH TODMAN, Executrix.

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J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

VINE POTS.—VINE POTS.
The strongest and most durable POTS for VINES or FRUIT TREES are supplied by
JOHN MATTHEWS, Royal Pottery, Weston-super-Mare.
"References to most of the leading Firms in the Trade."

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JERUSALEM ARTICHOKES, in large or small quantities. Lowest price on application to
JAMES CARTER AND CO., 237 and 238, High Holborn, London, W.C.

To the Country Trade.
WHITE SPANISH and STRASBURG ONION.
JAMES CARTER, DUNNETT AND BEALE are prepared to quote Special Prices to their Country Friends of the above, on application.
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LAXTON'S JOHN BULL PEA, a new 3 feet, main crop, Blue-Wrinkled variety, is
The Largest and Handsomest for Exhibition,
The Best for Flavour and Quality,
The Best for a Heavy Crop,
The Best for General Cultivation.
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ROBERT PARKER begs to announce that he can supply the above-named by the dozen, 100, or 1000, in nearly 150 named varieties, from 12s. per dozen upwards. Descriptive and priced Lists forwarded to applicants.
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1881. Hardy Perennials Illustrated. 1881.
THE ABOVE NEW CATALOGUE of choice and rare Perennials will be issued in a few days, and may be had, post-free, on application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

Hardy Rhododendrons and Azaleas.
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
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LILIUM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz.; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.
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LARGE CONSIGNERS of CHOICE CUT FLOWERS, FRUITS, CUCUMBERS, &c., are requested to communicate with
WISE AND RIDES, Horticultural Agents, Tavistock Court, Covent Garden, W.C.

BUYERS wishing to avail themselves of a CHEAP OFFER of various TREES and SHRUBS should refer to large Advertisement appearing in this Paper on the 8th of last month, or see T. L. MAYOS' reduced LIST.
WANTED, strong Standard Cider and other APPLE TREES; also ASH, 3 to 4 feet.
Highfield Nursery, Hereford.

WANTED, to Purchase, 1000 MANETTI STOCKS, fit for Working.—Apply, stating price, to
E. WILSON SERPELL (late Pootey), Nurseryman and Seedsman, Plymouth.

WANTED, Seedling BRIER STOCKS, for this season's Budding, for cash. Samples and price per 1000 to
A. MOFFAT AND SON, Nurserymen, Biggleswade, Beds.

WANTED, a few thousand PARADISE STOCKS. Send particulars to
J. CHEAL AND SONS, Lowfield Nurseries, Crawley.

WANTED, a TULIP TREE, of extra size. Send price and particulars to
G. A. M., W. Gray, 19A, Change Alley, E.C.

To the Trade.
WANTED, a quantity of EUONYMUS and AUCUBAS, from 1½ to 3 feet high; likewise smaller stuff for transplanting. Send price per dozen or 100 to
W. BUNN, Florist, 5, Paignton Road, Stamford Hill, London, N.

WANTED, GLOBE and JERUSALEM ARTICHOKES. State price per dozen and cwt. to
FISHER, SON AND SIBRAY, Handsworth Nurseries, Sheffield.

WANTED, Planting SEAKALE and ASPARAGUS. Quote price per 1000 to
WM. CUTBUSH AND SON, Highgate, London, N.

WANTED, Quotations of SCHOOLMASTER, and INTERNATIONAL KIDNEY POTATOS. State price per cwt. or ton, to
WM. FELL AND CO., Seed Merchants, Hexham.

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THE QUEEN'S SEEDSMEN, and by Special Warrant to H.R.H. the PRINCE OF WALES, READING, BERKS.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

Special Offer of Onion Seed, &c. (New and Nett).
JAMES FARRAR AND CO. are prepared to make low quotations for above upon application, and also of Vegetable Marrow (long white ribbed var.).
Seed Warehouse, 36, Primrose Street, Bishopsgate, E.C.

Seeds.
CHARLES TURNER'S Descriptive Price LIST for the present season is now ready, and may be had on application.
The Royal Nurseries, Slough.

EUONYMUS EUROPÆUS.—Strong Seedlings of different ages, per 1000 or 10,000, at cheap rates. Prices by correspondence.
A. RATHKE AND SON, The Nurseries, Praust, near Danzig, Prussia.

Advice to Planters.
PLANT FROST RESISTING SHRUBS.
TREE BOX looks as fresh and green after the late severe weather as ever. A large stock of all sizes. Prices on application to,
T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

CAMELLIAS for Sale, healthy, clean grown Plants, mostly Old Double White, well set with Flower-buds, various heights, 4 to 5 feet, and bushy in proportion: 30 Plants in all. Price for the lot, £20. Can be seen at
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BULL'S grand New COLEUS; also all the best English and Continental varieties, 2s. 6d. per dozen. LEMOINE'S and DR. DENNY'S new ZONAL GERANIUMS of 1880, 12s. per dozen. Post-free for Cash.
A. HEALY, North Walsham.

To the Trade.
POTATOS.—Myatt's Prolific Early Kidney, Magnum Bonum, Champion, Early Rose. Lowest cash price per ton on application.
W. W. JOHNSON AND SON, Seed Merchants, Boston, Lincolnshire.

To the Trade.
POTATOS.—Magnum Bonum, Myatt's, Early Rose, and Victoria.
CHARLES CULLING, Pheasant Repository, Downham Market, Norfolk.

Myatt's Improved Kidney Potatos.
DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh, can offer above. Price per ton on application.
DOWNIE AND LAIRD, Seedsmen, 17, Frederick Street, Edinburgh.

SEAKALE.—SEAKALE.—SEAKALE.—Also ASPARAGUS and RHUBARB, for forcing and planting. Prices on application. Our Seed CATALOGUE is now ready, and will be forwarded free on application.
H. THORNTON AND CO., Nurserymen and Seedsmen (Dancer's Nurseries), Fulham, S.W.

## SALES BY AUCTION.

**Monday Next.**
ESTABLISHED ORCHIDS, LILIUM AURATUM, &c.

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, 2000 LILIUM AURATUM, just arrived from Japan; 400 AMARYLLIS FORMOSISSIMA, from Mexico; an assortment of hardy English-grown LILIES; extra fine bulbs of L. HUMBOLDTII, PARDALINUM, and others, from California; CALOCHORTI, CARNATIONS, PINKS, and various other ROOTS and BULBS: together with about 200 lots of choice established ORCHIDS, the property of a private gentleman, including Masdevallia Bella, Veitchii, tovarensis candida, and Harryana cœrulescens; Cattleya Dominiana, and labiata Pescatorea; Odontoglossum Edwardsii, vexillarium, Alexandræ, and Pescatorea; Lælia anceps Dawsoni, Saccolabium præmorsum, Phalænopsis amabilis, P. grandiflora, Cypripedium Druryi, C. lævigatum, and many other rare and valuable species, a large number of them in flower.
Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Important Sale of very handsome English-grown** CAMELLIAS, 2 to 3½ feet, well set with bloom-buds; choice AZALEA INDICA, GREENHOUSE PLANTS in variety, a superb assortment of 400 Standard Dwarf and Climbing ROSES, selected FRUIT TREES, HARDY SHRUBS, AMERICAN PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above, by AUCTION, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on TUESDAY, February 22, at 12 o'Clock precisely.
On view the morning of Sale. Catalogues had at the Rooms and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

**The Anchor Gardens, Knap Hill, Woking, Surrey.**

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. Jay to SELL by AUCTION, on the Premises, as above, on TUESDAY, February 22, at 12 o'Clock, 6000 LAURELS, POPLARS, &c., 3500 AUCUBA JAPONICA, 4500 HOLLIES, Standard and Dwarf ROSES, HERBACEOUS PLANTS, &c.
On view. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C.

**The Springfield Watercress and Pleasure Gardens,** 156, Wandsworth Road, S.W.
CLEARANCE SALE, Ground required for building.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises (as above), on THURSDAY, February 24, at 12 o'Clock, 1500 CLOVE CARNATIONS, 1000 ROSES, 5000 RHUBARB ROOTS, and materials of GREENHOUSE, PITS, ARBOURS, and DRINKING BARS, a FOUNTAIN, and Effects.
On view day prior. Catalogues of Auctioneers, 98, Gracechurch Street, E.C.

**8000 Lilium auratum.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, E.C., on MONDAY, February 28, 8000 LILIUM AURATUM, just received from Japan in fine condition.

**Brox Nursery, Chertsey, Surrey.**
In the High Court of Justice, Chancery Division, in the matter of the Estate of George Gray the Younger, deceased.—Gray *v.* Gray.

MR. R. WATERER (of the Firm of R. & J. Waterer & Son), the person appointed by Vice-Chancellor Sir C. Hall (the Judge to whose Court this action is attached), will SELL by AUCTION, upon the Premises, on MONDAY, February 21, and four following days, at 12 o'Clock punctually, the whole of the valuable and well-grown NURSERY STOCK, comprising about 150 lots of Mixed Ornamental Shrubs, including many fine Specimen Plants, well furnished and well rooted; 2000 Standard and Dwarf Roses, 40,000 Green and Variegated Hollies, 1 to 4 feet; 1000 Kalmia latifolia, 4000 Rhododendron ponticum, 1 to 2 feet; 10,000 do., 3 to 6 inches; 2800 Rhododendrons, to name; 300 fine do., 3 to 4 feet, well set for bloom; 200 Golden Yew, 1 to 2 feet; 3000 common do., 3500 Portugal Laurel, 6 inches to 2 feet; 10,500 common Laurel, 1 to 3 feet; 6000 caucasica do., 1 to 2 feet; 3000 Aucuba japonica, 6 inches to 2 feet (bushy plants); 500 mascula do., 3000 Cedrus Deodara, 2 to 5 feet; 5000 Wellingtonia gigantea, 1 to 4 feet; 2000 austriaca and Laricio, 2000 Silver Fir, 500 Picea Nordmanniana, 1 to 3 feet; 1500 Weymouth Pine, 3 to 5 feet; 500 Abies Douglasii, 3 to 6 feet; 2500 orientalis, 1 to 3 feet; 600 Menziesii, 2 to 5 feet; 3000 Retinospora ericoides, leptoclada, plumosa nana, 6 to 18 inches: several thousand Forest Trees, Scarlet Chestnut, common Horse Chestnut, Poplar, Mountain Ash, Sycamore, Common and Purple Beech, Spruce, from 3 to 14 feet; fine Weeping Ash and Willow, 7 to 8 feet; 2000 Fruit Stocks, consisting of Pears, Crabs, Mussel and Common Plums, a quantity of clean-grown Fruit Trees, of the most choice sorts, and true to name, comprising 3000 Standard and Pyramid Apples, Pears, Plums, and Cherries, 15,000 Maiden Apples and Pears (very strong); 2000 Paul's Double Scarlet Thorn, 2000 Berberis, japonica, Aquifolia and Darwinii; 500 Clematis in pots, to name; 300 Ivies of sorts, 3000 Deutzia gracilis, and a variety of other Stock, all well grown, well rooted, and in good condition for removal; also a very valuable powerful 6-yr. old Bay CART-HORSE, PONY, and Village CART; Two nearly New Crosskill CARTS, one with Springs and patent Axletrees; capital HARNESS, and other effects.
May be viewed seven days prior to the Sale, and Catalogues had upon the Premises; of Messrs. HEATHFIELD AND SON, Solicitors, 44, Lincoln's Inn Fields, London; of J. A. REDHEAD, Esq., Solicitor, 5, Mark Lane, London, and Chertsey; and of Messrs. R. AND J. WATERER AND SON, Auctioneers and Valuers, Chertsey, Surrey.

**Hundleby, near Spilsby, Lincolnshire.**
To NOBLEMEN, GENTLEMEN, NURSERYMEN, and OTHERS engaged in Planting.
SALE of VALUABLE NURSERY STOCK, now Growing at the Holly Nursery.

MR. R. MACKINDER, instructed by Messrs. Cole Brothers, will OFFER by PUBLIC AUCTION, on the Holly Nursery Grounds, Hundleby, on TUESDAY, February 22, at 10 o'Clock A.M., the whole of the valuable Stock of FOREST, PARK, and HEDGEROW TREES, CONIFERÆ, BORDER SHRUBS, &c.
The Auctioneer invites attention to this important Sale, the valuable Stock being sold in consequence of Messrs. Cole Brothers dissolving partnership.
May be viewed three days prior to the Sale.
Catalogues may be had of Messrs. COLE BROTHERS, Holly Nursery, Hundleby; and of the Auctioneer, Spilsby.
The Nursery is situated within half a mile of the Spilsby Station on the East Lincolnshire Line, Great Northern Railway.

**7000 Lilium auratum, just received from Japan.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, February 21, at half-past 12 o'Clock precisely, an Importation of 7000 Bulbs of LILIUM AURATUM, just received from Japan; also an Importation of rare INDIAN LILIES, including some fine Bulbs of Lilium Wallichianum and L. polyphyllum; a consignment of 2000 double ITALIAN TUBEROSES from America, 120 fine clumps of JAPANESE IRIS, just received direct from Japan; a consignment of 2000 TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, and 3000 GLADIOLI from New Jersey, &c.
On view morning of Sale, and Catalogues had.

**Roses, Fruit Trees, Shrubs, Bulbs, &c.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 23, at half-past 12 o'Clock precisely, first-class Standard and Dwarf ROSES, of sorts; Standard, Pyramid, and Dwarf-trained FRUIT TREES, Portugal and Common LAURELS, Variegated HOLLIES, RHODODENDRONS, Specimen CONIFERS, and a great variety of ORNAMENTAL FLOWERING TREES and SHRUBS, choice GLADIOLI, LILIUMS, TIGRIDIAS, and other BULBS for Spring Planting; a choice assortment of HARDY HERBACEOUS PLANTS for the open border, &c.
On view morning of Sale, and Catalogues had.

**Importation of Vanda cœrulea in very excellent** condition; also DENDROBIUM FREEMANII, JENKINSII, NOBILE, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 23, at half-past 12 o'Clock precisely, without reserve, a fine importation of the beautiful VANDA CŒRULEA; most of the plants are well furnished with good healthy foliage. The DENDROBIUM NOBILE are stated by the collector to be a very fine variety, and are from an altogether new locality.
May be viewed the morning of Sale, and Catalogues had.

**Cattleya Dowiana, Odontoglossum ramosissimum,** PILUMNA NOBILIS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 24, at half-past 12 o'Clock precisely, by direction of Mr. F. Sander, of St. Albans, a grand lot of CATTLEYA DOWIANA: the plants are in splendid health, with sound eyes and leaves; also the finest lot yet offered of ODONTOGLOSSUM RAMOSISSIMUM, the white variety, and a truly superb Orchid (see flowers, drawing, and spikes); also grand masses of the pure white large-flowering PILUMNA NOBILIS, collected by Mr. F. C. Lehmann; also the white-lipped variety of ODONTOGLOSSUM HALLI, O. NÆVIUM, and O. PESCATORIA; MESOSPINIDIUM VULCANICUM, a splendid and very large lot of CATTLEYA MOSSIÆ varieties, two new MAXILLARIAS; together with a grand lot of the beautiful ONCIDIUM AMPLIATUM MAJUS in large-bulbed masses, and other ORCHIDS.
On view morning of Sale, and Catalogues had.

**Hardy Plants and Bulbs.**—(Sale No. 5803.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY NEXT, February 26, at half-past 12 o'clock precisely, a splendid assortment of Standard, Half-Standard, Dwarf, Climbing, and Pillar ROSES, from the Nurseries of one of the most renowned growers of the day; also some excellent Standard, Dwarf, Pyramidal, and Espalier FRUIT TREES, a useful lot of well grown Shrubs, GLADIOLI, LILIUMS, TIGRIDIAS, &c., in lots to suit the convenience of buyers.
On view morning of Sale, and Catalogues had.

**Choice Imported Orchids from the Philippine** ISLANDS and VENEZUELA.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 3, at half-past 12 o'Clock precisely, by order of Messrs. H. Low & Co., Imported ORCHIDS from the Philippine Islands, consisting of Vanda lamellata Boxallii, amongst them splendid masses; Cypripedium lævigatum, in the best possible condition, many of them fine masses; fine specimens of Aerides quinquevulnerum, true Saccolabium violaceum, Vanda Batemanii; also from Venezuela fine specimen Cattleya Mossiæ, C. speciosissima, and Masdevallia tovarensis, good plants with healthy foliage, amongst them some fine specimens. At the same time will be offered good plants of Cypripedium Laurenceana, Dendrobium Lowii, and other choice Orchids.
May be viewed the morning of Sale, and Catalogues had.

**Odontoglossum Oerstedi.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 10, a fine importation of this remarkable ODONTOGLOSSUM. For figure see *Gardeners' Chronicle*, June 30, 1877. Further particulars in later Advertisement.
On view morning of Sale, and Catalogues had.

**The renowned Collection of Orchids of** JOHN DAY, Esq., of TOTTENHAM.

MR. J. C. STEVENS has received instructions from J. Day, Esq., to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without the slightest reserve, during the ensuing spring months, his entire COLLECTION of ORCHIDS. This Collection, which is one of the finest in the country, contains well-grown specimens of almost every species and variety worth growing. The following are the days of Sale:—

| | |
|---|---|
| THURSDAY, March 31 | THURSDAY, May 5 |
| FRIDAY, April 1 | MONDAY, May 23 |
| TUESDAY, April 12 | TUESDAY, May 24 |
| WEDNESDAY, April 13 | THURSDAY, June 9 |
| WEDNESDAY, May 4 | FRIDAY, June 10 |

Further particulars will appear prior to each Sale, and Catalogues will be ready about ten days before. The plants will be on view on the morning of each Sale, but cannot be viewed on the premises without a special order from Mr. J. C. STEVENS. To avoid any risk to the plants, they will be brought to King Street on the afternoon prior to each Sale, and when necessary the rooms will be heated.

**Flowering Orchids.**

MR. J. C. STEVENS will hold a SPECIAL SALE of FLOWERING ORCHIDS on FRIDAY, March 11, and will be glad of ENTRIES NOT LATER than TUESDAY, March 1. All plants entered in this Sale must be either in Bud or Flower.
Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

TO BE LET, with Immediate Possession, SEEDSMAN'S SHOP, HOUSE, and nearly an Acre of NURSERY GROUND, at Hemel Hempstead, within five minutes' walk of the Market Place. Rent, £42.
For terms apply to ROBINSON, Estate Agent, Hemel Hempstead, N.W.

**To Fruiterers and Market Gardeners.**

TO BE LET on Lease, or Sold, 30 ACRES of LAND, recently planted with the best kinds of Market Fruit Trees, Apples, Pears, Plums, Cherries, Nuts, Gooseberries, and Currants. Distance 28 miles from London, on the Great Western Railway, and half a mile from a station.
Further particulars to be had from GEORGE DAVISON, Brampton House, Marlow, Bucks.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

STRAWBERRIES IN POTS.
Crop at once.
Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.
H. CANNELL, Swanley, Kent.

ORCHIDS.—The largest stock in Europe. Thousands of these beautiful Plants to select from, at 10s. 6d., 15s., and 21s. each, at
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

**To the Trade.—Clearance of Building Land.**

ASPARAGUS PLANTS, 1-yr., 2-yr., 4-yr., also 9-yr. (extra good forcing). RHUBARB, Linnæus, Stott's Monarch, Johnston's St. Martins, and Ruby, a splendid colour throughout.
FREEMAN AND FREEMAN, Norwich.

CABBAGE PLANTS for SALE, by the rod or acre. Selected stocks, growing on the noted Elms Farm, Barnes, Surrey. Also Early Don, Scotch Regents, Scotch Champion, POTATO SEED.

ASH.—Good plants, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet, offered to the Trade, or private buyers, on reasonable terms, by
J. CHEAL AND SONS, Lowfield Nurseries, Crawley.

LARCH.—Twice transplanted, grand stuff, 2 to 3 feet.
WILLIAM IRELAND, Pilton Nurseries, Barnstaple.

**Extra Strong Vines.**

FRANCIS & ARTHUR DICKSON & SONS offer as above, splendid well ripened, short-jointed Canes, both Fruiting and Planting sizes, raised without bottom-heat, and thoroughly clean and healthy. Priced LIST, including all the best varieties, on application.
The "UPTON" Nurseries—Chester.

**Richardia hastata (the Yellow Calla).**

HOOPER AND CO. are now offering this exquisitely beautiful Plant at 18s. per dozen, 2s. each.
Covent Garden, London, W.C.

**Seedling Thorns and other Forest Trees, Hardy** CONIFERS and SHRUBS, CHEAP.

MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

**To the Trade.**

ACER NEGUNDO.—Stocks, fine, 3 to 4 feet, 4s. per 100; 4 to 5 feet, 6s. per 100, or 40s. per 1000; 7 to 8 feet, straight, 8s. per 100, 60s. per 1000.
THORN QUICK, transplanted, fine, 2½ to 3 feet, 20s. per 1000.
W. C. SLOCOCK, Goldsworth "Old" Nursery, Woking.

QUICKS, extra strong, 4 and 5-yr. old, fine 17s. per 1000; LAURELS, bushy, 1½ to 2 feet, 80s. per 1000; PEAR STOCKS, fit to graft, strong, 30s. per 1000; HOLLY, bushy, 1 to 2 feet, 25s. per 100.
W. JACKSON, Blakedown, near Kidderminster.

BLOOMING RHODODENDRONS.—Fine healthy plants of the best varieties, covered with Bloom-buds, 3 to 5 feet high. An inspection solicited. CATALOGUE free on application.
H. LANE AND SON, The Nurseries, Berkhamsted, Herts.

SEED POTATOS
GRAMPIANS, Robertson's true stock, 20 tons, £6 10s. per ton.
CHAMPIONS, true Scotch, 25 tons, at £3 15s. per ton
PRINCE ARTHUR KIDNEY, 15 cwt., at 11s. p. cwt.
RIVERS' ROYAL ASHLEAF KIDNEY, 5 tons, £6 10s. per ton.
And other leading sorts. Prices on application.
THOMAS IMRIE AND SONS, Nurserymen and Seedsmen, Ayr, N.B.

B. S. WILLIAMS begs to intimate that in the event of any of his Customers not receiving his ILLUSTRATED CATALOGUE, if they will kindly communicate with him, a Copy will be sent.
Seed Merchant and Nurseryman, Upper Holloway, London, N.

KENTISH FRUIT TREES.—One of the largest stocks in the county, comprising Standard Pyramid and Trained CHERRIES, APPLES, PEARS, and PLUMS, in 300 varieties, at from 60s. to 100 per 100. GOOSEBERRIES and CURRANTS, KENTISH COBS, RASPBERRY CANES, &c., at very low prices.
T. EVES, Gravesend Nurseries.—Established 1810.

WILLIAMS' for GARDEN and FLOWER SEEDS and HORTICULTURAL SUNDRIES.

WILLIAMS' NURSERIES are at all times worthy of a visit from all lovers of plants.

WILLIAMS' PLANT HOUSES are constructed both for convenience and comfort, and Parties about Constructing and Furnishing Conservatories, Stoves, &c., will do well to pay a visit to these Nurseries, where any advice will be gladly given.

WILLIAMS' for all kinds of FLOWERING STOVE and GREENHOUSE PLANTS. Specimens a speciality.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

**To the Trade.**

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are now prepared to make special offers to the Trade of their fine selected stocks of GARDEN and FIELD SEEDS of 1880 growth, carefully grown on their own Farms, and of the finest quality.
Seed Growing Establishment, Wisbech.

SPECIAL CHEAP OFFER of THORN QUICKS.
Having to Clear a Portion of Ground we offer large quantities of strong and extra strong Thorn Quicks at considerable reduction. Prices on application to
JOSEPH TREMBLE AND SONS, Victoria and The Castle Nurseries, Penrith.

RASPBERRY CANES.—100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30*s.* per 1000; samples of 100 for 4*s.*, free in London, no change of rail. Also 100,000 FASTOLF, price 10*s.* per 1000; samples of 200 for 2*s.* 6*d.* free on rail, sent to any station in Great Britain. Payments to accompany order. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to
A. AND E. BATH, Colgates Farm, Sevenoaks, Kent.

CABBAGE PLANTS, very strong autumn-sown Early Enfield, Rainham, Robinson's Drumhead, Russell's (true) Thousand-head, &c., at 3*s.* per 1000 (1200), 25*s.* per 10,000 (12,000).
N.B. Plants warranted free from club-root, grown on strong soil from best seed stocks. Low quotations for very large quantities. Descriptive LIST and testimonials on application.
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.
Strong HOLLY, 9 to 12 inches high, 12*s.* per 100.
Strong HAWTHORN QUICK, 25*s.* to 30*s.* per 1000.
RICHARD SMITH AND CO., Nurserymen, Worcester.

WORMLEIGHTON'S SEEDLING.—This splendid new variety of Potato obtained the First Prize, as the best Seedling Potato not in Commerce, at the Great International Potato Show, held at the Crystal Palace, in September last. Price 2*s.* 6*d.* per pound, 7 lb. 15*s.* 100 other choice kinds in stock.
DANIELS BROS., The Queen's Seedsmen, Norwich.

**Illustrated Catalogue of Ferns.**

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

WILTSHIRE SNOWFLAKE.—A splendid new Seedling Potato, raised by Mr. Jas. Lye, Clyff Hall, Market Lavington; it obtained First-class Certificate at Devizes in November last, and reported by the Royal Horticultural Society as a most promising variety: *vide Gardeners' Chronicle*, November 20, 1880. Price 1*s.* per pound, 7 lb. 6*s.* 100 other choice kinds in stock.
DANIELS BROS., Seed Merchants, Norwich.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**New Catalogue.**

WILLIAM BARRON AND SON'S New Descriptive CATALOGUE of Coniferæ, Hardy Ornamental Trees, and General Nursery Stock, may now be had on application. A personal inspection of their unrivalled Stock solicited. The Nurseries are three minutes' walk from the Borrowash Station on the Midland (Derby and Nottingham) Railway.
Elvaston Nurseries, Borrowash, Derby.

**Special Spring List, No. 50.**

THE NEW PLANT AND BULB COMPANY beg respectfully to invite attention to the above.
CONTENTS:—Beautiful BULBOUS and OTHER PLANTS suitable for Present Planting for Summer and Autumn Flowering, in Open Ground, or Conservatory Decoration, &c. Post-free on application.
Lion Walk, Colchester.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 3½ feet.
SCOTCH, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted.
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

# ARTHUR VEITCH MEMORIAL

A Fund, to be called the "ARTHUR VEITCH MEMORIAL FUND," the proceeds to be dispensed through the GARDENERS' ROYAL BENEVOLENT INSTITUTION, for the benefit of aged and infirm GARDENERS, or their WIDOWS.

This movement having met with the warm approval of the leading Horticulturists in the United Kingdom, the Committee beg to direct the attention of Intending Subscribers to the List of Hon. Collectors for the Fund advertised in the *Gardeners' Chronicle* of February 5.

Subscriptions (not to exceed One Guinea from Head, or Half a Guinea from Under Gardeners) are respectfully solicited from all classes of Horticulturists.

The Fund will be open Three Months, and when closed each Donor will receive a Subscription List, showing the amount given by each Subscriber.

| | |
|---|---|
| Hon. Treasurer. | J. ROBERTS, The Gardens, Gunnersbury Park, Acton, W. |
| Hon. Secretaries. | W. WILDSMITH, Heckfield Gardens, Winchfield, Hants. |
| | J. HUDSON, The Gardens, Gunnersbury House, Acton, W. |
| | J. AUSTEN, The Gardens, Ashton Court, Bristol. |

RICHARDIA HASTATA (the yellow CALLA).
We hold a fine Stock of this rare and elegant plant. See Coloured Plate and Description in the *Garden*, No. 473.
Price, 3*s.* 6*d.* each.
JOSEPH TREMBLE AND SONS, Victoria and The Castle Nurseries, Penrith.

**To the Trade—Broad Beans.**

H. AND F. SHARPE have very fine samples of Green and White Windsor, Monarch Longpod, Green and White Longpod BEANS, to dispose of at very reasonable prices, either picked or unpicked. Samples on application.
Seed Growing Establishment, Wisbech.

**Grapes this Year.**

FRUITING CANES, thoroughly ripened without bottom-heat, 7*s.* 6*d.* to 10*s.* 6*d.* each. PLANTING CANES, 3*s.* 6*d.* to 5*s.* each. Leading kinds.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Samples and Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12*s.* per dozen; other varieties, 15*s.*, 18*s.*, and 24*s.* per dozen.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

R. AND G. NEAL have to offer fine Dwarf-trained APPLES, PLUMS, and MORELLO CHERRIES; also 1-yr. ASPARAGUS. Price on application at
The Nurseries, Wandsworth Common, S.W.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts, have a large and fine stock of Pyramid and Standard FRUIT TREES, of which a Descriptive CATALOGUE will be forwarded on application.

CLAYWORTH PRIDE CELERY has proved to be the hardiest and best in cultivation. It blanches very readily, and will stand the frost and wet better than any other variety. In packets, 13 stamps; per ounce, 5*s.*
R. OGLEY, Clayworth, Bawtry, Yorkshire.

AZALEA INDICA, with buds.—A large stock of the above still on hand, which can be supplied at a very moderate price.
JULES DE COCK, The Ornamental Plant Nurseries, Ghent, Belgium.

DREADNOUGHT CUCUMBER.—We have grown this variety very extensively for Market, and still find it the best paying sort, and is certainly the finest Black Spine Cucumber grown, making 20 per cent. more than Tender and True, which is the best smooth sort. 1*s.* per packet (7 Seeds); cheaper in large quantities.
POPE AND SONS, 120, 121, 122, Market Hall, Birmingham.

**Seventh Year of Distribution.**

TELEGRAPH CUCUMBER (Warranted), 18 Seeds, 1*s.*; 7 Seeds, 6*d.*, post-free. The Seed has been collected from handsome, well-grown fruit. Price per ounce on application.
R. W. BEEDELL, The Nurseries, Wallington, Surrey.

**Cœlogyne cristata.**

R. S. YATES' unequalled stock of the above lovely cool-growing ORCHID, of easy culture, is now in splendid bloom, which he is cutting daily in spikes of from four to seven flowers on each. They will carry to any distance. R. S. YATES offers plants from 1 to 20 guineas each, or upwards, for cash only.
24, Corporation Street, Manchester, and Sale Cheshire.—Feb. 8.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
,, Golden, many thousands, 3, 4, 5 to 10 feet high.
,, Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
,, laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
,, Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
,, Golden Queen, 4, 5, 6 to 10 feet high.
,, Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
,, ,, ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
,, DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
,, SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

APPLE TREES with MISTLETO growing on them. Price from 7*s.* 6*d.* to 21*s.* each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

KING NOBLE or EARLY GOLDEN SHAW; the best early Potato of its class, being as early as the true old Ashleaf, and as fine a flavour, but produces four to six times the quantity. Dwarf and compact habit. First-class for early work. Per peck, 4*s.*; per bushel, 14*s.* 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet.
CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

WHITE ELEPHANT.—A choice new American Potato, of very great promise, raised from the same seed-ball as the Beauty of Hebron, which it resembles in many respects, but more productive; in fact, we may claim that the White Elephant not only possesses the unexcelled qualities of the Beauty of Hebron, but also the wonderful productiveness of the old California of twenty years ago. Price 1*s.* 3*d.* per pound, 7 lb. 7*s.* 100 other choice kinds in stock.
DANIELS BROS., Seed Farmers, Norwich.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8*s.* per dozen, 50*s.* per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

JOHNSTON'S DOWNSHIRES.—We can now supply this fine variety, 3*s.* 6*d.* per peck, or 10*s.* 6*d.* per bushel. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

**Gold Medal Begonias.**

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 1*s.* and 2*s.* 6*d.* each. All first quality. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

RASPBERRY CANES and STRAWBERRY PLANTS.
For Sale, in large or small quantities, the undermentioned very best varieties:—

| RASPBERRIES. | STRAWBERRIES. |
|---|---|
| Carter's Prolific. | President. |
| Northumberland Fillbasket. | Sir Joseph Paxton. |
| Red Antwerp. | Aigburth. |
| Semper Fidelis. | Elton Pine. |
| Fastolf. | Eleanor. |

Apply to JOSIAH H. BATH, Manor Farm, North Cray, Kent.

**THE LARGEST ROSE GARDENS IN ENGLAND.**

## CRANSTON'S NURSERIES.

(ESTABLISHED 1785.)

*New Rose Catalogue for* 1880-81,

now ready and may be had post-free on application.

**Awarded over 60 First Prizes for Rose Blooms this season.**

CRANSTON'S NURSERY and SEED CO. (LIMITED), King's Acre, Hereford.

**TO THE TRADE.—SPECIAL OFFER.**
**VINES—VINES—VINES.**

W. G. CALDWELL AND SONS can still supply strong FRUITING CANES of the following varieties, at 4s. 6d. each; Planting Canes, 3s. each:—

Alowick Seedling, Black Humburgh, Duke of Buccleuch, Gros Colmar, | Foster's Seedling, Lady Downe's, Madresfield Court, Trebbiano,

The Nurseries, Knutsford, Cheshire.

## AIGBURTH BRUSSELS SPROUTS.

*The Best Flavoured, Hardiest, and Most Productive Variety in Cultivation.*

**In use from October to March.**

This is the only variety which has withstood the recent severe weather; it has been tested by the most practical Gardeners, and pronounced the best sort in cultivation. The Royal Horticultural Society's trials of Brussels Sprouts at Chiswick also placed the "Aigburth" variety in the place of honour—1st. The *Gardeners' Chronicle* remarks in leading article, January 29, p. 136, "The trial of Brussels Sprouts at Chiswick served to show the decided superiority of certain stocks in a remarkable manner: the best were the 'Aigburth.'"

*In Sealed Packets only, post-free, 1s. each.*

**ROBERT P. KER & SONS,**
BASNETT STREET, LIVERPOOL.

Contractor to Her Majesty's Government. — By appointment to H.R.H. Prince of Wales.

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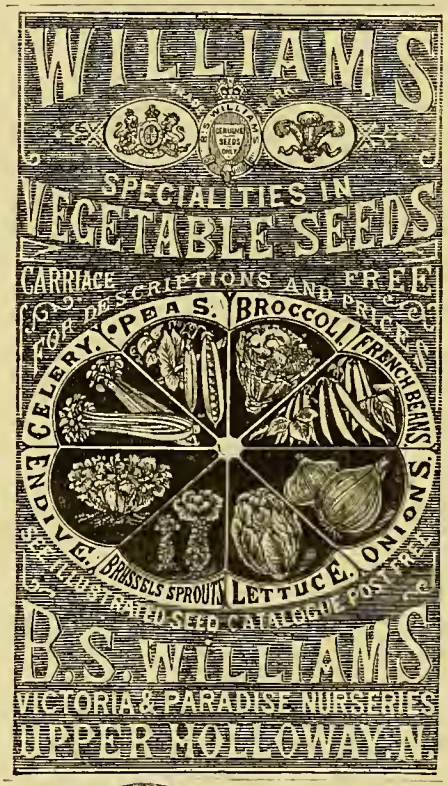


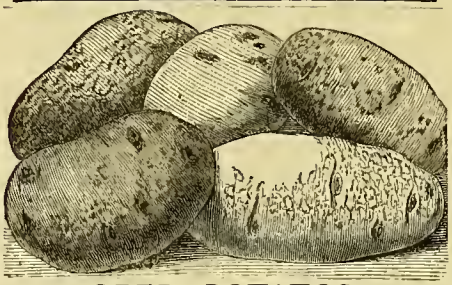

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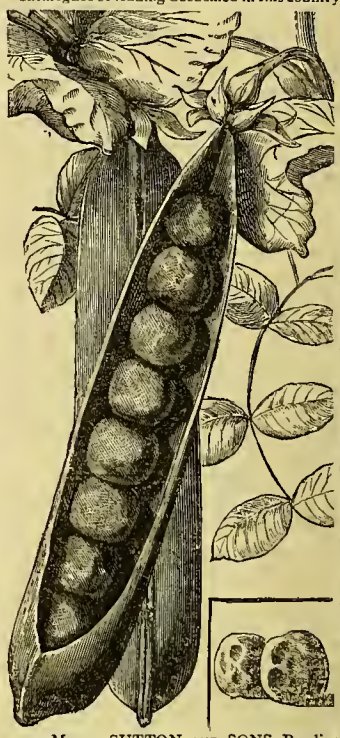

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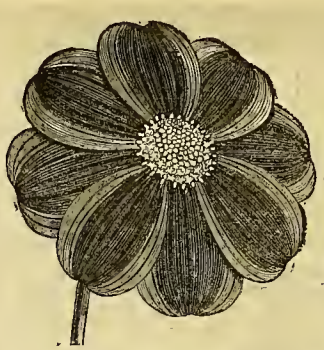

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All the above have been figured, full size, in the *Gardeners' Chronicle* and other horticultural journals. For culture and other particulars, see H. C. & Sons' FLORAL GUIDE, sent, post-free, for 12 Stamps.

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EVERY ONE who visited Swanley knows that we have every good Coleus, no matter the distance or price they cost, and they also know that we discard every second-rate one, and offer only those which we are sure will give satisfaction. The colours of the new ones are very brilliant. Cuttings each of the 24 picked kinds, post-free, for 5s.

Also the same with VERBENAS, our collection of which has been awarded several medals. 24 for 5s., post-free.

**Calceolarias (Spotted).**

ALL from our best strain. Established Plants in 60's, 2s. 6d. per dozen, 18s. per 100. Small plants 1s. 6d. per dozen, 10s. per 100, post-free.

THE HOME FOR FLOWERS SWANLEY KENT.

**Special Offer.**

FREDK. GEE begs to offer, for cash, the undermentioned superior Bedfordshire grown SEEDS—POTATOS, CABBAGE, and other PLANTS, ROOTS, &c. Although the late severe weather has made sad havoc amongst various Plants, &c.—in many instances half of them being killed—F. GEE has a large quantity of fine Plants left, and will supply them at the following reasonable prices, for early orders accompanied with cash.
All the Standard varieties of CABBAGE, grown from his far-famed stocks, at 3s. per 1000 (of 1200); Red Picklers, fine, at 5s. per 1000. [7s. 6d. per 1000.
LETTUCE Plants, Hardy Green and others (scarce), 1s. per 100,
SAVOY, Large Drumhead, and finest BRUSSELS SPROUTS, at 3s. per 1000. [4s. per 100.
CAULIFLOWERS, fine Plants, Veitch's Giant and others,
PRICKLY COMFREY, true Caucasian, crown sets, 2s. 6d. per 100, 20s. per 1000.
POTATOS, very fine, grown on new land, recommended to those who require a change of seed (at per peck of 14 lb., and per bushel of 56 lb.):—
,, Early Ashleaf (true), 2s. per peck, 7s. per bushel.
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,, Myatt's Prolific, very fine, 1s. 6d. per peck, 5s. per bushel.
,, New Early Beauty of Hebron, and Burbank Seedling, can be highly recommended, 1s. 6d. per peck, 5s. per bushel.
,, Sutton's Magnum Bonum, very fine, true stock, 1s. 6d. per peck, 5s. per bushel. [4s. per bushel.
" Scotch Champion, very fine and true, 1s. 3d. per peck,
Bags to hold 2 bushels charged 6d. each; other packages charged lowest prices. Special prices for very large quantities may be had on application; also Trade offers.
Many other kinds can be supplied cheap and good.
Cheap Early SPRING FLOWERING ROOTS, such as DAISIES, WALLFLOWERS, PYRETHRUMS, CARNATIONS, PICOTEES, &c. See CATALOGUE.
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CUCUMBER, ROLLISSON'S TELEGRAPH IMPROVED.—This strain is, without exception, the finest variety of Telegraph extant. The seed has all been saved from handsome well-grown fruit. Per packet, 1s. Price to the Trade on application.
EDMUND PHILIP DIXON, Seed Grower, Hull.

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HIRAM SHAW, Richmond Hill Nursery, and 14, Broad Street Park, Sheffield.

YEWS, English, 3 feet; CUPRESSUS LAWSONIANA, 3 feet; LIGUSTRUM OVALIFOLIUM, 2 feet and 3 feet; BEECH, 3 feet; SPRUCE, 2 to 3 feet; and Dwarf ROSES. A large quantity to offer from ground which must be cleared this season.
GEORGE SWAILES, The Nurseries, Beverley, Yorkshire.

# CATTLEYA DOWIANA, ODONTOGLOSSUM RAMOSISSIMUM, PILUMNA NOBILIS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 24, at half-past 12 o'Clock precisely, by direction of Mr. F. SANDER, of St. Alban's, a grand lot of CATTLEYA DOWIANA; the Plants are in splendid health, with sound eyes and leaves. Also the finest lot yet offered of ODONTOGLOSSUM RAMOSISSIMUM—the white variety, and truly superb Orchid; see Flowers, Drawing, and Spikes. Also grand masses of the pure white large-flowering PILUMNA NOBILIS, collected by Mr. F. C. LEHMANN. Also the white-lipped variety of ODONTOGLOSSUM HALLII, NÆVIUM, and PESCATORIA; MESOSPINIDIUM VULCANIUM; a splendid and very large lot of CATTLEYA MOSSIÆ varieties, two new MAXILLARIAS; together with a grand lot of the beautiful ONCIDIUM AMPLIATUM MAJUS, in large-bulbed masses; and other Orchids.

*On view morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

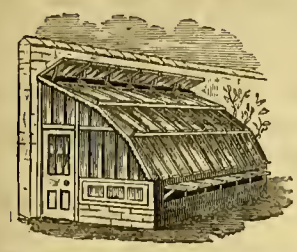
# ODONTOGLOSSUM ŒRSTEDI.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 10, a fine importation of this remarkable ODONTOGLOSSUM For figure see *Gardeners' Chronicle*, June 30, 1877. Further particulars in later advertisement.

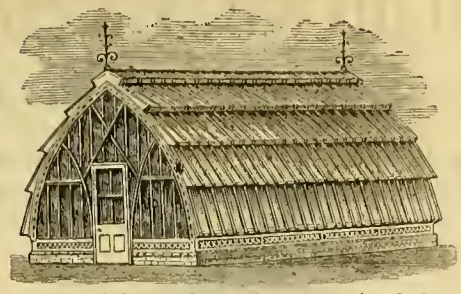
*On view morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

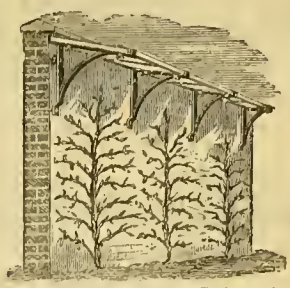
# WRIGHT & HOLMES, PRACTICAL HORTICULTURAL BUILDERS and ENGINEERS,



Improved Cranston's, suitable for Peach-house, 9 feet wide.



Cranston's Patent, glazed without putty; glass fixed with brass screws.



W. & H.'s Patent Portable Glass Coping, 2 feet wide. Price, 3s. per foot run.

FURTHER PARTICULARS ON APPLICATION.

333, MOSELEY ROAD, BIRMINGHAM.

# THE GENERAL HORTICULTURAL COMPANY

(JOHN WILLS), LIMITED,

BEG TO ANNOUNCE THAT THEIR

## DESCRIPTIVE PRICED CATALOGUE

OF

## VEGETABLE, FLOWER, AND AGRICULTURAL SEEDS,

GARDEN IMPLEMENTS and REQUISITES, FRUIT TREES, ROSES, &c., for 1881,

*Is now published, and will be forwarded, post-free, on application.*

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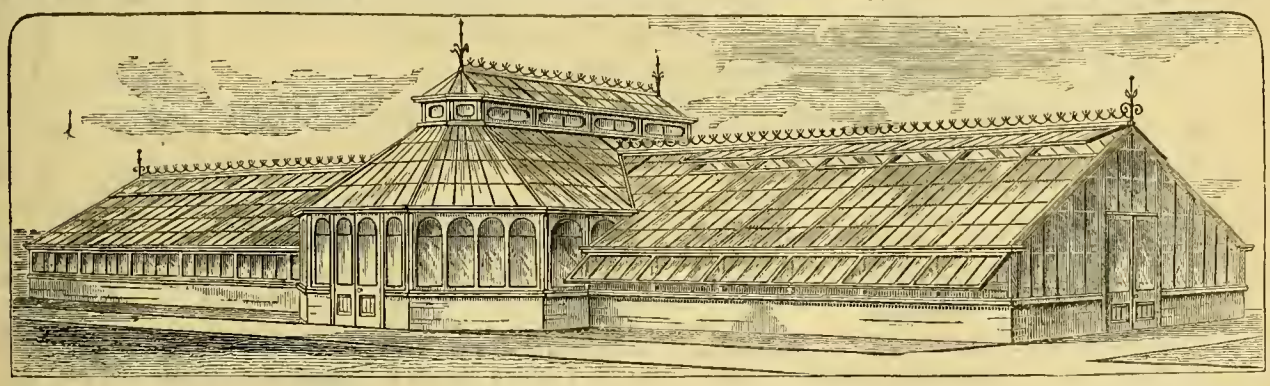

At the Grand Show at Preston, July, 1878, Out of Fourteen Competitors.

Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price*. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.

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**Plans, Estimates, and Catalogues free. Customers waited on in any part of the Kingdom.**

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# THE BEST AND MOST DISTINCT NEW PEA.

## SEASON, 1881.

THE

### Earliest Wrinkled Pea

**Yet Introduced.**

We have the pleasure of introducing to the English public this New and perfectly distinct Wrinkled Pea, feeling convinced, after a most careful trial, that it will prove to be not only the earliest Dwarf Wrinkled Pea, but that for quickness of growth, productiveness, and flavour it is unequalled by any other early variety. It is the result of a cross between those two popular varieties Little Gem and Champion of England, and in productiveness to Little Gem. It grows from 8 to 10 inches in height, comes ready for table in five weeks from the date of planting, and is invaluable for forcing under glass or for early sowings in the garden. The great want hitherto has been a Wrinkled Pea which will occupy but little space, and come in as quickly as the first early round white varieties. This Pea remedies that want, and it has only to be tried to ensure general cultivation. It was introduced in America two years ago by Messrs. B. K. Bliss & Sons, the eminent seedsmen, of New York, from whom we have purchased the entire stock which will be sent by them to England this season.

### CAUTION.

**Sutton & Sons are the only English House to whom a Consignment of this New Pea has been sent for sale by the Raisers, Messrs. B. K. Bliss & Sons, of New York. Every package will bear Messrs. Sutton's REGISTERED TRADE MARK.**

**Invaluable for Forcing.**

**Unsurpassed for First Early Crop.**

GOOD SEEDS Suttons CARRIAGE FREE TRADE MARK REGISTERED

TRADE MARK.

**PRICE.**

¼ Pint .. .. .. 1s. 6d.
½ Pint .. .. .. 2s. 6d.

**PRICE.**

8s. 6d. per Quart.

### TESTIMONIALS.

"*New South Wales,*
"*May* 21, 1879.

"I exhibited at the late Intercolonial Exhibition in Sydney Bliss' American Wonder Pea, and they received a Special Diploma, being highly esteemed on account of their quality and earliness, so that they have quite eclipsed the best English varieties tested against them, and the product of the seed is grand in size and quality.—A. A. DUNNICLIFF."

*In alluding to the above the "Sydney Morning Herald" of April 22 adds:*—"Among vegetables specially worthy of note was Bliss' American Wonder Pea, shown for the first time. It is remarkable for the rapidity of its growth, as it is ordinarily ready for the table in thirty-three days from the time of planting. Mr. Dunnicliff had three crops since September last."

### NOTICE.

**NOTICE.—Messrs. SUTTON'S NOVELTIES are subjected to careful Test Trials, and all those offered this season are of sterling merit and perfectly distinct.**

**AMERICAN WONDER PEA. (Bliss.)**

## SUTTON'S COLLECTIONS OF VEGETABLE SEEDS,

**For One Year's Supply.**

| | | |
|---|---|---|
| For £10 10 0<br>For 5 5 0<br>For 3 3 0 | THE BEST and CHOICEST for LARGE GARDENS. Carriage free to any Railway Station in England or Wales, and to any Scotch or Irish Port. | For £10 10 0<br>For 5 5 0<br>For 3 3 0 |
| For £2 2 0<br>For 1 11 6 | THE BEST and CHOICEST for MODERATE-SIZED GARDENS. Carriage Free to any Railway Station in England or Wales. | For £2 2 0<br>For 1 11 6 |
| For £1 1 0 | THE BEST and CHOICEST for the AMATEUR'S GARDEN. Carriage Free to any Railway Station in England. | For £1 1 0 |

*Full particulars as to the Contents of the above Collections gratis and post-free on application.*

The Queen's Seedsmen,
READING, BERKS.

Suttons Sons

Seedsmen to the Prince of Wales
(*By Special Warrant*),
READING, BERKS.

POST OR CARRIAGE FREE.

# FLORAL NOVELTIES
## FOR SPRING, 1881.

| | Per packet—s. | d. |
|---|---|---|
| AGAPANTHUS umbellatus candicus... | 2 | 6 |
| ANTIRRHINUM nanum picturatum... | 1 | 6 |
| BEGONIA hybrida gigantea ... ... | 2 | 6 |
| GODETIA Whitneyi, new spotted ... | 1 | 6 |
| ESCHSCHOLTZIA californica alba fl. pl. | 1 | 6 |
| ESCHSCHOLTZIA carminea ... ... | 1 | 6 |
| MIGNONETTE, new Golden Queen ... | 1 | 6 |
| PANSY, Snow Queen ... ... ... | 1 | 6 |
| PRIMULA alba magnifica ... ... | 5 | 0 |
| PRIMULA, Chiswick Red ... ... | 5 | 0 |
| PRIMULA rubro-violacea ... ... | 5 | 0 |
| PYRETHRUM aureum selaginoides ... | 2 | 6 |
| SENECIO SPECIOSUS ... ... | 2 | 6 |

**GODETIA, LADY ALBEMARLE.**
*Splendid Magenta-crimson Flowers.*
**Per packet, 6d. and 1s.**

## Our Half-Guinea Collection contains :—

6 Choice varieties Pæony Aster
6 ,, ,, Dwarf German Ten-week Stock
4 ,, ,, New Double Zinnia elegans
6 Choice Half-hardy Annuals for Bedding-out, including Phlox, Marigold, Lobelia, &c.
12 Choice Hardy Annuals, the most useful and showy kinds, including Nemophila, Sweet Pea, Tom Thumb Nasturtium, Viscaria, &c.
4 Choice varieties Everlasting Flowers } For Winter Bouquets
2 Choice Ornamental Grasses } For Winter Bouquets
1 Packet Camellia-flowered Balsam
1 ,, Petunia, Choice Mixed
1 ,, Portulaca, Fine Double
1 ,, Verbena, Choice Mixed
½ Ounce Mignonette
1 ,, Mixed Annual Flower Seeds.

*Other Collections of Choice Flower Seeds* 5s., 7s. 6d., 15s., 21s., *and* 31s. 6d. *each.*

From J. E. Denniston, Esq.—"The Collection of Flower Seeds I had from you last year turned out a most satisfactory investment—everything doing well. The Stocks, Phlox Drummondi, and Asters were very fine. I was specially pleased with the Balsams, which were much admired."

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# NEW PRIMULAS FOR 1881.
*POST-FREE.*

**Williams' Primula sinensis fimbriata alba MAGNIFICA.**
(Raised by Messrs. J. & J. HAYES, Edmonton; purchased by B. S. WILLIAMS.)
The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.
**Per Packet, 5s.**

**Williams' Primula sinensis fimbriata CHISWICK RED.**
This is best described as the most brilliant crimson-scarlet Primula yet sent out, with habit as robust as "Alba Magnifica," the foliage very finely cut and deep green. Sold only in sealed packets bearing my trade mark.
**Per Packet, 5s.**

**Williams' Primula sinensis fimbriata RUBRO VIOLACEA**
Is a remarkably fine plant, of extremely robust habit, bearing flowers of an exceedingly peculiar violet-crimson shade, hence its name, most appropriately given by the Royal Horticultural Society. Sold only in sealed packets bearing my trade mark.
**Per Packet, 5s.**

*Awarded First-class Certificates by the Royal Horticultural Society.*

For Opinions of the Press and Testimonials see
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Now Ready, Post-free to all Applicants.

# NEW and CHOICE FLOWER SEEDS.

| | Per packet—s. | d. |
|---|---|---|
| **Agsratum,** Duchess of Connaught, bright lavender-mauve .. .. .. .. .. .. .. | 1 | 6 |
| **Abutilon,** finest mixed .. .. .. .. .. | 1 | 6 |
| **Balsam,** Williams' Superb Strain .. .. 2s. 6d. and | 1 | 6 |
| **Begonia,** New Bedding variety, finest mixed, 2s. 6d. and | 1 | 0 |
| **Begonia,** Splendid Mixed Hybrids.. .. .. .. | 1 | 6 |
| **Calceolaria,** Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. & | 1 | 6 |
| **Cineraria,** Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and | 1 | 6 |
| **Cockscomb,** Williams' Prize (New) .. .. .. | 2 | 6 |
| **Cyclamen persicum,** Brilliant (New) 5s., 3s. 6d., and | 2 | 6 |
| **Cyclamen persicum giganteum** 5s., 3s. 6d. and | 2 | 6 |
| **Cyclamen persicum giganteum rubrum,** 5s., 3s. 6d. and | 2 | 6 |
| **Cyclamen persicum,** Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and | 1 | 0 |
| **Dahlia,** Single, Yellow, Scarlet, or Mixed .. .. | 1 | 0 |
| **Mignonette,** New Hybrid Spiral .. .. .. .. | 1 | 0 |
| **Mimulus,** Finest Mixed .. .. .. .. .. | 1 | 0 |
| **Musk,** Williams' New Giant.. .. .. .. .. | 1 | 6 |
| **Pentstemon,** Extra Choice Mixed .. .. .. | 1 | 0 |
| **Polyanthus,** Wiggins' Prize Strain .. .. .. | 1 | 0 |
| **Primula sinensis fimbriata coccinea** (New), 5s., 3s. 6d., and | 2 | 6 |
| **Primula sinensis fimbriata,** Williams' Superb Strain, Red, White, or Mixed, 5s., 3s. 6d., 2s. 6d. and | 1 | 6 |
| **Primula sinensis fimbriata rubra magnifica** .. | 3 | 6 |
| **Primula sinensis fimbriata,** Queen of the Whites.. | 3 | 6 |
| **Pyrethrum aureum selaginoides** (New) .. .. | 1 | 6 |

☞ All Seeds amounting to 20s. Carriage Free to any Railway Station in England, and all of 40s. to any Railway Station in Scotland or Wales, or any Steam Port in Ireland.
*Flower Seeds Free by Post, except heavy kinds.*

# B. S. WILLIAMS,
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**VICTORIA AND PARADISE NURSERIES,**
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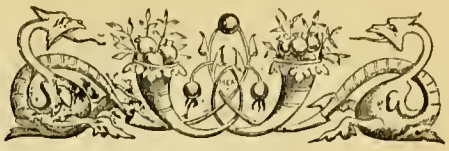

THE
# Gardeners' Chronicle.
*SATURDAY, FEBRUARY* 19, 1881.

## ECONOMY IN FUEL.*

IN ordinary coal when heat is applied a change immediately begins: the coal softens and swells, and a large quantity of gas is set free. This gas, consisting of carburetted hydrogen and bicarburetted hydrogen, when brought in contact with a sufficient quantity of the gas called oxygen at a certain temperature, effects a chemical combination with it, and in this process the heat we require is brought forth.

But the coal contains another combustible, called carbon, which also combines with oxygen, forming carbonic acid and carbonic oxide, and in that process also gives off the heat required. So that combustion, or burning, means just the chemical union or joining of certain substances in certain proportions, which substances in this process of union give off the latent heat contained in them, and required for our purposes.

When we require a good fire it is not only necessary to have plenty of good coal, but also a supply of air or oxygen, for if we attempt to kindle it with the quantity of oxygen deficient we fail in our purpose.

To get this oxygen, which is so necessary that it is called a "supporter of combustion," we have a never-failing supply in the atmospheric air, and our only consideration is how best to bring these substances, having the necessary chemical affinity, together; or, in other words,

### HOW TO CONSTRUCT OUR FURNACES.

In the construction of furnaces for marine and land engines it is sometimes necessary to calculate very accurately the exact size of furnace and grate area. In our case, however, no such nicety need be sought after, and the best way is not to attempt it, but to follow out a few general rules which I will now endeavour to point out; and, as in our hot-water system the furnace is as it were a part of the boiler, we must in our consideration of this point touch the question of

### BOILERS.

Few subjects connected with horticulture have occasioned so much angry controversy as hot-water boilers, and any one who meddles with it is sure to get into hot water. I have no intention of entering on it.

In the choice of a boiler the size of the fire-box and furnace should never be lost sight of; for, let the merits of the boiler be what they may, if the furnace be too small to contain the requisite quantity of fuel, and the grate-bar area too small to admit a sufficient quantity of oxygen, you never can have good combustion, and your heating power is sure to be deficient.

In my own practice I prefer a long low furnace to a short lofty one, for I have found that with a short boiler I could not raise the same heat as with a long one, with the same quantity of coal and the heating surface of the boilers equal.

Numerous instances may be adduced to show the great saving in fuel effected by putting in a

* Paper read before the Aberdeen Horticultural Society on October 15, 1880, by Mr. A. D. Makenzie, of Edinburgh.

comparatively large boiler, with of course a correspondingly large furnace, in place of a small and inefficient one, and this even when the boiler put in and the one taken out were of the same kind. This fact is often taken advantage of by unscrupulous boiler doctors in puffing their own patent specifics. They drop upon some place where probably, additions having been made time after time, the boiler has become inadequate and much too small for the quantity of piping. They pull it out and put in one of their own, about three or four times larger, and of course with the best results. Instead, however, of attributing the success to the increase of size of furnace, and areas of bars and heating surface, it is blazoned abroad as being an absolute proof of the immense superiority of their boilers over those of other people.

Therefore as a first principle in economical hot-water heating, put in a comparatively large boiler, and if I may venture to particularise I would specify as follows for the plain saddle boiler, being a form well known to every gardener :—

| | | | | | |
|---|---|---|---|---|---|
| For quantities of | 150 feet | 4-inch pipes | and under | = 24 | inches |
| ,, | 200 | ,, | ,, | 30 | ,, |
| ,, | 250 | ,, | ,, | 36 | ,, |
| ,, | 300 | ,, | ,, | 42 | ,, |
| ,, | 400 | ,, | ,, | 48 | ,, |
| ,, | 500 | ,, | ,, | 54 | ,, |
| ,, | 600 | ,, | ,, | 60 | ,, |

I do not give these figures wishing to dogmatise upon them, but merely as approximations. Let us now consider a most important point, viz.,

### The Draught.

This is a most important element in the economical working of a hot-water apparatus. We may have a large boiler of the best make, and every appliance about the furnace that we can think of, but if we have no draught the whole will prove a total failure.

Let us examine for a moment how this should be. You remember I tried briefly at the outset to explain the nature of combustion, and the necessity for the oxygen of the air being brought into close contact with the carbon and hydrogen of the coal. Now, as oxygen forms only about 20 per cent. of the atmospheric air, and as we cannot separate the oxygen from the nitrogen, which is no factor in combustion, you see that a very large quantity of air must be taken into the furnace to supply a small portion of oxygen. One pound of coal requires 140 cubic feet of air for its proper combustion, weighing about 11 lb., but containing only 2½ lb. of oxygen. The drawing or pressing of this air into the furnace is the object and use of the draught. If it be neither forced in from below nor sucked up from above, there is then a deficiency.

Let me try to explain more simply the manner in which the draught in the chimney acts. Where you have a chimney short or long, you have, as it were, an apparatus something like the beam of a weighing machine. When you apply heat to the column of air inside the chimney, you heat the air, and in heating it expands, occupies more space, gets lighter, and is forced up by the colder and heavier current pressing upon it from below. The atmospheric pressure is 15 lb. on the square inch, and this being a constant weight outside, while the action of the heat rarifies the air inside the chimney, there must be an upward current inside, and a downward current outside, continually going on as long as the inequality of the weight of the two columns continues. We make this current pass through our fire, thereby gaining possession of the oxygen required. You all know how your fire is checked if you open the soot boxes and allow the air to pass direct into the flues without passing through the fire, thus diminishing the quantity of oxygen. The damper acts precisely in the same way, as it prevents the heated air and gases getting away and making room for a new supply.

We thus see the absolute necessity of having at all times a good draught, as it is the means of putting into our hands the ready power to supply the fuel with what is essential for its combustion and for heat production. Some people make a mistake in thinking that the heat going up the chimney is lost and useless. This is not the case. We cannot want heat in the chimney. We might as well want the chimney itself, and great heat in the chimney is frequently the sign, not of waste, but of economical firing and perfect combustion.

A black smouldering fire, distilling tar and sending the gases up the chimney at a comparatively low temperature, is a great waste of fuel. I have seen a saving of 50 per cent. easily accomplished by a powerful draught being established. We should remember that a multiplicity of flues, nooks and crannies round a boiler is frequently an element of weakness from their liability to soot up and check the draught. These, therefore, should on that account be avoided as much as possible. A very frequent and most annoying cause of want of draught is the contraction of the flues leading to the chimney. It is one of the most difficult things conceivable to get masons to see the necessity for giving plenty of room in forming the flues. A flue should never be less than about 90 inches area, and for large boilers more in proportion. Perfect facilities for the cleaning of flues should be carefully kept in view in the building of a furnace, for if there be a crevice not easily got at soot accumulates there and soon affects the draught. I will next consider the

### Quantity of Piping,

in proportion to the space to be heated, as an element in the economical working of a hot-water apparatus. If the piping be deficient in quantity you may have the very best boiler, good furnace, abundance of power and a strong draught, but your success in keeping up a sufficient temperature will not be great. The particular quantities requisite for horticultural structures of the various kinds do not fall properly within the subject on hand. I do not intend to particularise in this matter, but let me advise you that the quantity should not by any means be under the proper ratio; rather err on the safe side. It should be remembered that when once the temperature of water in hot-water pipes on the low-pressure principle is brought up to a certain point no amount of hard firing will bring it higher. The water in the boiler, even when boiling, which in a low-pressure apparatus should be scrupulously guarded against, is only 212°, and taking the average over the piping is only about 160° or 170°. When we have attained this heat no amount of firing can help us, and all additional fuel used in attempting to raise it above that is simply wasted. The remedy for this is a larger quantity of piping, thereby saving fuel, and raising the temperature to the necessary degree. After having a large boiler, well built, with a good chimney giving the requisite draught, and piping to the desired proportion, we next require for economical heating

### Good Stoking.

A great deal depends upon the stoker, and I am afraid this is a point which does not receive the attention it should get. It seems very often to be considered that all that is necessary is to throw into the furnace a quantity of coal and pay no further attention to it, either as to supply of air, cleanliness of flues and boilers, or state of the fire when coal is put on. When rapid firing and quick raising of heat are desired care should be taken to have the furnace comparatively clear of ashes, so as not to fill up the spaces between the bars, thereby hindering the free access of air. In all cases where it is wished to raise the heat quickly and with least waste, the fuel should be laid on the bars in a layer of from 3 to 4 inches thick, replenished at frequent intervals. Particular care should be taken that the bars are entirely covered, for if there be any part of the bar area left uncovered the air is thereby admitted direct into the firebox and flues, doing no good so far as combining with the fuel is concerned, cooling the boiler and flues and spoiling the draught.

It is a very pernicious practice to fill the front of furnaces chokeful of coals, and to leave the whole of the back part of the bars uncovered. After the heat is brought up to the desired point in the houses preparatory to damping down, the red embers should be pushed well back, and covered over with, say, from 2 to 3 inches of fresh fuel, and then the remaining part of the furnace filled up so that combustion must go on at the back first, slowly eating its way forward, while the ashes and refuse remaining behind prevent too free a supply of air entering behind.

The admission of a small quantity of air at the furnace front, supplying the necessary oxygen to the gases rising off the banked-up fuel in the process of caking, is in this case beneficial, and prevents smoke. I cannot too earnestly impress upon stokers to keep their furnaces and flues perfectly clean, and free from soot and ashes.

I have known men to be sent 60 or 100 miles to examine what was represented to be a defective apparatus, and find that all that was required was to clear out an accumulation of soot—work for the sweep rather than for the engineer.

We have thus seen that, with our present knowledge and appliances, the most we can do in the way of economy of fuel in our hot-water systems is to use care and attention in constructing our furnaces, making them large and roomy; put in good large boilers to get roomy furnaces; endeavour at all times to get a good draught by the proper admission of air below, and by as far as practicable heightening the chimneys, by putting in a full quantity of piping, and by careful and judicious stoking. Distrust all loud and boastful puffing up as to particular shapes and forms of boilers, "fearfully and wonderfully made," alleged although they may be to do four times the work of other boilers with one-fourth the fuel. You will find on experience that there is no such difference between the worst form and the best, other things being equal.

## New Garden Plants.

### Calanthe bella, *n. hyb. art.*

A new hybrid from the Royal Exotic Nursery of Messrs. James Veitch & Sons. The parents are Calanthe Veitchii male, and Calanthe Turneri female. The flower is rather strong in its tissue and of a robust appearance, thanks to the much-developed lip with very broad laciniæ. The flower is lilac, excepting the greater part of the column and an area at the base of the lip, which are both of the finest and deepest carmine, the last bordered by a white zone. The spur is whitish-yellow. I learn from Mr. Harry Veitch there are two racemes with fifteen flowers each, and that they are not so drooping as those of C. Turneri. The novelty deserves an honourable place. What a pretty group might be made by bringing together these different species, varieties, and mules, flowering together during the shortest days! A new and great ornament is still undescribed, Mr. P. H. Gosse's C. Sandhurstiana. *H. G. Rchb. f.*

### Masdevallia leontoglossa, *Rchb. f.**

This rare species was discovered by my late excellent friend, Herrmann Wagener, and described more than a quarter of a century ago. It appeared later —I believe in 1867—at Director Linden's, then at Brussels. Something very like it, perhaps distinct, was sent in April, 1874, by Messrs. Veitch. I am sorry it was lost sight of. Now I have a very fine, well-coloured flower at hand, sent from the fine collection of Mr. Edwin Wright, grown by Mr. James Hodge, Gravelly Hill, near Birmingham. I place M. leontoglossa, gargantua, angulifera, vilifera, and the doubtful Veitchian plant in one group, easily distinguishable from the coriaceæ by the lateral sepals being united nearly to their top in a very unusual manner, exceedingly conspicuous in M. vilifera, I had the other day in a glorious state from Mr. Day. The flower at hand is light yellow, partly lemon coloured, partly more ochre coloured, with numerous dark spots from purple to indian-purple in colour. The white petals have inside two purple streaks. The white lip is covered with groups of purple warts near the apex, and bears many groups of such blotches. The column is bordered with purple, and has five longitudinal lines under the stigmatic hollow. It is no grand thing, but undoubtedly very pretty for its affinity, where less brilliant colours are usual. *H. G. Rchb. f.*

## GRAVEL TENNIS.

A short paragraph in the report of the Royal Horticultural Society is devoted to the subject of lawn tennis, which appears to be popular in the gardens at South Kensington. It is in no sense disparaging to private pleasure gardens, that aim at nothing beyond recreative purposes, that there should be associated with them certain pleasant forms of recreation in which those who love gardens for their horticultural delights may also join in without detracting from their position as horticulturists or from the garden's charms. Bowls, croquet, and lawn tennis are essentially domesticated garden games, and are now universally so regarded as whist or chess are games of the domestic fireside. When, therefore, we find that lawn tennis is in such high favour at South Kensington, it seems somewhat remarkable

* *Masdevallia leontoglossa*, Rchb. f., in Seemann's *Bonplandia*, iii. 69; Walper's *Ann.* vi. 191.—Folio rigido crasso spatulato oblongo ligulato apice minutissime emarginato; pedunculo unifloro breviusculo; cupula brevi; mento abrupto sepalo impari libero caudiformi; sepalis lateralibus apice fiss. brevissime caudatis; tepalis spatulatis, medio appendiculatis labello oblongo papuloso, signo gyrifero elevato utrinque in basi; androclinii limbo integerrimo. *H. G. Rchb. f.*

that no attempt has been made to provide the *habitués* with gravel tennis also. Lawn tennis is a summer game; the grass must be dry, the sun should shine to dispel the dew or rain-drops, that the feet of the players may not suffer, and the balls be not spoiled. But if tennis is on the grass a game for pleasant weather, it is also an active one, such as gives time for little gossip, still less (unlike croquet) for flirtation, and calls into action the full physical development of those who play. Why, therefore not provide for such active recreation in the winter. If we have a summer season when lawn tennis, croquet, or cricket can be played, we have at least a longer winter season when our youths and maidens are debarred from the beneficial exercise these games give, and during which time, or except when for a week or two they may disport upon the ice, they are practically debarred from outdoor amusements, for few ladies may hunt, and none may shoot. But tennis is in open winter weather quite as accessible to devotees as in summer if they be but provided with a properly made gravel court, and that such can be made and are made we have had ocular demonstration. On paying a visit to Mrs. Eyre Crabbe's charming residence at Glen Eyre, Southampton, on a recent wet day, we were gratified with a look at the admirable gravel court made there, and under unusual difficulties, because such is the peculiar formation of the ground that it is not possible to find half a dozen square rods that are level, and therefore in making the court levels had to be provided. Naturally the ground is sandy, and the subsoil a mixture of sand and gravel. The space set apart for the court was excavated to a depth of 18 inches, and all the subsoil sifted to take out the coarsest stone; this was replaced to a depth of 12 inches, and firmly rammed down all over. Then upon this came several inches of screened gravel, less in size of stones, and over all was placed about one inch of extra fine gravel of the rich claret colour peculiar to the locality. This forms a beautiful smooth surface which, though firm, is not hard, but is quite elastic to the tread, and most pleasant to walk upon. Although it was raining hard at the time, and had been for several days, the surface was literally as dry as a bone, and the rain ceasing, the game might have been played upon it at any moment, and in entire comfort.

## FREELANDS, FORGANDENNY.

Calling at Freelands, Perthshire, the residence of E. C. Wood, Esq., a few days since, I was delighted to find several of the houses quite as gay as they would be in May. There were Calanthes in quantity, some in 60-sized pots, and baskets with spikes of flowers 3 feet or more in length, comprising Calanthe Veitchii, C. vestita rubra and C. vestita lutea; and Poinsettias, 16 to 18 inches in diameter, splendidly coloured. One of the houses occupied by Orchids requiring a warm temperature was very striking: a background was formed of Poinsettias, in front of these were Calanthes, interspersed with various other Orchids not in flower, and edged with a Begonia called here Moorei: I think, however, it was sent out some years since as multiflora erecta; it has dark foliage and pink flowers produced in tolerable profusion. Every plant in the house was in fine condition, and the colours of the flowers and the bracts of the Poinsettias were very brilliant. In the same house was a fine mass of Lælia anceps with fifteen spikes of flowers just opening; Saccolabium giganteum, extra fine variety; Aerides Lobbii and quinquevulnerum, Saccolabium Blumei majus; a fine mass of Anthurium Scherzerianum, Veitch's large variety; Odontoglossum cariniferum, two extra fine specimens of Cattleya Skinneri, full of flower-sheaths; Cattleya Warneri, and Odontoglossum Alexandræ, all in vigorous health; and on the roof a grand plant of Nepenthes Rafflesiana. Adjoining this on the east side in a Peach-house was a fine display of Chrysanthemums, a dark crimson late-flowering variety especially attracting attention. In another house on the west side was a fine lot of Telegraph Cucumbers ready for use; also more Calanthes, and a splendid specimen of Dendrobium densiflorum, 3 feet in diameter, always grand in its season, this being one of the finest varieties; Dendrobium moschatum with well ripened growths 8 feet in length; and some fine specimens of Cœlogyne cristata commencing to throw up spikes of flower. In a small stove are some fine masses of Eucharis amazonica, and some remarkably well-coloured Dracænas used as table plants, Amaryllis, &c., and a free-flowering Scutellaria called coccinea, a fine winter plant.

The conservatory roof is covered with a fine plant of Lapageria rosea, also a nice plant of its white variety; here is also a grand specimen of that fine old Camellia, Marchioness of Exeter, in full blossom; some nice specimens from 4 to 7 feet in height of Camellia Reine des Fleurs, imbricata, alba plena, Chandler's elegans, and quantities of other useful flowering and decorative plants. In the vineries were some good plants of Azaleas. The Calanthes were such splendid examples of good cultivation that I asked Mr. Routledge, Mr. Wood's excellent gardener, to give your readers the benefit of his experience; he has done so, and says:—

"As soon as they have done flowering and are at rest, we pack them under the benches in the stove, laying the pots on their sides to keep them as dry as possible; I think they keep much better in this way than when shaken out of their pots. As soon as they start into growth we dress off all dead roots and old flower-stems from the bulbs, planting them thickly in our ordinary cutting boxes, in a mixture of leaf-mould and sand. They are kept moderately damp, and soon emit plenty of fine thick healthy roots; they are then potted into 7-inch pots, three bulbs in each pot. The compost used is good turf three parts, with the fine sifted out of it, and one part old cow-dung, with sufficient sand, broken crocks and charcoal, to make it free and open. As soon as they are well into leaf they are top-dressed with sphagnum, kept well watered and syringed and dusted with Standen's manure once a fortnight, which they seem to enjoy. They do equally well in baskets suspended from the roof—indeed, I think rather better, as the spikes of flower are longer, the flowers larger and young bulbs also. Those in baskets are still finely in flower. We use Teak baskets 8 inches square, and 4 inches deep. Avoid keeping Calanthes in a cold greenhouse or vineries when at rest. Two years ago I kept a portion of mine in the vinery, frost never entered it all the winter, yet nearly all the bulbs were rotten when examined in spring."

The gardens at Freelands have been nicely laid out since Mr. Wood purchased the estate, and reflect great credit on Mr. Routledge for the excellent manner in which they are always kept. *W. H.*

## NEW GARDEN FERNS.

Asplenium Baptistii, *n. sp.*

Fronds bipinnate, broadly ovate, coriaceous, smooth; pinnæ stipitate, the lower about 5 inches long, with about four narrow stipitate linear-toothed pinnules, about 2 inches long, and a long terminal lobe, 3½ inches long, scarcely ¼ inch broad, furnished with distinct linear marginal teeth, pointing forwards, and terminating in a long attenuated point, which is toothed nearly to the end; veins obscure; sori linear-oblong, straight, parallel with and close to the midrib; indusium narrow, membranous, entire; stipes and rachides dull grayish-brown, smooth above, scaly at the base; caudex stout decumbent, slowly creeping, thickly clothed with lanceolate scales of a deep purplish hue, having a darker line in the centre.—Hab., South Sea Islands. 1879.

This is a fine and distinct looking evergreen stove Fern, allied to A. contiguum, but having the basal part of the pinnæ split up into a few distinct narrow stalked pinnules, which, except in being much smaller, resemble the remaining portion of the pinnæ, having a few distinct linear teeth, and sori parallel with the midrib. The name has been provisionally employed by Mr. B. S. Williams, by whom the plant was imported about a couple of years ago, and who was awarded a First-class Certificate for it by the Royal Botanic Society at one of the summer shows of the past year.

The plant is of evergreen habit, with a stout decumbent caudex, furnished with blackish-purple dark centrally-striped scales, as also is the base of the smooth dull brownish-gray stipes, which is from 6 to 8 inches in length; the rachis is smooth, and of the same brownish hue. The lamina of the frond is broadly ovate, and about 1 foot long, furnished with rather distant pinnæ, which have a distinct stalk ¼ inch or rather more in length, and the basal portion about 1 inch in length split up into distant attenuated pinnules about two on each side, the remaining part of the pinnæ, some 4 inches long, being linear, lengthened out to a much attenuated point, and the margins having, at intervals of about ¼ inch, linear, pointed teeth projected forwards. The texture is thick and leathery, so that the veins are not apparent. The sori are large, oblong or linear oblong, straight and lying close to, almost parallel with, the midrib. The centre of the frond has an open appearance, from the slender stalks of both pinnæ and pinnules. The linear, marginal teeth average about ¼ inch in length at the broadest part of the pinna, becoming shorter upwards, and here and there the basal ones are forked. It will make a good and elegant show Fern on account of its distinct character and its durable texture. *T. Moore.*

Asplenium Vieillardii, *var.* facile, *Moore.*

Fronds pinnate, coriaceous, glabrous, ovate, marginate; pinnæ (about five pairs, with a terminal one) alternate, cuneate at the base, which tapers into a short stalk, parallel-sided or widening upwards, 4—5 inches long, ¼—½ inch broad, distinctly toothed towards the base, more deeply toothed upwards, and deeply and unequally incised at the apex, which is sometimes forked or dilated; veins usually once forked at a very acute angle, one branch entering each marginal tooth; sori also at an acute angle, close-set, narrow, linear, extending in a curved line from the midrib nearly to the margin; indusium narrow, entire; stipes and rachis smooth, dark grayish, semiterete, channelled in front.—Hab., New Caledonia.

This fine evergreen hothouse Fern, which is one of peculiar interest, on account of the remarkable dentation of the fronds, was described and figured in these pages under the name of A. schizodon (see *Gardeners' Chronicle*, 1871, 1004, fig. 223), which, however, has to give way to the earlier one of A. Vieillardii, published by Mettenius in the *Annales des Sciences Naturelles* (4 ser., xv., 72). It was introduced some ten years since by Mr. J. G. Veitch, but the plant then obtained has remained a stubborn and unsatisfactory grower, whereas our present subject, as we learn from Mr. Williams, by whom it was introduced, is a much freer grower, and a really elegant and interesting plant.

The leathery deep green fronds grow up from a decumbent scaly caudex, and have a stoutish dark gray stipes, 4 or 5 inches in length; they are of a broadish ovate outline, 9 or 10 inches long, and about the same in breadth, pinnate, with about five pairs of rather crowded parallel-sided or apically dilated pinnæ, which in this variety do not appear to form an auricle, such as is evident in the figure above quoted. They are in fact narrower as well as longer and more numerous, so that the plant is more desirable for cultivation. In its acutely forked veins, and its very long curved sori, it sufficiently accords with the type, as it does in its narrow entire indusium.

The plant now under notice, which we call var. facile on account of its more facile growth, was imported from the South Sea Islands, by Mr. B. S. Williams, of Holloway; and in its freer growth, larger fronds, and more numerous pinnæ appears to be a form which cultivators will welcome as distinct from that distributed some years since, and which has never become common—probably by reason of its unsatisfactory progress. *T. Moore.*

## CINCHONA CULTIVATION.

(*Concluded from p. 174.*)

*Planting Distances.*—In the early days of Cinchona planting the trees were put out at distances of 12 feet apart, but it was soon found out that, even for the strong and free-growing red bark, C. succirubra, this distance was too great for remunerative results. "It appears that the red bark, even in South America, is never a large tree: C. officinalis is but a big shrub, and it is doubtful whether any of the species become much larger."

In the Government plantations of India, Sikkim, the Nilgiris, and Darjeeling, even the large-leaved Cinchona succirubra are now planted at distances of 4 feet by 4 feet, giving 2722 trees per acre, whereas when planted at 12 feet by 12 feet as hitherto followed in Jamaica, the number of trees is only 303 per acre. Dr. King, in his *Manual of Cinchona Cultivation in India*, remarks that "wide-planting is obviously in error." All the Cinchonas have the habit of throwing out a quantity of superficial rootlets, and young Cinchona plantations do not thrive until the soil

between the trees is sufficiently protected from the sun to allow these superficial rootlets to perform their functions freely. The growth of weeds, which is a very important factor in tropical cultivation, is also checked by shade. By close planting, therefore, two desirable objects are speedily obtained, and moreover, the trees are encouraged to produce straight clear stems yielding a larger proportion of trunk bark and less branch bark. On this well-known habit of forest trees is founded the practice of close planting in forest plantations in Europe, the object being to produce long, straight, unbranching stems from which to cut timber of long scantling.

As the trees begin to press upon each other they can be thinned out, and a quantity of bark may thus be got at a comparatively early period, with positive advantage to the plants that are allowed to remain on the ground. It is true that the cost of close planting is greater than that of sparse planting, but on the other hand the reduction in the cost of cleaning and the manifest greater yield of the plantation will more than compensate for this.

It may therefore be safely assumed that the red bark, C. succirubra, should be planted at distances not greater than 4 feet by 4 feet, and the crown bark, C. officinalis, at not greater than 3 feet by 3 feet.

The latter may, however, very conveniently be put out at distances of 3 feet between the rows, and only 2 feet between each slant.

*Shading.*—It is very advisable to give the newly planted plants some shade for a short time after they are put out. The best and choicest mode for any particular locality must of course depend on local conditions. At the Government Cinchona plant tations it is found very convenient to place two or three sprays of the common Bracken (Pteris aquilina), on the sunny side of the plant with the stalks well fixed in the ground. Should the weather prove wet with high gales of wind the Fern leaves should be slightly moved on one side, so as not to touch or rub the plant when moved by the action of the wind.

*Staking.*—In windy localities it is often necessary when plants have attained the height of 2 or 3 feet to give them support by stakes. The great danger to be avoided in staking the plants is the chafing caused by the swaying of the plants. If the material used for tying is of a soft nature, and the stakes are placed in a sloping direction so as only to touch the plants at one point, much of the evils of chafing may be avoided.

*Weeding.*—Sooner or later a newly planted clearing will begin to show signs of the numerous tropical weeds which everywhere infest the land. It is hopeless to think of entirely freeing the ground from such unwelcome visitors, and, indeed, in the case of a Cinchona plantation it is quite unnecessary to do so. No special rule can be laid down as to the number of cleanings actually required during the first and second years, but it would be advisable to keep down by cutting most weeds till the young plants are sufficiently grown to overtop them. Hoe weeding as a general treatment should never be permitted, as thereby the valuable surface-soil is loosened and washed away.

"Where the majority of the weeds are annuals, and the soil is soft and pliable, it may be advisable occasionally to substitute hand-weeding for cutting.

"The disturbance of the surface of the soil caused in pulling the weeds up by the roots, affords a rough kind of cultivation which is advantageous; moreover, the superficial roots of the Cinchonas are less damaged than by hoeing. It need scarcely be stated that, in proportion as the Cinchona trees grow and their leafy heads cover the ground, the undergrowth of weeds becomes less luxuriant. A slight superficial hoeing of the soil immediately round the plants should, however, be given once a year if possible. The space to be cleared need not exceed 1½ to 2 feet in diameter, having the tree stem as its centre. To young plants especially this is very beneficial, and it is found that the oldest trees in the Sikkim plantation are much benefited by the operation.

"In all cultural operations it ought to be borne in mind that the roots of Cinchonas are comparatively superficial, and that any very deep hoeing is therefore more likely to do harm than good."

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Pittosporum zeylanicum. — The deliciously scented blossoms of this Cingalese shrub amply make amends for their lack of colour. It is a very free-flowering species, of dwarf bushy habit. The colour of the rather small flowers is a greenish-white. It is a native of the Oova district in Ceylon, at elevations of from 3000 to 5000 feet. Now flowering in the Palm-house at Kew.

## ABIES (PICEA) SUBALPINA.*

For the illustration of this Conifer, as yet rare in cultivation, we are indebted to Dr. Engelmann, who has kindly sent us a photograph of a fertile branch and cone from a specimen met with by him in the course of his recent expedition (fig. 45). As Dr. Engelmann's description has not yet found its way into our handbooks, we quote his account nearly in full, and append the synonyms which are supposed to belong to the present species.

"Closely allied to A. balsamea, the western representative of which it must be considered to be; it extends from the higher mountains of Colorado and the adjoining parts of Utah to Wyoming and Montana,

Fig. 43.—Abies subalpina: spray from sterile branch, and tips of leaves.

where it is the only species, and westward to the mountains of Oregon and into British Columbia (Fraser's River), and southward to Mount Shasta, always scattered in the subalpine forests, and, at least in Colorado, coming almost up to the timber line, but never alone constituting forests. It is a larger tree than balsamea, often over 2 feet in diameter, and 60—100 feet high, with thin, pale

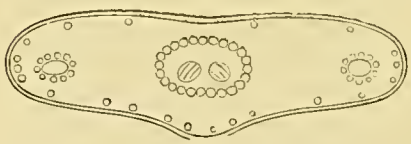

Fig. 44.—Abies subalpina: section of leaf plan (magn.).

whitish, smooth bark, which only in very old trees becomes cracked and ashy-grey; timber so poor and soft that in some parts of the Rocky Mountains it is called Pumpkin Pine. Leaves like those of balsamea, notched on the sterile and pointed on the fertile branches; hypoderm considerable, though interrupted on the upper surface, crowded on the edges and keel. Cones retuse, brown-purple, 2—3½ inches long, 1¼ inch in diameter, the smaller ones near the timber line. Scales rounded or almost square, often almost as high as broad, similar in their proportions to those of balsamea, but larger, bracts short, emarginate, mucronate; seeds, including the wing, over 1 inch long, the latter nearly twice as long as it is wide.

"*Var.* fallax (Engelm. *Synops. Amer. Firs*, p. 597) has the resin ducts of this species, but the foliage almost of concolor; the leaves sometimes 1½ or even 1¾ inch long, mostly obtuse and covered with stomata above, glaucous when young. Dr. Newberry's specimen in the Herbarium of the Agricultural Department, Washington, collected on the higher tops of the Cascades, south of the Columbia River, and described* by him as A. amabilis in *Pacific Railroad Reports*, 6, bot. 51, belongs, here; the loose scales (12 lines wide, 11 high with pointed bracts, seed with narrow wings, as in the species, but larger) brought home, indicate a large cone such as he describes as 6 inches long and 2½ inches thick. S. Watson and lately A. Siler collected a similar form on the Wasatch Mountains, but the loose broad scales sent by the former may possibly belong to concolor, which grows in the same region. The mere fragments of this interesting form seen by me do not permit me to give more than the above indication.

"This species has troubled botanists considerably. It is probable that Hooker's lasiocarpa belongs here, as a branchlet, together with a few scales, preserved under that name in the Kew herbarium, seems to point out; but the description in the *Flor. Bor. Amer.*, which mentions the leaves as the longest of any Abies, refers, perhaps, to something else, and has certainly given cause for the application of the name to the long-leaved forms of concolor in the English nurseries. Then, in 1863, A. Murray distinguished a form of this species collected by Lyall in British Columbia, and on the Upper Columbia River, as A. bifolia, recognising the different forms of foliage, but misapplying the scientific name. [See our fig. 97, April 10, 1875.] About the same time specimens and seeds from Colorado were distributed by Dr. Parry, and by E. Hall as grandis, and may now be cultivated as such in Europe. That Parlatore and others have taken it for amabilis has already been stated."

Although in the Kew herbarium there are few specimens of subalpina which are to be looked on as truly typical (one from Herb. Harvard is truly so, as was kindly pointed out to me by Sir J. Hooker), and none of the variety fallax, yet there are several specimens which may, with more or less confidence, be referred to this species—in particular some specimens collected in Colorado by Sir Joseph Hooker and Dr. Asa Gray, who met with the plant "below Kelso's Cabin at an elevation of 9000—10,000 feet." The herbarium specimens have very much the appearance of those of amabilis, but they suggest a dwarfer plant, smaller in all its parts, while the position of the resin canals is different. In subalpina they are in the tissue of the leaf, but in amabilis proper they are close beneath the epidermis.

For fresh specimens of A. subalpina we are indebted to Mr. Barron of the Elvaston Nurseries, Borrowash. In these specimens the bark of the young shoots is ashy grey, slightly hairy, afterwards glabrous, with irregular cracks extending lengthwise down the branch, and marked with circular leaf-scars. Leaves densely crowded, in many rows (fig. 43), either nearly parallel in direction with that of the branch, or spreading from it at an angle of about 30°, each nearly 1 inch long, a line in width, straight or sickle-shaped, linear-acute, entire or notched, midrib, slightly grooved on the upper green surface, prominent beneath, with a glaucous band of stomata on either side. Buds globose, tubercled, not resinous. The transverse section, shown at fig. 44, shows an oblong outline, with scanty hypoderm cells scattered over both surfaces; the resin canals are parenchymatous, and surrounded by strengthening cells, the vascular bundle is double, and surrounded by a well-marked bundle-sheath. In all essential particulars this arrangement of the parts of the leaves agrees with that of the type specimens of subalpina in the Kew Herbarium, and also with that of the type specimen of Hooker's lasiocarpa. Nevertheless, we think it only prudent to retain the mark of doubt as to the identity of Hooker's lasiocarpa with the more recently named A. subalpina. As to the lasiocarpa of gardens (Parsonsiana, Lowiana) that is an entirely different plant. Engelmann and MacNab both refer Murray's bifolia to this species, a point upon which we express no opinion. There can, we imagine, be no doubt as to the hardihood of this tree in this country, although we have seen only very small specimens. *M. T. M.*

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* Abies subalpina, Engelmann, in American Naturalist, ex Synops. Amer. Firs, Transactions of the Academy of St. Louis, iii. (1878), p. 597; Sargent, Catal. Forest Trees of North America (1880), p. 68. *Synonyms*:—Pinus (Abies) lasiocarpa, W. Hook., Flor. Bor. Amer. ii. 163 (1840?); MacNab, Proc. R. Irish Acad. (1876), 682, not of Balfour nor of gardens; Abies bifolia, A. Murr., Proc. Royal Hort. Soc. Lond. iii. 318, Gard. Chron. 1875, vol. iii., p. 465, fig. 97; Pinus amabilis, Parlatore, in DC. Prod. xvi., part ii., p. 426., not of Douglas.

* His description of the foliage, however, seems to refer to what I call A. grandis var. densifolia (= amabilis, Engelmann, *Gard. Chron.* 1880, Dec. 4, p. 720). Dr. N. may have mixed both forms—an unfortunate mishap, which is by no means rare in such collections, mostly made in haste and often under unfavourable circumstances.

## PLANT LABELS.

On going round the herbaceous garden at Kew, it has often occurred to me that the labels are taken up and laid together every time a bed is raked, and afterwards replaced by the labourer from memory, the evident transpositions having seemed difficult to explain in any other way. But after the experience of this winter, when nearly all our flat wooden labels are not only out of the ground, but appear to have been shot out, something in the way in which I have seen porcupines at the Zoological Gardens shoot out their loose quills, so as to be at a distance from the plant which they marked, any amount of demoralisation in the naming of mixed borders can easily be understood. Hence the subject of labels is not unnaturally attracting a good deal of attention at present.

It may help those of inventive genius who are going to compete for the prize for the best plant-label offered by Mr. G. F. Wilson, through the Society of Arts, if hints are sent by those who have tried different kinds of labels, so as to give the competitors the full benefit of all past experience. I assume that in all mixed collections of plants a large number of labels is necessary. In my garden, which is of moderate size, I label nothing which can be recognised at all times of the year without a label, and yet I have fully 10,000 labels in constant use. Labels should be (1) cheap, (2) durable, (3) indelible, (4) portable, (5) markable with a common lead-pencil, (6) not liable to be ejected by frost, or (7) broken by a kick.

Those who have plenty of Hazel trees at hand will find Hazel rods, three-quarters of an inch in diameter, cut into lengths of about 10 inches, with a horizontal slice cutting into 4 inches from the upper end, and made by a single cut of a knife, to take the paint for writing, in many ways better and cheaper than the common flat labels. They last three times as long or more if the lower end is dipped in creosote. A common labourer with plenty of material, using a pair of pruning-shears and a strong sharp knife, will easily cut 1000 in a day, and they possess qualities 4, 5, 6 and 7.

I have, however, invented and adopted another label—clumsy I admit, and not readily commending itself to others, but far more simple in practice than it sounds in description. It reminds me of the military regulation order explaining the cocking of a musket, or printed directions given for learning to swim. What reads and sounds as if it were difficult and complicated, becomes in practice the simplest thing in the world. Common round bar-iron, three-eighths of an inch in diameter, is cut obliquely into lengths of 10 inches, and pierced with an eye ¼ inch from one end, and dipped when red-hot into gas-tar. For these pegs, which weigh about 4 oz., I pay 50*s.* per 1000, but think they might be had for less. Then I have flat wooden suspending labels pierced at each end, for which I pay 4*s.* 6*d.* per 1000; through the two eyes 8 inches of pliant wire is passed for fastening the label to the iron pin. These are upon the whole the most satisfactory labels I have yet used. They cost 5*s.* 6*d.* per 100, but the iron pin—nine-tenths of the cost—is indestructible. The label is easily and quickly renewed, and will last when suspended for many years. Not one has been ejected from the ground this winter, and if kicked over they are not hurt, and easily set up again. It is true they are heavy to carry about, but I keep a stock of the pins, which are weather-proof, in various corners, so as to have them handy for all parts of the garden.

Then the wired labels are just as portable and as easily written on as common flat wooden pegs. My great desideratum is a white paint which will reject the splashing of mud, but retain forever the writing of a lead-pencil. I can get no paint which is perfectly smooth and not sticky when dry, and should be thankful to be told of any. I enclose specimens of what I have described.

I may add that a heavy plant-label is not altogether without its advantages. In the year 1842, when I was a boy at Eton, one of the many jackdaws which built in the college chapel insisted upon having her nest so arranged that she could, whilst sitting, see out of the turret loophole, which looked towards Windsor Castle. This could only be done by making the foundation on a step of the spiral staircase, 9 feet below; and a massive nest, 9 feet high, was accordingly built. I made friends with the College clerk, and watched the progress of the nest, and recollect that amongst the materials, besides there being a box of lucifer-matches, garden pegs seemed to be in great request. Three or four years later, when I was at Cambridge, I recollect the present Professor of Botany exhibiting, at a meeting of the Ray Club, a newly-devised label for use in the Botanic Garden there. It was a very heavy metal one—the weight, he said, being found necessary to prevent the jackdaws carrying them up for their nests between the roofs of King's College Chapel. *C. Wolley Dod, Edge Hall, Malpas.*

Fig. 45.—Abies subalpina. (see p. 236.)

## ARTIFICIAL MANURES.

### McDougall's Phosphatic Manure.

[The following analysis was made at our request of a canister of manure bearing the above designation. It was bought for 1*s.* retail in the ordinary course, and weighed a little over 2 lb., including the canister. For the full understanding of the analysis, reference should be made to our article at p. 144; meanwhile, we may say that the proportions of nitrogenous ingredients and potash are low, and those of comparatively unimportant substances higher than need be. It should be remembered, however, that the special attribute of this manure is said to consist in its phosphatic character. We have no experience as to its value in the practical cultivation of plants; but the manufacturers recommend it for pot plants, flower borders, beds, fruit trees, Vines, garden crops, Strawberries, &c. It must be borne in mind that the price charged for this manure, however, is much less than that asked for other manures richer in fertilising materials. Eds.]

Composition of a Sample of Manure, marked "No. 3."

| | |
|---|---|
| Moisture | 28.30 |
| *Organic matter and ammonia salts | 12.77 |
| **Soluble phosphoric acid | 1.85 |
| ***Insoluble phosphoric acid | 20.01 |
| Lime | 22.70 |
| Potash | 1.78 |
| Nitrate of soda | 4.28 |
| Oxide of iron, chloride of sodium, &c. | 7.52 |
| Insoluble siliceous matter | 0.79 |
| | 100.00 |
| *Containing nitrogen | 0.62 |
| Equal to ammonia | 0.75 |
| **Equal to phosphate of lime | 4.04 |
| ***Equal to phosphate of lime | 43.68 |

BERNARD DYER, F.C.S., F.I.C."

## A WINTER GARDEN FOR JERSEY.

Jersey is the largest of British isles down Channel and on the coast of France. It enjoys an excellent general climate, which is proved beyond dispute by the luxuriant growth and beautiful foliage of the trees, shrubs, and plants cultivated in the nurseries and private gardens of the island. We have often been struck with the peculiar richness of foliage, in comparison with the same kinds of growth in larger countries. There is evidently "something in the air," and "something in the soil," different to the adjoining coast of France and our mineral-producing country at home.

That "A Winter Garden" in such a favoured locality should be announced to the world, will, no doubt, attract the attention of great numbers of travellers, and visitors will flock to see and admire its contents; we are at liberty, therefore, to expect great and good botanical, floricultural, and horticultural results in such a favoured locality, enjoying, as it does, so many advantages of position and climate. Much will depend upon the selection of a proper site, and many more essentials seem to be thought necessary to cope with the contingency of making it "a self-supporting establishment."

The Royal Agricultural and Horticultural Society of Jersey have the matter in hand, and, with the noble array of titles, talent, and wealth at the command of its members, we have hope that it may prove a success. It would be a simple matter in the hands of a practical man, who would lay out his schemes, calculate the dimensions and cost of his project, count his means, and the possible costs of maintenance, with the probable returns; and having so far realised the project, he would set to work and carry out his operations without circumlocution or delay.

A winter garden should be botanical, horticultural, and floricultural, and as such has little sympathy with the growth of Potatos and the application of manures. These latter are subjects of practical domestic economy more befitting the necessities of the age than the accomplishments of civilisation. [!] The association of such ideas, experiments, and results, have little to

do with the comfort of the body, the gratification of the eye, or the elevation of the mind, for which plants from distant climes, flowers and fruit of exotic growth, and the artificial heat engendered by steam contribute in the proportion to which they can be enjoyed.

Music also hath charms, but not the music of the herds. The refined taste of the delicate pianist, the ear which is so appreciatively correct in the value of sound, and the conflict between performer and listener which accompanies performances worthy of the name, have little sympathy with bucolic sounds. How little has agriculture to do with refined enjoyment? They are separate and distinct features in the histories of our lives and our means of social enjoyment. If the Royal Agricultural and Horticultural Society requires a farm and a winter garden they should be separate and distinct establishments, excelling one another, if it were possible, in the superior styles of management and order, but not associated together—they are incompatible. We trust the committee named will be able to see what a clever and easy task they have in hand if they set the right way about it.

We shall be pleased to learn they have a winter garden at Jersey, and hope the committee will include botany and floriculture in their programme, so as to render it instructive as well as ornamental. These sciences are ably developed by competent persons, of whom many would be glad to avail themselves of the curatorship and active management. We hope for much in a horticultural sense from Jersey, with its genial climate, its 60,000 inhabitants, and the assistance of its 20,000 annual visitors. *Cæsarea.*

# Notices of Books.

**All about Cardamoms:** *Botanical Descriptions, Commercial Uses, and Modes of Cultivation.* From all the best authorities. Colombo: *Ceylon Observer* Office, 1880.

The time expended in hunting through numerous books for information on any given subject is often a serious inconvenience, resulting sometimes in a certain amount of failure, owing it may be to the book or periodical in which a special article has appeared being inaccessible. The idea of bringing together and publishing in a collected form all that has been written on one subject, is therefore commendable, though it may have certain objections, such as a repetition of almost identical matter, and sometimes even of the same words; but with all these considerations it is a convenience to have in one volume everything that has been written, which is the case with the pamphlet now before us. In the introduction we are reminded that requests frequently arise for information on the nature and cultivation of economic plants, and to meet this request the present little book has been compiled. The plan has been to publish the articles entirely as they appear in the original work, stating at the commencement of each the source from whence it has been obtained, and at the very outset a list of the books or papers is given, among them being the article Cardamom from the *Pharmacographia, Medicinal Plants* of Bentley and Trimen, the last edition of the *Encyclopædia Britannica*, Drury's *Useful Plants of India, Treasury of Botany*, and numerous others not so accessible.

As an illustration of the importance of Cardamom cultivation, we reprint the following paragraph, which is quoted from the *Agricultural and Planting Review*:—"Cardamoms (or Grains of Paradise as they used to be called) are grown chiefly in South India, Java, Sumatra, and the eastern Archipelago generally, in Madagascar and West Africa. Cardamoms are much used in the North of Europe as a spice and flavouring material for cakes and liqueurs, elsewhere they are used in curries and in medicine." From an official report on Material Progress in India, we quote as follows:—"Cardamoms form another important product of the hill districts chiefly on the western slopes of the mountains of Coorg and Mysore, at an elevation of from 2500 feet to 5000 above the sea. In Coorg the Cardamom forests are rented out for 30,000 rupees a year. In Mysore the yield is valued at £17,000. Instructions were given in 1871-72 for the demarcation of such tracts of jungle as were favourable for the growth of this spice, and Coffee planters are beginning to turn their attention to its cultivation. In 1873 the export of Cardamoms from Cochin equalled 14,000 lb." It is further stated, that at the present time 600 acres of land in all stages are under Cardamom cultivation in Ceylon, the commercial value of which may be estimated at 200,000 rupees.

## GREENHOUSE FLORISTS' FLOWERS.

Azaleas.—The earliest flowering varieties that have been forced should now be in full beauty, and the flowers last a long time at this season in a well-managed greenhouse or conservatory. The plants should be taken out of the forcing-house, and be placed in the greenhouse, when the first flowers are open. If a large proportion of the flowers open in the forcing-house they do not last long; those that open in the greenhouse are of greater substance, and remain in beauty very much longer. The plants intended to flower in June must now be kept in a cool airy greenhouse. They should not suffer for want of water, as a state of dryness causes many of the small hair-like roots to die at the points. The different varieties of Azalea mollis are exceedingly beautiful when forced; their pale green leaves, freshly formed, contrast well with the richly-coloured flowers. They seem to be perfectly hardy, too, as our plants out-of-doors look well after the trying ordeal of the last frost.

### Calceolarias.

Owing to the recent severe frosts it has been necessary to use much artificial heat merely to prevent the plants being injured by the cold, and this is just what these plants so much dislike. Probably greenfly has appeared on the older leaves. Look carefully over the plants, and if there is the least trace of it fumigate at once. Pot off seedlings for later blooming, also repot plants propagated from cuttings, and pot into the blooming pots the larger specimens, if this has not been done.

### Chinese Primulas.

These are now in full beauty, and others are coming forward for succession. It ought to be observed that they do much better in a rather warm greenhouse or conservatory than in one where the frost is merely kept out. The double varieties open their flowers best in an airy house and temperature of 50° or 55° at night; and when they are in flower they may be removed to the greenhouse. The later flowering plants may yet be potted on, as nice examples are produced in 3 and 4-inch pots. For other cultural directions see p. 78.

### Chrysanthemums.

No time should now be lost in getting in the cuttings, if they have not been done already. The cuttings that were put in early, or rather at the end of last year, will now be fairly well rooted, and should be potted on into larger pots, using good yellow loam, rotten manure, and a little leaf-mould. The plants must be kept quite near the glass, and ought not to be crowded. It was recommended to dip the cuttings in a solution of soapy water, to kill greenfly, but probably there may be some of this pest about them now, and if it is convenient to fumigate, do so. If greenfly gets into the points of the young shoots it is not easy to kill it, and it very much cripples the plants.

### Cinerarias.

Our earliest plants are now in full beauty; after that stage it is not necessary to give any manure-water. Those in a later stage would, however, be much improved by it, though it should be given weak, as the Cineraria does not like it strong—the fleshy roots are killed by it; used judiciously, and applied about twice a week, it gives texture to the leaves and brilliancy to the flowers. The larger plants should have the shoots well tied out. Later flowering and small specimens may be potted on into larger pots. The plants should be near the glass, and have plenty of space to develope themselves.

### Hyacinths.

Continue to remove plants to the greenhouse or conservatory as the spikes approach the flowering stage. If they are placed there as soon as the first flower or two opens, the remainder will slowly develope their beauties, and at this season will remain in good condition for six weeks. The later plants for flowering in March, or about the end of that month, should be grown on slowly in a cool pit. It is always easier to push them forward to get the flowers in by a given date than to retard. The only way they can be kept back is by shading and keeping them cool; this draws the leaves, and if, in addition, the flowers are past their best, they are sure to be beaten by fresh young examples, even if the latter are not quite so strong in growth. Apply weak manure-water about twice a week.

### Early-flowering Pelargoniums.

A temperature of 55° at night can easily be kept up in the house when the weather is mild, but if a sharp frost should set in it might fall 5° or more lower. A very moist atmosphere would be injurious, but the paths and stages of the house should be made moist about once every day—say at 10 A.M. If the pots are, as they ought to be, well filled with roots, and the plants well set with flower-buds, manure-water should be applied freely, and the plants will require careful attention so that they will not suffer for want of water. Prepare osier rods of the right thickness by tying them straight in small bundles, and hanging them up in a dry airy place. If this is not done they will probably start into growth when their ends are placed in the soil. Plants to flower later—say in June—must now be kept near the glass in a cool greenhouse; the pots ought also to be fairly well filled with roots at this time, and if necessary manure-water should also be given to them. The stems should be tied out, and otherwise regulated.

### Zonal Pelargoniums.

The young plants propagated from cuttings last autumn, and which are now in 3-inch pots, should be potted on into 5-inch ones. If they are wanted to flower early they should be placed in a house where they can have some artificial heat, but this must be accompanied with sufficient ventilation. Plants intended to form moderate-sized specimens during the summer, and to flower late in the autumn, need not be pushed on at all; they will do well enough at present in any house from which frost is excluded. Large specimens for flowering in the summer must also be kept in any cool house near the glass. If they were not potted into their flowering pots in the autumn this ought to be done now, and the soil used must not be too rich; a sixth part of rotten cow-manure added to the loam will be sufficient, with about as much leaf-mould, not too much decayed. In potting all these soft-wooded plants see that the soil in which they are growing is quite moist, and the potting material moderately so. At this season the freshly potted plants would not require water for at least six days after potting.

### Verbenas.

The plants placed in a little heat in order to start them into growth will now have formed healthy young growths. These may be taken off at once, and propagated in a house where there is a little artificial heat. The cutting-pots should be plunged in heat, and covered with hand-glasses. Under this treatment there will scarcely be any failures, and the cuttings will form roots in a week, and will be ready to pot off in a week more. Petunias require very similar treatment to Verbenas, and the above instructions apply equally well to them. Seeds of either of them may be sown now in pots or pans of light sandy soil. *J. Douglas, Loxford, Ilford.*

# Garden Operations.

## *KITCHEN GARDEN.*

Any blanks that may have occurred in the ranks of autumn planted Cabbages during the recent severe weather should now, if not already done, be made good, and the soil made firm again around plants that may have become loosened at the collars. Plant out Shallots, Garlic and Chives in beds 4 feet wide with an alley 1 foot wide between each bed in rows 9 inches apart and 6 inches in the row, which will be five rows in each bed—one row in the centre and two on either side. The beds should be made square with the wall, and should have an even and somewhat firm surface, over which some wood-ashes have been strewn; it should be patted down with the back of the spade, should have the alleys neatly cut by pressing the soil back to the line with the back of the spade, and, when the bulbs have been planted—the Shallots inserted by the pressure of finger and thumb barely under the surface of the bed, and the Garlic and Chives a couple of inches deep—the bottom of the alleys should be made level with a small rake. The beds will then present, as all seed beds should do, a neat appearance. Onions, as a rule, succeed Celery, therefore no time should now be lost in taking up the latter and laying the stems in as deep as before

in a north border, and the ground should be manured and well dug, so that the seed may be sown as soon as the condition of the surface, which should be sufficiently dry to prevent its adhering to the feet, will permit. The ground, assuming it to be light and pulverised, should then be trodden, raked and made level with a wooden rake and then rolled with a light roller and again raked—this time and subsequently with an iron rake, the ground having first received a good surface-dressing of dry soot—after which the drills can be drawn 1 inch deep and 1 foot apart, and the seed sown thinly and evenly in the drills. The soil should then be closed in over the seed with the feet, and again trodden down over each individual drill and rolled, and then finally raked over in the same direction as the drills, so that the bed, when finished, may present a fine, firm, and even surface. As to varieties there have been many kinds introduced of late years, all which for size and appearance are undoubtedly good; but for general use and good keeping qualities the following well-tested varieties may be thoroughly relied on, namely:—Danvers Yellow, Nuneham Park, James' Keeping, and Deptford or Strasburg. These are all good varieties and of good size, and should, in my opinion, be used in the order in which their names appear. However, in addition to the above-named Onions, a few rows of White Naples should also be sown for early use, as also a few beds of the Silverskin variety for picklers, the latter being sown broadcast and rather thickly in a poor, dry, and shallow border in order to prevent their growing too large. Carrots (Long Red Surrey and Altringham are two good varieties for general crop) and Parsnips (Hollow Crown and the Student) should also be sown on the first favourable opportunity in the same way as recommended for Onions, except that the rows should be farther apart—from 15 inches to 18 inches between each row. As soon as the condition of the ground permits of its being done another sowing of Nonsuch and Early Snowball Turnips and Early Nantes Carrots should be made adjoining those previously sown. A small sowing should also be made in a favourable situation of the following seeds, namely:—Wheeler's Imperial Cabbage (or any other early variety), Early Ulm Savoy, Leek, Green and White Paris Cos Lettuce, and Grand Admiral Cabbage Lettuce, Round-leaved Spinach, and Early White and Scarlet Turnip-rooted Radishes—the latter under a south wall between the trees. If pitted Potatos have not already been sorted and disbudded no time should now be lost in doing so; and as soon as Cauliflower and Lettuce plants, which should now be all planted out as recommended in the Calendars for January 22 and February 5, have been removed from cold pits, the latter should be got ready for, and planted with, some of the early kidneys from the shelves in the Potato-house, taking care that the young shoots are not broken off in the operation. Lee's Hammersmith Kidney and Myatt's Prolific are two good varieties.

Forcing Department.—Sow in pots Long Red, Cayenne, and Squash or Tomato-shaped Capsicums, placing them in a warm frame near the glass, and potting off singly in 60 pots as soon as large enough to handle, returning them to the frame. Celery plants, too, when large enough, should be pricked out in rich, finely sifted soil, 4 or 5 inches apart, in a frame near the glass, and then watered through a fine rose to settle the soil around the roots of the plants, which should be shaded from the mid-day sun for a few days until the roots have taken hold of the soil, when it should be discontinued, and sufficient air admitted to the frame to prevent the plants making a weakly growth. As the plants increase in growth so also should the ventilation be increased, and subsequently the sashes should be tilted up at night. Trophy Tomato, in my opinion the best for outdoor culture, should be sown at the end of the present month, as also Marjoram and Basil; and pots should be placed over a few of the earliest crowns of Rhubarb out-of-doors, and, if necessary, covered with dung and leaves. *H. W. Ward, Longford Castle.*

## *FLOWER GARDEN.*

The boisterous gales of wind that have of late been prevalent will, to some extent, retard the growth of newly planted trees and shrubs, particularly such of them as may not have been well secured to supports. Any that have not yet had this attention, or of which the supports are inefficient, should at once be seen to, and the ground about them should still be kept thickly mulched. The planting of deciduous kinds should be brought to a close as soon as possible, but most kinds of evergreen shrubs will move with safety for months to come—though, for convenience sake, because of the increased labour that the spring and summer bring, it is desirable to plant these also at this season. This is our regular practice, and at the present time we are busy planting Rhododendrons, Hollies, and Conifers. Perhaps I ought to add that our soil is a sandy loam, and always workable. On heavy clay land delay in planting is inevitable, in fact desirable, for some time to come; but on light soil, unless the plants are got in early, that the roots may get established before the sun has much power, the plants fail to make satisfactory progress, at least for the first season. Many trees have been hopelessly injured by the heavy gales, and as if left they will only be eyesores, they should be cleared away without hesitation, and others planted in their place. Any that have only lost a branch or two may be trimmed up, and at the same time, with a view to symmetry, it may be desirable to lop a good branch, as also to remove every bit of dead wood, and, in the case of columnar habited trees, to tie close in any boughs that are breaking away from the main stem, and are therefore liable to be snapped by the wind. A similer remark is also applicable to Ivy-clad buildings, for the wind gathering in any portion hanging from the walls is liable to strip the whole clean away, and the only way to prevent this is to trim it up close to the wall every season, immediately before it starts into new growth, a plan that also insures freedom from the lodgment of vermin, and a bright green colour the whole summer. All other wall climbers may now be pruned and trained in, except it be Roses. These have been so hard hit with frost, that, in many instances, they will have to be cut down, whilst others, though not killed to the ground, are sure to die back somewhat, and till the full injury that the frost has done is visible pruning should be delayed. A few of the more robust-growing hybrid perpetual varieties may now be pruned with a view of getting an earlier bloom, but pruning of the main bulk should this year be deferred till near the end of March: still keep all of them well mulched. It is important that all alterations necessitating the removal of turf should be completed early, that it may be established before draught checks its progress. Roll the same at every opportunity now that the ground is wet, and a close velvety turf will result. Soot and wood ashes, either, or both mixed, are most excellent manures for lawns, and may be applied at any time, though showery weather is preferable in which to do so.

Indoors the present is a busy time, as all kinds of plants intended for summer bedding need overhauling. Pelargoniums that have been wintered in store pots or boxes want potting off; Ageratums, Heliotropes, Petunias, and such like, the same; old plants of Fuchsias to be cut-back and started into growth by being placed in a moist heat; Calceolarias in cold frames to be thinned out, and the points pinched out to cause a branching growth; Violas the same: these latter, if convenient, might be planted in their permanent positions. Dahlias, Salvias, Cannas, and herbaceous Lobelias, should all be now started into growth, and seedling plants of subtropicals—named in a former note—should be potted off before there is any likelihood of the roots getting matted together. Seedling Lobelias, as a rule, are disappointing, they grow so irregularly; it is therefore best to secure a good strain and grow the stock from cuttings. We strike ours in a moist bottom-heat of about 65°, and then pot them, ten or twelve in a 48-pot, and as the season advances plant them out in cold pits. Mesembryanthemum cordifolium variegatum, notwithstanding all new-comers, is still invaluable, and this we strike in shallow boxes of light soil by standing them on the pipes in vineries, or any house that needs to be kept at 55°; here they strike freely, and are then removed to cooler quarters, and are never removed from the cutting boxes till they are finally planted out. Alternantheras may be propagated in exactly the same way, but a better way is to make up slight hotbeds, as for Cucumbers—the cuttings may be inserted as soon as the heat declines to 70°, and here they may remain till transferred to the beds—the frames or lights, of course, being removed as weather permits so as gradually to inure them to full exposure when planting-out time arrives. *W. Wildsmith, Heckfield, Hants.*

## *FRUIT HOUSES.*

Peaches and Nectarines.—Forcing is in a great measure still depending on fire-heat, for although we have milder weather we have so far very little sunshine, consequently the trees come on very slowly. It is not, however, advisable to push them too hard so long as such dull weather continues. Keep the night temperature of the early house from 55° to 60°. Give more air when the temperature rises to 65° by fire-heat. On bright days, with a good circulation of air, they may run up to 75° or 80°. On sunny days close early, syringe the trees well with chilled water, and moisten every available surface two or three times a day. To prevent red-spider, a little manure-water put in evaporating troughs where the trees are near the pipes will act as a check upon it, as the enemy generally makes his first appearance in such places. Disbud and heel-down the shoots as near the base as possible, to form bearing wood for next season; but do not crowd them on any account, it is often the cause of weak unripened wood. I never leave spurs, except a leaf or two at the base of fruit, which are taken off after the fruit is gathered. Pull off all the weakest fruit, leaving sufficient to allow for a few dropping during the stoning period, which should be very few indeed if the trees are in good condition, and have had all they require in the shape of water, &c. Should any trees be weak through overcropping or other causes they will be much improved by giving them a mulching of good horse or other manure, and afterwards a thorough soaking of chilled water about 85°. The earliest trees in the second house should now be pretty well set; as soon as they are syringe them slightly twice a day with chilled water. Go over later trees on fine days with the brush; since introducing bees I have had no need to use it. When they are all set give a thorough watering, and the same treatment as in the early house. Attend to cleansing and training succession-houses, and keep the ventilators in the latest houses open night and day to keep them as late as possible. *J. Wallis, Keele Gardens.*

### Melons.

If the directions given in former Calendars have been attended to and no mishap has occurred the young plants will now have formed the third leaf, and will soon be ready for planting out. It is important in executing this operation to see that the plants do not sustain injury by exposing either leaves or roots to a temperature lower than that in which they have been growing. In pits or houses where bottom-heat is provided by means of hot-water pipes all that is necessary is to put a thin layer of brick rubble over the slates which cover the pipes, and then lay a thin layer of litter over the rubble. Upon this a stratum of turf is laid to keep the compost from getting intermixed with the rubble, which would impede the free passage of water when it has been applied to the roots. In case fermenting materials are used for supplying bottom-heat the materials should not be exhausted by violent fermentation before being used, and in filling the pits a layer of faggots should be placed in the bottom and an allowance of not less than 9 inches should be made for the subsidence that is sure to take place with even gentle fermentation in the course of time. After tramping the materials firmly into the pit a single turf or sod in thickness should be laid over the surface of the bed, which is then ready for the compost to be put on, as in the case above mentioned. I make a narrow ridge right along the centre of the bed of prepared compost, such as was recommended in a former chapter, and when the whole body of earth is warmed to the proper temperature, as indicated by the ground thermometer, the plants intended to be planted out are plunged up to the rim of their pots in the ridge of earth for two or three days prior to being finally planted out. In planting, two plants are put under each sash or light close to each other as a safeguard against failure or accident, and, of course, the best plant only is retained when it is seen which promises to be the best. A stake is then put to each plant to direct it to the first wire, and a slight surface-mulching of horse-droppings and a watering with water at about 85° completes the operation. The day temperature should now range from 75° to 80°, and the night temperature from 70° to 75°, according to the state of the weather. *W. Hinds.*

### Cucumbers.

Plants that have been in bearing during the autumn and winter will now be fast gaining strength under the influence of increased light and heat, especially if they are not taxed with a heavy crop. Old plants come into bearing so early compared with young plants raised from seed, that even where they have suffered severely during the late severe weather, if the stems are hard and young growths are pushing away from the joints, they will yet yield an abundant supply of fruit in considerable advance of seedling plants. Fruits are already forming numerously at the fourth joint of young growths upon plants that were relieved at the turn of the year. Such plants require gentle treatment to bring the roots into full play, after which young growths will shoot away and flourish with amazing vigour. In cases where root-action is found to be very defective, a surface-covering of warm dung and leaves—a sufficient body to create a gentle warmth—will bring about the desired effect, and also provide a constant moist vapour, which will prove highly beneficial to the general well-being of the plants. The treatment recommended for young Melon plants are so identical with the cultural conditions essential in the case of the Cucumber, that it would be a work of useless repetition to traverse the same ground a second time. I would, however, add that the staple portion of the compost for Cucumbers should be rich turfy loam, with a slight addition of well-rotted manure. In a compost of this nature vigour and fertility are sustained for a much longer period than when the soil used is of a light open texture, such as is frequently employed. *W. Hinds, Canford.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| MONDAY, | Feb. 21 | Sale of Lilium auratum from Japan, &c., at Stevens' Rooms. Sale of Lilies and Established Orchids, at the Mart, by Protheroe & Morris. Sale of Nursery Stock at Brox Nursery, Chertsey, by Mr. R. Waterer. |
| TUESDAY, | Feb. 22 | Sale of Nursery Stock at the Anchor Gardens, Knap Hill, Woking, by Protheroe & Morris. |
| WEDNESDAY, | Feb. 23 | Sale of Roses, Fruit Trees, &c., at Stevens' Rooms. |
| THURSDAY, | Feb. 24 | Sale of Imported Orchids, at Stevens' Rooms. Clearance Sale at the Springfield Nursery, Wandsworth Road, S.W., by Protheroe & Morris. |
| SATURDAY, | Feb. 26 | Sale of Hardy Trees, Bulbs, &c. at Stevens' Rooms. |

IT needs some courage to advocate the REMOVAL OF OLD TREES. To touch an old tree is to many not only a blunder but a crime akin to sacrilege, and in many cases it is so. The short and simple theory, with some people, is, in regard to trees, "whatever is is right," especially if it is but old enough. The trees might have been choice seedlings, or planted without the slightest regard to taste, comfort, or propriety: but the tree has battled with the storm and braved the breeze for a century or more, and, therefore, it must stand where it is. It not only appeals to sentiment, but becomes a tender sentiment in itself. So much is this the case that the tree can truly be said to stand alone. Other days and other lives are associated with and entwined around the trees, and thus it becomes almost impossible to remove them. These sentiments are often right and praiseworthy to a very great extent, still they are sometimes allowed to be carried to great extremes: hence it is no uncommon thing to find the most lovely landscape, the richest views, shut out or hidden by commonplace trees that have nothing to commend them but their age. In parks and pleasure grounds it is no uncommon thing to find even the best trees hidden, so that the apparent paradox becomes a sober fact—we cannot see the trees for the trees.

In all such cases true taste aided by courage would sacrifice one or more trees for the sake of the many. In many of the best gardens in England, landscapes need cutting out rather than planting in. Probably it needs more taste and judgment to create landscapes by the first method than by the second; but then it is so rapid as to entitle it to be called the instantaneous mode. It is this very rapidity of change that seems to frighten many. Plant in a landscape, and its progress is so slow as to be almost imperceptible to our senses. Cut one out, and the change becomes a matter of hours or days at the longest—and so much the better. The cuckoo cry of "Never cut down an old tree as you cannot put it up again" is as childish as it is foolish. Who but a simpleton would wish to put it up again? To those accustomed to prejudge results in landscape, the effects of either cutting down or planting are clearly foreseen. No tree of any value should be removed, none planted, without the advice or sanction of such authorities. More places are ruined or marred through the interference of those with neither culture, taste, or judgment, than are made beautiful by the exercise of such qualities. It is too often forgotten that wealth does not give taste, and yet among the things almost every man thinks himself qualified to do well is the planting or cutting down of trees. No one can do either to good purpose without special culture and training. Any one possessing these sees, as it were, the end from the beginning, and may create beauty by semi-magical rapidity by cutting down trees that either hide or deform it.

The majority of places are over-planted, in the sense of being planted too near and too thickly round the mansion. A few large trees in close proximity to houses are at once picturesque, beautiful, and useful. They clothe the baldness of bare brick or stone with the varying forms and colours of vegetable life. Their shelter is useful, their shade may be most grateful, but they are often so close and in such masses as to dwarf the finest buildings into puniness and surround mansions and villas with a dank atmosphere or a sombre gloom that is most unwholesome and depressing. Trees are not seldom crushed up against dwelling-houses and buildings, much to the injury of both, and as if there were not an inch of ground anywhere else on which to plant. Not a few landscape gardeners seen to have forgotten that abundant shelter and all needful shade may be afforded without crowding the trees right up against the house.

This tendency to plant so close to buildings often results in hiding up, instead of supporting or embellishing the latter. Blinds and shutters around houses have been carried to ridiculous extent in this country. In or near to towns planters naturally seek to give as much prominence as possible to trees and shrubs to relieve the dreary monotony of miles of bricks and mortar. The case is widely different in the country. There trees and green fields abound, and the well-built mansion or cottage becomes itself an important feature in adding to the interest and completing the beauty of the landscape; and yet the suburban style of planting out houses has too often been adopted in the country.

In all cases where mansions have been overplanted, or trees badly placed, no time should be lost in thinning the one or removing the other. Readers who have taste and judgment will know how to proceed: those who have not should obtain the best judgment and taste at their command. As a general rule it may be said that all common trees in actual contact with buildings should be removed, and also all those that so block the foreground of the landscape as to limit its area, or hide up the more distant and salient points of its beauty.

The woodcut which we give (fig. 46) will suffice to illustrate some of the remarks just made. It represents the "drive" at Linley, already described at p. 747, vol. xiv. The drive is, in fact, a river valley bounded by wooded eminences on either side, and terminating in a fine bold hill. The sides of this valley were planted many years ago with much taste and judgment, and some noble Scotch Firs, Spruces, and other trees mentioned in our previous article, not forgetting the noble clump of Larches, of which we also gave the history, and which are shown on the right of the centre of the cut. Many of these fine trees had been blocked in and concealed by others, planted for shelter and other purposes, no longer required, and their cautious removal is now being carried out with very great advantage under the judicious direction of Mr. BOSCAWEN.

—— THE LATE REV. JOSHUA DIX.—All those who were acquainted with the late much respected chairman of the Floral Committee will sympathise with the numerous misfortunes that have befallen his family. At the present time an effort is being made to procure the admission of his orphan grandson into the Infant Orphan Asylum, Wanstead. The mother is unfortunately helpless from epilepsy and paralysis. We shall be pleased to receive proxies, which may also be sent to Mrs. DIX, 115, Torriano Avenue, Camden Road, N.W. The case is a particularly distressing one, and will, we hope, meet with the practical sympathy of all who are able to assist.

—— POTATO CULTURE.—A list of Potatos, representing about 600 sorts in all, but melted down to about half that number by a process of severe selection, forms a useful feature of the current number of the *Gardeners' Magazine*.

—— LILIES.—Lilium eximium (true) is a great favourite with the Messrs. BECKWITH, who have three houses occupied with it and L. longiflorum. The first house contains 5000 pots, four bulbs in a pot, Dutch-grown roots; they are as even as anything in their way could be imagined; scarcely one bulb in a hundred seems likely to fail blooming. Five thousand bulbs of Japanese growth are equally promising. Of L. longiflorum comparatively few are cultivated, and the stock is far behind L. eximium in appearance, being much weaker, and will evidently not flower nearly equal to this beautiful free-forcing kind, which for decorative purposes has few flowers to surpass it. Quantities of the common white L. candidum fill one half of a long house, but this sort requires to be grown a year in the pots before forcing, otherwise scarcely one in a score will bloom; but after a season's growth, so as to admit of their getting established, few fail to flower.

—— "TRAITÉ DE BOTANIQUE."—Under this title M. VAN TIEGHEM has commenced the publication of what promises to be an important text-book of botany. The latest and most important sources of information have been had recourse to, and the arrangement of the matter is made with that judgment in selection and clearness and orderly sequence of detail which makes many French books contrast so favourably with many published in Germany.

—— EARLY BEANS. — It will be observed that most seedsmen's catalogues place the Mazagan at the head of the early Beans for present sowing. It is a good and useful variety, but is by no means the first early generally supposed. The Seville Longpod is decidedly the earliest, and several days in advance of the Mazagan; the Early Longpod is also before it. The last named is much more largely grown than the Mazagan, the culture of which is confined to a considerable extent to certain districts. Beck's Dwarf Green Gem is also a most useful early Dwarf Bean, unsurpassed, if equalled, for its rich flavour; but by reason of a succession of bad harvests it has become scarce and dear. Let gardeners sow the Seville Longpod for early crop, and follow on with Longpod types and Broad Windsors; Beck's Green Gem on a warm rich early border, as the Bean for the table, should also be grown,

—— A HORTICULTURAL SOCIETY FOR CHISWICK. —On Monday last a meeting of some of the leading residents of Chiswick, Gunnersbury, &c., took place in the Council Chamber of the Royal Horticultural Society's Gardens at Chiswick, to form a horticultural society for Chiswick and district. The great success which attended the exhibition held in April last at the Vestry Hall, Turnham Green, in aid of the funds of the West London Hospital, has induced the promoters of the present society to take this step. There was a good attendance at the meeting, and a strong desire was expressed for the establishment of the society. With the concurrence of the Council of the Royal Horticultural Society, Mr. A. F. BARRON made an offer of the Chiswick Gardens as a site for the show; to provide tents and all necessary appliances, clerking, &c.; and this offer was so generous and acceptable that it was at once provisionally accepted. Some of the leading supporters had promised liberal guarantees, and it is confidently expected a large number of subscribers will be forthcoming. A provisional committee was appointed, and it is proposed to hold a summer show in July. History repeats itself, and there seems to be a probability that the old Chiswick Gardens will again witness the bustle and excitement of a flower show. The neighbourhoods of Chiswick, Gunnersbury, Grove Park, Bedford Park, and others are extending with amazing rapidity, so that a flower show at Chiswick is well nigh certain to be a great success.

—— THE FIRST COMMISSIONER AND THE PUBLIC GARDENS.—The whirligig of Time brings with it changes in the conduct of public affairs, and although in politics it is an established rule to alter as little as possible the policy or acts of previous office-holders, this generosity does not always, and fortunately, apply to those matters which are outside party or political feeling. The office of First Commissioner of Works is one that varies both with party changes and circumstances. Under the late administration it was held by two doubtless able officials. To them succeeded Mr. ADAM, still no doubt a man of taste and of ability; and the namesake of the first gardener is followed by such an able administrator as Mr. GEORGE SHAW-LEFEVRE. Whilst in relation to the grounds that surround the new Natural History Museum Mr. ADAM would seem to have accepted the taste that ruled his predecessor, Mr. SHAW-LEFEVRE has already put

in force such changes as would indicate that if his tastes are not original, they are, at least in garden matters, diverse from those previously dominant. The man who had in the House of Commons the courage to read a lecture on taste to the City Corporation and to defy the "Griffin," would hardly be a servile follower of routine. Laid out in the most formal lines, and with huge beds evidently intended for squab carpet parterres, Mr. Shaw-Lefevre has boldly had the entire lot turfed over, evidently regarding the flower-beds as abortions, and the emerald-green herbage as a pearl of great price to be preserved. If he could turf over some of those broad square walks also he will deserve credit, for they are at once ugly and utterly out of keeping with the structure. There is a field for the display of an excellent piece of decorative gardening, and it is to be desired that under the new dominant influences we may now see something that shall not induce vexation or ridicule on every passing gardener.

—— Roses.—Winter Rose forcing and propagation are now being pushed on by Messrs. Beckwith. Two hundred dozen blooms were cut the first week in February. One of Mr. H. Bennett's new varieties, Jean Sisley, was in fine condition: the flowers at this season are about the colour of Madame Victor Verdier; the buds are large and of the long tapering shape now so much preferred to the shorter more globose form. There is here a new yellow Continental Rose, not yet named; the habit of the plant is like Safrano in appearance, the flowers are something between Maréchal Niel and Perle de Lyon. Messrs. Beckwith have so high an opinion of this Rose, that they have already had 7000 of it grafted this winter, and more are yet to be done.

—— Crocus Imperati.—In the opinion of most lovers of hardy flowers this species is one of the handsomest of all the vernal Croci. It is one of the hardiest and freest flowering, besides being one of the earliest to open its blossoms, which, moreover, require less sun to cause them to expand than do those of most other species. The exterior of the outer perianth segments is a brownish-yellow, with three deep purple stripes, the inner surfaces, as well as both surfaces of the inner segments, being a very pleasing blue. At Kew this is at present the most striking hardy plant in flower.

—— "Fiji Planting and Commercial Directory."—It will surprise many to see the progress made in colonising these far distant islands. The publication before us gives brief information as to the history, climate, products, and prospects of this young colony. The agricultural prospects are considered satisfactory by Mr. Horne, the director of the Mauritius Botanic Garden, who visited the islands for the purpose of studying their resources. Sugar, Coffee, Cocoa-nuts, Cotton, Tea, Cinchona, Tobacco, and various other tropical products can be easily and profitably grown, while the Sandal-wood is a special source of profit. About 13,000 acres are already under cultivation, no less than 5876 being devoted to Cocoa-nut planting. The rainfall varies in different districts from 60 to 250 inches annually, the average being 110. The temperature varies from 55° to 90°, the average being 75°. The highest temperature in the shade, average of three years, was 93° (in February), the lowest for the same period 62° (in August). The maximum in the sun 158°, in February, but varying comparatively little throughout the year; the lowest temperature on the grass was registered at 50°, in August, the range being about 14°. From these few data, which may be useful to cultivators, it may be judged that the climate is not likely to be an unhealthy one, all things considered.

—— Hamamelis japonica.—This species is now in flower in the Kew Arboretum. It differs from H. arborea (figured in the *Gardeners' Chronicle* last week) in its rather paler flowers, which are also somewhat less in size, and are borne in less dense clusters. The sepals, too, in the present species are a very light reddish-brown colour, whilst those of H. arborea are a deep dull red. The flowers of both are slightly scented. All the Witch Hazels are very desirable plants, but the two just mentioned are much more handsome than the old H. virginica, which, moreover, flowers at a different season—autumn or early winter.

—— The Winter of 1879-80 in Belgium.—Baron Selys de Longchamps has published in the *Bulletin* of the Royal Botanical Society of Belgium an account of the effects of this disastrous winter on the trees on his property at Longchamps-sur-Geer, a low-lying spot in a river valley. The thermometer on November 20 went down to—1° C., = 30°.2 F., and the frost lasted for thirty-eight days; on one occasion—December 9—the temperature was recorded as low as

Fig. 46.—The drive at Linley, showing the original group of larches. (see p. 240.)

—26° C., = 14°.8 F. All through January, February, and March, frost continued with slight and brief intermission. April and May were hardly more genial; indeed, on May 1 the temperature was again registered —1° C. This exceptional winter was preceded in Belgium, as it was here, by the gloom and constant wet of the so-called summer of 1879. Observations on the state of the trees were made on three separate occasions during 1880, and the following among other particulars may be cited. Among Conifers which were not injured are mentioned Pinus silvestris, Strobus, Cembra; Picea alba, excelsa, nigra, canadensis; Larix europæus, leptolepis, dahurica; Taxodium distichum, Thuya occidentalis, plicata, gigantea; Retinospora pisifera, squarrosa, ericoides; Juniperus communis, Sabina, virginiana; Ginkgo biloba. The following Conifers were more or less hurt:—Pinus Laricio, Pinaster (killed), insignis (killed), Lambertiana (killed), Mugho; Abies nobilis, pectinata (Silver Fir), some killed, others much injured; Nordmanniana, injured; balsamea, killed; Pinsapo, killed; grandis, killed; Menziesii, killed; Cedrus atlantica, killed; Sequoia gigantea, killed; Libocedrus decurrens, killed; Biota orientalis (Arbor-vitæ), killed, or greatly injured; Thuyopsis dolabrata, slightly hurt; Cupressus Lawsoniana, several killed; nutkaensis, slightly injured; Retinospora obtusa, killed; Cupressus sempervirens, killed; Juniperus drupacea excelsa, killed; Taxus baccata (common Yew), three-fourths of a large number killed; T. adpressa, killed; Cephalotaxus pedunculata, Fortunei, drupacea; Torreya grandis and californica, all killed. Of other evergreen shrubs Mahonia Aquifolium, repens, japonica; Euonymus radicans, Hypericum calycinum, Rhododendron ponticum were all uninjured. The following were killed or severely injured:—Ruscus aculeatus, Daphne Laureola, Mezereum; Aucuba japonica, Prunus Laurocerasus, lusitanica; Mahonia japonica, Ilex Aquifolium (Holly), and Ivy (Hedera Helix), killed to the ground, but broke again in summer. Buxus sempervirens killed like the Yews. Among fruit trees almost all the Pears, pyramids or espaliers, were killed; the destruction among Apples was nearly as great, those grown as cordons destroyed; Cherries and Plums less injured; Apricots as standards killed, Peaches mostly killed; Quinces, Medlars also killed; Mulberries not much hurt, Almonds injured, Currants, Gooseberries not much hurt; Filberts, Walnuts and Spanish Chestnuts slightly hurt; Vines outdoors slightly hurt. Of course the crop of fruit was very defective. No such injuries have been noted for seventy-five years; the intensity of the disaster being brought about by the early and sudden appearance of the frost after two wet years. The trying winds of the spring completed the disaster.

—— Rosa minima, so called in the Cambridge Botanic Garden, is a most charming little plant. It is evidently a diminutive form of the common "Monthly," and, like it, flowers in the most untiring manner. For several weeks it has been in flower, and one of its merits is the good temper with which it submits to forcing. In but a short time it produces a delicate furnishing of pretty foliage, which is very soon followed by fragrant little flowers, fairly double. The tiny buds are very attractive, and altogether the term "fairy-like," which people are pleased to use sometimes, could not be applied more fittingly.

—— Hyacinths for Market.—After two of the worst seasons that possibly were ever known in succession for the growth of Hyacinths, the ill effects of which were so apparent in the badly ripened bulbs which came to hand in the autumn of 1878-79, and which generally resulted in a correspondingly meagre production of flowers, the roots the past autumn appear to be all that could be desired. For after all that can be done by judicious treatment in forcing, and the management immediately preceding this, unless the bulbs are plump, solid, and heavy, there is no possibility of big strong spikes, such as delight the growers of this favourite flower. Messrs. Beckwith's Hyacinths have for many weeks been a sight which those who have not seen a large market grower's establishment would fail to realise. Three of the large houses are devoted to them for five weeks before Christmas and up to the end of February. The stock in heat is kept up to 10,000; each day as the vanloads in bloom are sent away their places are filled up by others to come on in succession. The centre stage of the largest forcing-house holds 2800, and it is here where most of the flowers undergo the finishing process. Each kind is stood by itself across the stage, forming broad bands of distinct colour, which, seen from the ends of the house, have a most pleasing effect, the soft shades peculiar to this flower contrasting beautifully. The most noted exhibitions of Hyacinths we have ever seen lose by comparison with the contents of this house, not alone in quantity, but more in the even condition of the plants bearing large massive spikes, managed to a nicety so that the individual flowers are neither crowded nor too loose, with stout foliage, just sufficiently developed to match. Not a particle of manure in any shape is given them, ordinary loam with a large proportion of sand being all that is used. White varieties are most in demand; reds and blues about equal. No variety is grown in quantity until its merits for general usefulness have been tested. As will be seen by the names appended, there are a good many of the old kinds yet unbeaten:—Gertrude, pink; Marie, deep blue; Fabiola, pink; Agnes, red; Grandeur à Merveille, French-white; Mrs. Beecher Stowe, red; Josephine, brightest of dark reds; Baroness Van Tuyll, pure white; Charles Dickens, blue; Noble par Merite, double, red; Albus Maximus, white; John Bright, pale blue; Porcelain Sceptre, porcelain; Couronne de Celle, fine blue; Lord Grey, flesh colour, fine; Sir John Lawrence, deep blue; Crown Prince of Sweden, dark mauve, double; Grand Lilas, porcelain-blue; Leonidas, blue; Queen of the Netherlands, white; Mammoth, the largest of all, white; Mont Blanc, white; Solfaterre, red, tinged with orange; Mimosa, black-blue, throws many spikes, often three or four to a bulb; La Franchise, ivory-white.

—— Euphorbia jacquiniæflora.—The centre stage of a large house at Messrs. Beckwith's is filled with this plant. They are struck in April, and grown four together in 8-inch pots. The sprays of bloom, consisting of the leading portion of the shoots, were in and cut soon after Christmas, and the lower portion of the shoots for some 12 or 15 inches of their length were again complete wreaths of scarlet flowers. This brilliant coloured winter-flowering plant requires to be well done to enable it to produce such an amount of second crop as this.

—— The Weather in the Lothians.—A Midlothian correspondent writes under date of February 15:—"The wintry weather still holds here, with no appearance of a thorough thaw at present. We had a fresh fall of 3 inches of snow last night, and 4° of frost this morning. A clear sky and a rising barometer indicate keen frost to-night. We have not got a spade into the ground since the second week of November. Throughout the winter, although the cold at night was excessive, we have had sunshine more or less almost every day, which has proved beneficial to our early forcing, of which we have a large share. Grapes, Peaches, plants, &c., have all forced easily and better than usual this winter. So far as can yet be seen our losses out-of-doors will not be great, but I may say more on that subject at another time."

—— Leontice altaica.—This is a peculiar little Berberidaceous plant, with glaucous green leaves and terminal racemes of pretty yellow flowers. It is a native of the Altai Mountains, and was long ago introduced to British gardens; at the present time, however, it seems to be very far from common. The generic name was given on account of a fancied resemblance in the leaves to the print of a lion's foot. It is now flowering in the herbaceous ground at Kew.

—— Flower Shows and Public Holidays.—We are pleased to observe a growing tendency on the part of promoters of flower shows to have their fixtures on Bank and local holidays. The great masses of the people will keep holiday, and it behoves those who have the management of institutions, &c., appealing to public support to provide healthy recreation on a public holiday. The flower show is one of those associations that can lay claim to a humanising influence, and the more the masses can be attracted to shows the farther will they be removed from some injurious influence, while managers, who labour hard to make a show pay, will be benefited thereby. It is a custom now to hold spring shows in the suburbs of London, and Easter Monday is an appropriate day on which to hold it. The experiment was tried at Ealing last year, and resulted in the takings at the doors being nearly trebled. One great difficulty besets managers of indoor shows—that it is almost impossible to engage a room sufficiently spacious to accommodate the exhibits and to admit of a large gathering of people; but something can and is being done, and horticulture becomes a helper in the work of social reform.

—— Reading Horticultural Society.—The spring and summer exhibitions of this Society are fixed for Thursdays, May 19 and August 25. At the former show prizes will be offered for a group of Rhododendrons, to occupy a certain defined space, and also for cut blooms of twelve show and twelve fancy Pansies, in distinct classes. The Society having emerged from the shadow of debt which hung upon it, is now zealously bent on making its shows as attractive, generally interesting, and successful as possible.

—— Malva umbellata.—This plant, which has been flowering for several weeks in the Oxford Botanic Garden, is one of the most interesting things we have lately met with. It is one of those choice rarities certain to be seen on a visit to this fine old establishment. Its habit is rather that of Hibiscus than Malva, and it grows erect, with much the appearance of H. mutabilis, or one of the near allies. The leaves are nearly orbicular, cordate, obtusely lobed, and soft, with starry hairs. The flowers are in umbels of usually three each, borne upon stout axillary peduncles. There is an involucel of stipitate deciduous bracteoles, the calyx has triangular teeth, and the corolla, of deep purplish-crimson, is nearly 2 inches across. Although the flowers are of good size there is something still more attractive in the colour, which is somewhat peculiar and exceptional. This species appears to flourish in a stove, and is, of course, all the more valuable for flowering in winter. It is a native of New Spain.

—— Colorado Beetles in Devonshire.—In the House of Commons, on the 11th inst., Mr. Borlase asked the Secretary of State for the Home Department whether his attention had been called to the evidence adduced at the Yealmpton Police-court, with regard to the discovery of Colorado beetles in South Devon; and Mr. Mundella said he had been requested to answer this question, Colorado beetles being in his department. The history of the case referred to was as follows:—On the 5th inst. the deputy chief constable of Devon telegraphed to the clerk of the Council that a man near Plymouth was in possession of some live Colorado beetles, which he refused to give up, that there was no power to apprehend, and asked for instructions. A telegraphic reply was immediately sent to the effect that the Destructive Insects' Act of 1877, and the order passed under that Act, provided for the imposition of penalties in such cases. Copies of the Act and order were forwarded to him by that night's post. On the 7th inst. the Home Office sent us a letter from the clerk of the justices of the Petty Sessions Division on the subject. We gave him the same information as was given to the deputy chief constable. On the 10th inst. we received an official intimation that the defendant had been convicted and fined £5, the maximum penalty of £10 having been mitigated, as he pleaded ignorance of the law, and proved that the beetles had been destroyed.

—— Aspidium aculeatum var. biaristatum.—This is a Himalayan variety of the Shield Fern, which differs somewhat from any of the European forms of an extremely widely-distributed and variable species. On the rockwork at Kew a plant of it is now conspicuous by reason of its very bright glossy deep green fronds, which are much more attractive than those of any of its near relations.

—— The Ceylon Coffee Disease.—In some notes from Ceylon published in a recent number of *The Colonies and India*, the publication of Mr. Marshall Ward, the Government Cryptogamist's report, is announced. It is stated that on several points Mr. Ward's conclusions as to the nature and cause of the Coffee-leaf disease which he had since his arrival in the colony been fully investigating, were antagonistic to those arrived at by his predecessor, Mr. Morris. Notably was this the case with regard

to the filaments, which Mr. Ward pronounced to have no connection with the Hemileia vastatrix. The report, it is said, throws considerable light on many questions connected with the disease which have hitherto puzzled scientists. It is satisfactory to learn that Mr. Ward believes that if the disease can be got rid of, there is nothing to prevent the Coffee trees recovering their former vigour, and bearing as abundantly as of old. On one special point Mr. Morris and Mr. Ward are in full accord, viz., as to the imperative necessity of destroying by fire the diseased leaves which fall from the trees. Even after they have so fallen they have the power of disseminating the disease unless destroyed; and it is to be hoped, for their own sakes, the planters will see that the joint recommendation so strongly urged by the two cryptogamists is most fully carried out. Regarding Ceylon Tea, it is stated that the island growths are well received in Australia, samples of the Tea having been sent to the Melbourne Exhibition; it is expected therefore that the Ceylon produce will find a large and steady market in the Australian Colonies. On the subject of Cinchona, the Calisaya variety had been adversely reported on by Mr. Moens, the Superintendent of the Dutch Government plantations in Java; but subsequent reports received from Mr. Howard differed entirely, and he pronounced the bark of this kind to be superior to that of the renowned succirubra. As the Calisaya had been very extensively planted on the estates, this decision of Mr. Howard had given great satisfaction to the planters. Several extraordinarily large yields of bark were reported to have been obtained from individual trees.

—— Hakea bipinnatifida.—This West Australian Protead forms a neat glabrous bush about 2 feet high. It has small cylindrical leaves, once or twice ternately divided. The pretty small white flowers are freely produced in short dense almost sessile racemes. As a cool-house winter-flowering decorative plant this species is well worthy of cultivation. Now flowering in the winter garden at Kew.

—— Orchids in Flower at Messrs. Veitch's.—The following Orchids are now in bloom at Messrs. James Veitch & Sons', Royal Exotic Nursery, King's Road, Chelsea:—

Ada aurantiaca
Angræcum citratum
,, eburneum
,, sesquipedale
Anæctochilus Dominii ×
,, Rollissonii
,, Veitchii ×
Calanthe nivalis
,, Turneri
Cattleya Trianæ
,, ,, bogotensis
,, ,, incarnata
,, ,, Rougieri
Cœlogyne cristata
,, ,, Lemoniana
Cypripedium Argus
,, barbatum biflorum
,, Boxallii
,, Crossianum ×
,, Harrisianum ×
,, Hookeræ
,, longifolium
,, porphyreum ×
,, Schlimii album
,, Sedeni ×
,, vernixium ×
,, vexillarium ×
,, villosum
Dendrobium Ainsworthii
,, ,, roseum
,, crassinode
,, ,, Barberianum
,, cucullatum giganteum
,, Dominii ×
,, endocharis ×
,, Farmeri aureum
,, infundibulum
,, luteolum
,, nobile
,, japonicum
Dendrobium Pierardi
,, primulinum
,, splendidissimum ×
,, Wardianum
Dendrochilum glumaceum
Epidendrum eburneum
Dendrobium thyrsiflorum
Goodyera discolor
Lælia cinnabarina
,, Veitchii ×
Leptotes bicolor
Lycaste Skinneri
Masdevallia amabilis
,, bella
,, Chimæra
,, ignea
,, polysticta
Miltonia Clowesii
,, cuneata
Mormodes Wendlandii
Nephelaphyllum pulchrum
Odontoglossum Alexandræ
,, ,, Bowmanii
,, ,, maculatum, and many other fine varieties
,, Andersonianum
,, ,, angustum
,, blandum
,, constrictum
,, cirrhosum
,, gloriosum
,, Hallii
,, maculatum
,, nevadense
,, pulchellum
,, Pescatorei
,, Roezlii
,, ,, album
,, roseum
,, Rossii majus
,, tripudians
,, triumphans
,, prænitens
,, nebulosum
Oncidium ampliatum
,, aureum
,, cucullatum
,, cheirophorum
,, Forbesii
,, fuscatum
Phaius Bernaysii
,, grandifolius
Phalænopsis amabilis
,, grandiflora
,, Schilleriana (many plants)
Restrepia elegans
Saccolabium Harrisonii
Sophronites grandiflora
Vanda suavis
,, tricolor
Zygopetalum crinitum

—— The Cultivation of Hops in Switzerland.—In a recent report on the agricultural condition of Switzerland it is stated, so far as the cultivation of Hops is concerned, that there is scarcely any district where Hop growing may be said to occupy a prominent position, or to claim superiority over other branches of agriculture. This is chiefly attributable to the climate, which on the whole is not favourable to the growth of Hops. In the west and south-west it is too dry for them, in the alpine districts it is too inclement, and, in fact, in no part of Switzerland can it be said to be eminently favourable to their production. The milder and more sheltered districts produce healthy, thriving plants, but this is not sufficient to alter the fact that Hop growing, *per se*, in Switzerland is a most precarious employment, and that the Hop grower suffers more from foreign competition than the cultivator of any other agricultural product. The importation of Hops has largely increased of late years on account of the extension of breweries, for which Switzerland, from its natural conditions and situation, possesses so many facilities. In spite of numerous drawbacks the question of extending the area of Hop culture in Switzerland is from time to time discussed without, however, giving rise to any practical results.

—— Mr. Bockett's Orchids.—The plants here are looking well: the large number of Phalænopsis which this collection contains continue to make excellent progress. After the severe ordeal the severity of the winter has put such plants to, there does not seem to be a trace of spot or disease; the big leathery leaves are as free from blemish as usual when the growth is just completed; most of them are fast coming into bloom. In the Odontoglossum-house some 300 plants are pushing up their spikes, or are already in flower. O. Andersonianum has a spike with forty-six flowers. The following were also in bloom:—

Ada aurantiaca
Cattleya Trianæ
Cœlogyne cristata
,, ,, Lemoniana
,, barbata
Cypripedium villosum
,, Harrisianum
,, Boxallii
,, Sedeni
Dendrobium nobile
,, primulinum
,, heterocarpum
,, crystallinum
Dendrobium crassinode
,, macrophyllum
Lycaste lanipes
Masdevallia ignea
,, Lindeni
Oncidium cucullatum
Odontoglossum Rœzlii
,, crispum
Phalænopsis Schilleriana
,, amabilis
,, ,, picta
,, grandiflora
Sophronites grandiflora

—— Potatos.—A Mr. James Torbitt, of North Street, Belfast, has addressed to the Right Hon. W. E. Gladstone a letter containing some startling statements. In order not to misstate Mr. Torbitt's views we reprint his own words, the value of which Potato growers will know how to estimate:—

"I respectfully beg leave to state that, acting on the strong encouragement of some of the most eminent authorities in the kingdom, I have been engaged on this work during the last six years, and upon a scale far larger than was ever before attempted. During each of these years I have grown 5000 (*sic!*) varieties of this plant, selected the best of the varieties which were disease-proof, and, what is of vast importance, I have intercrossed—cross-bred—these best disease-proof varieties, and I have now in my possession seed cross-bred during three generations, each generation having been disease-proof, and I can submit ample and unquestionable independent evidence that I have produced hundreds of varieties which have hitherto been disease-proof. Under these circumstances I respectfully beg leave to offer to the Government to produce next spring, and to deliver next autumn, 100,000 new varieties of the plant, 20,000 or 30,000 of which would probably be disease-proof, of immense yield, and of excellent quality. They would weigh only a few ounces each, and I would suggest that they should be distributed gratis by the Post-office among the people, one to each applicant, and when the matter became known there would be no lack of applicants, and the delivery would cost nothing. Again, I would further respectfully suggest that this process should be continued year after year, until the whole kingdom became saturated with new disease-proof varieties. And the necessity for the production of multitudes of varieties, if the maximum power of the plant is to be made available, is twofold—first, because it is many years before one variety attains to any considerable bulk; second, because the yield of tubers of new varieties is enormous during the first few years of life; but after a few years (more or less according to the constitution of the variety) it begins to fall off, and the varieties begin to become subject to the disease; and when this double defect reaches a certain point those varieties ought to be discarded and new lives substituted; consequently, new varieties should be continually coming forward in multitudes, to replace those wearing out.

"As to the advantages to be gained by growing new varieties, I would estimate them as follows:—Five to ten millions per annum from suppression of the disease; and twenty to thirty millions from probably doubled, possibly quadrupled crops. Knight found 34 tons; I found 24 tons; while the average yield of old varieties is not more perhaps than 6 tons per acre, and very often diseased; and there would remain behind the further advantage of an extended area of cultivation. I am aware of the present great difficulties of the Government; but the scientific cultivation of this plant is of more importance to England than any possible condition of Ireland; moreover, a healthy Potato crop is one of the greatest wants of Ireland. The acceptance of this offer would, I respectfully beg leave to submit, enable the English farmer to pay his present rent, and to defy any foreign food-competition whatever. Let this plant be properly cultivated, and let the manure be saved which is now run into the sea, and the prosperity of the people would advance by 'leaps and bounds.'"

—— Leptospermum scoparium.—This New Zealand shrub makes a useful decorative plant for the greenhouse or cool conservatory. It is of a bushy habit, and its twigs clothed with small dark green leaves and rather large white flowers come in nicely for bouquet work. It is the Manuka of the Maori tribes, who employ its hard wood in the manufacture of their canoe paddles and fish spears. It is now flowering in the winter garden at Kew.

—— Farningham Rose and Horticultural Society.—The annual general meeting of the Farningham Rose and Horticultural Society was held at Farningham on February 7, when the report for 1880, showing a balance of £36 4*s.* 5*d.*, was unanimously adopted, and the officers for the present year elected. The date of the next exhibition is fixed for Wednesday, June 29.

—— Begonia falcifolia.—A lovely species, introduced from Peru some years ago by Messrs. Veitch through their collector, Mr. Pearce. The sickle-shaped leaves are deep green above, and deep reddish-purple on their under surfaces; the younger foliage, moreover, is prettily spotted with white. The flowers of both sexes are composed of but two rose-coloured leaflets. Although not strictly a winter-flowering species, it is now blooming nicely in the T range at Kew.

—— The Weather.—General remarks on the weather during the week ending February 14, issued by the Meteorological Office, London:—The weather has been very dull and unsettled, with a great deal of rain, and in some places sleet or snow. The temperature was slightly above the mean in "Ireland, S.," but below it in all other districts. The greatest deficit was in Scotland, where the average for the week was 5° or 6° below the mean for the time of year. The lowest reading registered was 14°, and occurred at Glenalmond on the 12th, while in other parts of Scotland the thermometer fell to 21° or 22°. Over the greater part of England and Ireland the minima varied from 23° to 27°. The maxima were nowhere high, not exceeding 52° at any district, excepting "Ireland, S." The rainfall was more than the mean everywhere; in most places the excess was large, and in the west, as well as in "England, N.E." and the "Midland Counties," very large. Bright sunshine was very scarce, the percentages varying from 24 in "Ireland, S." to 11 in "England, N.E." Depressions Observed.—No. 1 was that referred to in our last issue as advancing towards Scotland, where it was shown at 8 A.M. on the 8th, and afterwards travelled to the southern parts of the Baltic. It caused heavy westerly gales on the 8th at most stations, and north-easterly gales in Scotland. No. 2, after advancing from the southward, and being shown, at 6 P.M. on the 10th, off the north of Ireland, moved in a south-easterly direction, and disappeared from our neighbourhood; it was very deep, causing very strong gales from the westward in the south, and from the eastward in the north, and subsequently from north and north-west. No. 3 reached our coasts from the Atlantic, and at the close of the period was over our western districts, causing strong southerly winds or gales in all parts of the kingdom.

—— Gardening Appointments.—Mr. George F. Glen, lately Gardener to L. C. M. Kirwan, Esq., Gelston Castle, Castle Douglas, N.B., has been appointed Gardener to Earl Fitzwilliam, at Wentworth Woodhouse, Rotherham.—Mr. Lawrence Dow, for six years Gardener and Steward at Saughton Hall, near Edinburgh, has been appointed Gardener to Sir David Baird, Bart., at Newbyth, East Lothian, in succession to Mr. George Goodfellow, who has been appointed Gardener to Mrs. Colonel Mure, at Caldwell House, Ayrshire.—Mr. Isaac Steele, for the past five years outdoor Foreman to Mr. Evans, at Storr's, Windermere, has been appointed Gardener and Steward to H. Crossley, Esq., Ferny Green, Bowness-on-Windermere.

# Home Correspondence.

**Artificial Manures.**—Professional and amateur gardeners are much indebted to the *Gardener's Chronicle* for publishing the analysis of various fertilisers. Many of us were quite aware of the high price charged for them in small quantities—a price many times more than their real value; hundreds, however, have never given the matter a passing thought, and it was quite in order to place the information before them. I have just received a small pamphlet containing testimonials from gardeners and others, sent to the proprietors of one of these fertilisers, as the result of their experience; and really, considering the effect produced by the manure, one cannot wonder at the owners placing a high value upon it. For instance, one amateur tried guano, but found it "burned the plants," and "raw manure evaporated before it produced any fertilising qualities." His flowers were drooping and dying for want of nurture until a certain fertiliser was tried, and it "immediately imparted a richness to the bloom, and a healthy appearance to the plants." Another amateur had even more wonderful results. His garden presented a "dingy and woebegone appearance." Fortunately a friend paid him a visit "while he was vainly endeavouring to coax a reluctant Auricula to bloom." The friend sent a bag of the fertiliser, and, presto! all was changed as by "the magic wand of the enchanter." The effect of the application was marvellous: it is best to give it in the amateur's own words:—"Never before were the plants so healthy and vigorous; never was their bloom so rich and gay and perfect." The manure in question is equally adapted for Cucumbers, which by the way it causes to produce at once four times as many as they did before; for Gooseberry bushes, for Onions (which it makes to grow too big for the cook)—all sorts of flowers: it kills the grubs while it fertilises the plants. Thus two rows of Celery were treated with the fertiliser, while two other rows received just double as much guano, with the surprising result that "the sticks treated with the fertiliser are just three times the weight of those to which guano was applied." I send you the little book, to show all and sundry that they may expect even greater things than these. Who would begrudge £200 or £300 a ton for such a valuable stimulant? I am sure it is not fair to blame the inventor, for what is he to think when every post brings him in such testimonials as the above? The man no doubt is led to believe that his manure will increase the productive powers of the plants three or fourfold, and he rightly thinks that such a valuable article ought to be and must be well paid for. *J. Douglas, Loxford.*

**Boots, Dry and Waterproof.**—Boots, and various compositions for waterproofing them, have been the subject of various communications to the *Field* and the gardening papers during the late severe weather we have experienced. For those whose duties call them to face a British winter, whether on road or rail, garden, farm, or forest, good boots are a *sine quâ non*, and any wrinkles for keeping them comfortable and dry inside, or waterproof outside, may well find a place in any journal bearing on the above interests. It is said when the late Duke of Wellington returned from his hard-fought Peninsular campaign some of the War Office officials asked him what part of the soldier's outfit was most important in order to secure his efficiency? The Duke's reply was, "A pair of good boots." Being further questioned as to the part of outfit next in importance, the reply was, "Another pair of good boots." There is more force and wisdom in the Duke's reply than appears at first sight; certain it is, those who have two pairs of good boots can always have one pair in reserve, getting dry and comfortable for a change when necessary. A man dry and comfortably shod is equal to more work in inclement weather, and less liable to be injuriously affected by exposure to cold and wet, than one suffering from cold, damp, or wet feet. It often happens in wet, dirty weather, or in time of snow, especially if long-contiued, that boots are damp and uncomfortable inside, although apparently dry outside, and if worn in this condition the feet quickly get cold and damp unless constantly on the move. An excellent remedy for this is the following simple wrinkle I made a note of many years ago, from the practice of a hunting baronet, and which I have practised when necessary ever since:—Put about a couple of quarts of Oats (bruised Oats are best) or bran into a tin or iron vessel, place it on the fire or hot-plate till the moisture is thoroughly dried out, and the whole pretty warm, pour about a quart into each boot, and in a few minutes the dry heated Oats will have absorbed any damp or moisture without injuring the leather in any way, leaving the inside of the boot as dry as a bone, and as comfortable as possible for use. The Oats can be put back into the vessel and kept in a dry place for further use. The same Oats may do duty for several months. *D. M., Sutherlandshire.*

**Early Bird Potato.**—I have often wondered why this variety has not become more generally known, and why one so seldom sees it catalogued. I have seen several lists of Potatos this season, but only in one have I seen Early Bird offered. I first obtained it in 1879, at which time I formed a high opinion of it, and I never have had reason to alter that opinion, for to my mind there is no variety more worthy the attention of gardeners for earliest crops, either for frame or outdoor work. It was first sent out by Mr. Turner, of Slough, who may be able to account for its scarceness. *E. Morgan, The Butts, Harrow-on-the-Hill.*

**"Wanted, a Gardener."**—It will be seen from your advertisement columns of this week that notwithstanding the adverse comments of T. Reid upon the advertisement in question, and in spite of the warnings and threatening attitude of "W. W." (see *Gardeners' Chronicle*, February 5), your sensible correspondent of last week, J. Kent, was perfectly right in his surmise that there would be no difficulty whatever in obtaining plenty of first-rate applications. So good, in fact, were the great majority of applicants, that of the whole number (twenty-five) three-fourths would probably have been quite suitable for the post in question, as these latter, besides having the highest testimonials from present and former employers, appeared also (as far as could be judged without an interview) to answer exactly the description of man advertised for. Several of the leading London nurserymen—who, as a rule, do not give testimonials—took, moreover, the trouble to supplement the testimony as to some of the men by special private letters to me. This will show the class of men who replied to my advertisement. Employers are perfectly well aware that there are men, unfortunately, in every trade who would be glad to lay down laws for those employing them, and especially one which would prevent others from doing work better in quantity or quality than a certain very low standard. Such men, with a thoroughly "dog-in-the-manger" feeling, would doubtless like to "Boycott" any one of superior attainments to themselves for even applying for a situation of this kind. Fortunately, however, for the public good, the wishes of these "Boycotting" people are not much studied in our free country. At any rate, my advertisement was intended to prevent applications from those who were not suitable for the post, and I am pleased to find it has had exactly the effect intended, so that I have no doubt saved many of the "W. W." stamp both time, money, and trouble. [We should add here that "W. W." is of a very good" stamp." EDS.] As this is the first and last paragraph on the subject I intend to indite, I may mention that I do not intend to satisfy the curiosity of any one; but I gladly send you herewith in confidence both my own name and that of the gardener appointed. *Managing Director, Feb. 14.* [We have letters on this subject from "T. Reid," and "P., Surrey," but think enough has now been said. EDS.]

**The Gardeners' Royal Benevolent Institution.**—I have been much interested with the discussion in the last few numbers of the *Gardeners' Chronicle* on this subject. I think, if too much preference were given to gardeners, who having subscribed, say only three, four, or five years to the funds of the Society, and then should require to become recipients of its charities, it would render the Society to a certain extent a benefit, not a benevolent society. I think one may fairly argue thus, upon seeing the voting papers, detailing the several applicants in which A. or B. may be put down as having subscribed two or three years as the case may be:—A. or B. feeling that they may in a year or two require some assistance from this Society, may say to themselves, "Now I will subscribe a little towards the funds, so that if I make application for its charities I may ensure more votes on the day of election." Such are the thoughts that have passed through my mind, when I have read down my voting paper. I do think that those who have subscribed ten years should have a little consideration shown them, but I fail to see why those described in the first instance should. It must be borne in mind that it is a benevolent society, and while so I say let the most deserving applicants receive the most consideration. "Z." states (p. 212), "If gardeners want 'benefits,' &c.;" surely he is not aware that there is now already in thorough working order a gardeners' benefit society, called the "United Horticultural Benefit and Provident Society," the funds of which bear comparison with any benefit society in existence. *J. H. G.* [It is a matter for regret that the latter Society is so little known amongst gardeners, many of whom could well belong to it, who cannot afford to subscribe to the other. EDS.]

—— I thoroughly agree with the views expressed by your correspondent, "Z.," on forming a society for gardeners on the same basis as either the Oddfellows' or Foresters'. I think it would be a great acquisition to the gardening fraternity, and one which I feel sure would be well supported; for it is impossible for young gardeners, considering the low rate of wages for which they are employed, to subscribe a guinea a year to such an institute as the Gardeners' Royal Benevolent Institution, from which they receive not the slightest benefit till they attain an old age, "and perhaps not then." *Cyfarthfa.*

—— The report of the committee for 1879 ought to bring home to the minds of gardeners the advantages of this Institution and the assistance they could receive (in the event of their being subscribers) in their declining years should want and distress overtake them. Why, not one gardener in fifty would subscribe if they thought they could get the pension without giving a penny towards the funds. I think we ought to do all we could to encourage gardeners to subscribe, not put a stumbling-block in their way. *H. S. James, Farleigh Castle.*

—— "Z." (p. 212) has travelled wide of the mark in trying to explain why non-subscribers should stand before those who had been doing something to help others. No subscriber would think for a moment that the Institution is on the same basis as an Oddfellows' or Foresters' society. Of course, the Institution is a benevolent one, but I think the benevolence should be bestowed on those who had been trying to comply with the rules before outsiders, and I think the majority of the subscribers, after seeing the results of the late election, will give their votes in future to those who have been assisting others. *J. Bowerman, Hackwood Park.*

—— In the report of the Gardeners' Royal Benevolent Institution for 1878 will be found the following abstract, printed in italics:—"Your committe wish particularly to draw the attention of the subscribers in general and gardeners in particular to the fact that, although the state of the funds permit of an addition of seven pensioners, there will not be an election, as there are seven claimants who, or their husbands, have been subscribers to the Institution for fifteen years and upwards, and these seven, whose cases have been fully investigated, will be placed on the pension-list without any election, in strict accordance with Rule 6, to the total exclusion of all other applicants." Then follows this observation:—"This very fact should impress upon gardeners the great advantages of the Institution, and the necessity of their subscribing to it in their younger days, thereby laying up for themselves a small but secure provision in their declining years, as among the applicants there are several who have held influential and important positions in the horticultural world, but who, from unforeseen causes, have been compelled to seek the assistance afforded by the Institution." So dominant a fact authoritatively set forth shows the true basis for which the Institution was founded, and no such logic as "Z." has produced can cancel or annul it. It is perfectly evident that "Z." is not a subscriber to the institution, and I very much doubt if he has ever been "rewarded," at any annual festival, "with the welcome round of applause," after a donation of five or ten guineas, otherwise he would have seen from the rules prefixed to the list of subscribers which is sent to each of them annually—as well as from the announcements on some of his voting-papers—that those applicants who have complied with the rules and have been subscribers for fifteen consecutive years shall be considered eligible for pension. I trust this may help to elucidate the mode of relieving persons entitled to the benefit of the Institution, as a tacit recognition of "Z.'s" remarks would most assuredly have created prejudices against the Institution, and would greatly impede the progress thereof. *J. Ridout, Woodhatch Lodge, Reigate.*

—— Permit me to corroborate your several correspondents' remarks as to the desirability of allowing subscribers to the above excellent Institution, and who are also candidates for the pension fund, a certain number of votes at each election over those who have not subscribed. I agree in the main with the editorial remarks appended at p. 180, still it cannot be simple justice for those who have never subscribed to the Institution to be enabled (as they now are) to be put on the pension fund over those who may have subscribed, say ten or twelve years. As you say, voters have it in their power to prevent this, but in many cases they doubtless do not inquire into the claims of the several candidates, but give their votes to some enterprising friend who is desirous of promoting the interests of perhaps a non-subscribing candidate. I make no suggestion as to how many votes should be allowed to each subscriber, as the many excellent men of business on the Committee could soon devise a satisfactory way of carrying out the scheme if they saw fit to do so, which I sincerely hope they may. *H. J. C.*

—— It is inconceivable that your correspondent "Z.," in your last week's issue, can have made himself acquainted either with the work of this Society or with the rules by which it is governed, or he would not so rashly assert that no such thing as "beneficial" membership exists, or that this Association is a charitable institution and nothing more. On reading his letter I applied to the secretary (as "Z." might have done), and have been furnished with particulars, given below, which prove incontestably that

while the charitable supporters of this Society are enabled to materially assist a large number of distressed gardeners who have been unable or neglectful to "lay by for a rainy day," it does undoubtedly guarantee to the thrifty man far greater and more substantial benefit, "without canvass and without favour," than he can possibly obtain from any of the benefit societies or clubs. Facts speak for themselves, and I do most earnestly call the attention of your readers, and especially of working gardeners, to the following instances of the benefits derived from the operation of rule No. 6 of this most beneficent institution :—

*Particulars.*

"There are ninety persons at the present time on the Pension List of this Society at the annual expense of £1262. Out of these ninety persons forty-four have been placed on the Pension List without election, canvass, or favour, they or their husbands having been subscribers over fifteen years; and this is in strict conformity with Rule No. 6. These forty-four persons have contributed to the Institution £911, and have received from it £4540. The average contribution of each has been £21, and they have each received on an average £103. These forty-four persons have been recipients for terms varying from twenty-three years to one month. The following may be taken as examples, showing the benefit that arises to a subscriber of fifteen years and upwards:—One gentleman who had been a subscriber for nineteen years, *i.e.*, £19 19*s.*, was placed on the Pension List in 1860, and he has received £320. Another who gave £10 10*s.* in 1841, was placed on the Pension List in 1863; he has received £284. A widow whose husband subscribed fifteen years, *i.e.*, £15*s.* 15*s.*, was placed on the Pension List in 1858: she has received £276. The ninety pensioners are divided into three classes thus:—Those who have been placed on the list without election in accordance with Rule No. 6, 44; those who have been subscribers for various periods, 23; those who were non-subscribers, 23. Total, 90. Besides these forty-four there have been since the year 1857 thirty-five persons (who were contributors over fifteen years) placed on the Pension List without election in accordance with Rule No. 6. There has only been one occasion on which an applicant who had been a subscriber over fifteen years had been refused. Strict inquiry was made into his case, and it appeared that although he had been a subscriber long enough to justify the committee placing him on the Pension List, he did not prove to their satisfaction that he was a fit and proper person to receive the pension: and he withdrew his claim."

I write entirely in the interests of the working gardeners themselves, and would only add that it is most gratifying to see this excellent Society receiving every year increasing support from the charitable public, so that it has already an invested fund of over £13,000, offering an ample guarantee to gardeners (whom I strongly recommend to subscribe to it in greatly increased numbers) that it will not fail them should the day of distress ever come upon them; but it is a far safer and much more profitable investment for them than any benefit society can possibly be. *W. H. Culliford.*

**Frosted Potatos.**—We find, from repeated trials, that by immersing partially frosted Potatos in spring water for three hours before cooking, it takes away all the bad effects, and they are quite fit for the table. *J. C. & S.*

**Is Cicuta virosa Poisonous?**—Will you allow me to answer the somewhat quaint query of Mr. Wolley Dod *in re* Cicuta virosa? The obvious (but idiotic) repartee would be, "Try it," but as a matter of fact Cicuta virosa (Water Hemlock) is an acute narcotico-acrid poison. Its action is due, like that of Conium maculatum, to coneine, a liquid volatile alkaloid, the active principle of both plants. With all apologies to Mr. C. W. Dod, considerable doubt exists as to whether Socrates committed judicial suicide with Conium maculatum or Cicuta virosa. *C. Borgia.*

**Sweet Alyssum.**—This really useful, and I may almost say hardy little free-flowering bedding-out plant, which during the summer months is to be seen growing in almost every flower garden, is suitably adapted in a variety of ways for indoor decorative purposes, especially for forming a nice edging round the stagings of the greenhouse or conservatory. It is so easily propagated that any one in possession of a cold frame or two need have no difficulty in raising a sufficient quantity of it to meet his requirements. In certain localities not so liable to the more severe attacks of frost, with a very slight covering now and again in cases of emergency, it can easily be kept in a cold frame during the winter months if the plants or cuttings have been previously well rooted in the pots or boxes. As a rule, the cuttings root more freely and speedily in a cool moist atmosphere or temperature rather than in one that is warm and dry. Summer-put-in cuttings succeed best in a cold frame, dispensing with bottom-heat, simply placing the boxes or pots on the surface of coal-ashes which have been smoothed, raked, and levelled previous to arranging the pots or boxes along the bottom of the frame. Cuttings for the following season's supply should be put in about the middle of August, at least from this time onwards to the latter end of the month, so as to allow sufficient time for the cuttings to become well rooted and healthy before the colder days and nights of winter make their appearance. It is absolutely necessary that the cuttings be shaded from the sun until it is observed that they are beginning to grow, and no doubt forming roots, when they can be gradually exposed to the stronger influences of light and air. Simply place a number of cuttings in 3 or 4-inch pots in suitable soil, treating them as I have stated, and when once these have established themselves thoroughly as plants in the pots removing them to a cool greenhouse temperature, they can be retained and grown on until they come into flower, which will be about the beginning of March the following spring. If wanted earlier than this, simply give them a touch of heat somewhere for some time, which will speedily bring them into flower, and by removing them back again to the greenhouse or conservatory while they are in flower, arranging them round the edges of the stagings there, they will have a very neat and pleasant effect, especially at a time when lightsomeness and cheerfulness of appearance ought to be predominant there. *George Drummond, Broxmouth Gardens, N.B.*

**Linum arboreum.**—Herewith I beg to send you per post a specimen and a little sketch (fig. 47) of what I take to be the above-named plant. Is it the

Fig. 47.—Linum arboreum.

L. arboreum of Curtis, *Bot. Mag.*, 1794, as referred to by Mr. C. Wolley Dod in *Gardeners' Chronicle*, January 1, 1881, p. 21? It is now flowering in a greenhouse here, and is interesting in its way, but far less effective as a decorative plant than its congener, L. trigynum, a much taller-growing and a larger-flowered plant. L. arboreum forms a twiggy bush a foot or 15 inches in height, and about as much in diameter, its branchlets clothed with slightly glaucous spathulate leaves. These branchlets produce terminal flower-stems, clothed with recurved linear bracts, and are terminated in their turn by one or two flowers (as shown in my sketch) of a pale yellow colour. In a dry, sunny greenhouse it becomes effective in its own modest way, and is well worth a place in botanical collections, although I am afraid it would sadly disappoint the average cultivator of decorative plants and cut flowers. It will be interesting to me to know if Mr. Dod's plant is identical with mine, as I, too, accidentally saw the plant for the first time last year and found its owner rather surprised at my admiration of it and nothing loth to present it to our collection. *F. W. B.* [Linum arboreum, L.: there is only one sheet of it in Hb. Kew, from Crete, collected by Sieber and by Heldreich. Eds.]

**Coniferous Nomenclature.**—This interminable jumble has up to the present time sadly perplexed both nurserymen and gardeners—and no wonder, when we find the great doctors differing so much. It is but seldom that I have obtruded myself on your pages, I may therefore be excused if I once more attempt to "unravel the complexity, and evolve order out of chaos." I am encouraged in this by your first paragraph on "Abies concolor" in the *Gardeners' Chronicle* of May 22, 1880, pp. 648, 649. You say, "Great have been the confusion and misunderstanding respecting the tree known in our gardens as Abies or Picea Parsonsiana, Lowiana, and lasiocarpa, and proportionately thankful should we be to any one who takes the trouble to unravel the complexity, and evolve order out of chaos." Had this happy unravelling been accomplished, as you take for granted that it has been, I need not have taken up my pen; but after having read the whole of the article carefully, allow me to say that I find "confusion" worse confounded. I do not blame you, nor others who have failed through want of the proper materials to deal with. Do not charge me with egotism, when I tell you that I have been privileged to converse with David Douglas, and, I believe, all our British botanists who have been conversant with Conifers, and therefore I may be allowed to state a few facts which seem to be little known. In the article on "Abies concolor," after having quoted the different authorities and their different names, you summarise the whole thus: "We have it then established that the plants commonly grown in English gardens under the names of Lowiana and Parsonsiana, and sometimes also under the incorrect names of lasiocarpa, grandis, and amabilis, belong all to one and the same species, the accepted name for which is concolor." If this be the case, then I must add that concolor is a most unfortunate name; as this Latin adjective when translated is, "The same colour." Now these other darkies named give this dusty miller the lie, for they are not the same colour. Next we read, "Abies Parsonsiana (concolor) was introduced into Britain, according to Dr. MacNab, in 1851, under the name of grandis, &c." This is certainly an error, as I have a printed list now before me of all the Conifers collected by Jeffrey in the autumn of 1854. I had seeds of these and raised plants from them, but no Parsonsiana amongst them. The correct history of this tree and its introduction into England is as follows:—Messrs. Parsons, of Flushing, after arranging with the late Mr. Hugh Low, of the Clapton Nurseries, to become their agent in this country for the sale of certain new Californian Conifers which they had raised, sent sample specimens to Mr. Low. On their arrival he sent such as he did not know to me, to know their names: the original plant of Parsonsiana is now in our nursery (3 feet 7 inches in circumference of trunk). I at once wrote to Mr. Low that it was either lasiocarpa of Balfour, or a new species: I had not at that time had an opportunity of seeing the tree so named by the Professor. However, the following week I was called down to Scotland professionally. On arriving at Edinburgh, I called at the Botanic Gardens, and as soon as I saw "lasiocarpa," I told the late Mr. MacNab that the Professor had made a mistake; as the tree was identical with the grandis of Douglas: I afterwards told Dr. Balfour the same when we met in Switzerland; and his naïve reply was, "Well, Mr. Barron, very few people know these things:" in this I think he was rather near the mark. On my return from Scotland, I found that Mr. Stuart Low had arrived with the full consignment of plants; I at once went to Clapton to put the matter right about the name, but found to my surprise that a number of these plants had been bought and scattered over the country under the name of lasiocarpa, on no better authority than my qualified letter, that "it was either lasiocarpa, or a new species." At the special request of Mr. S. B. Parsons I named the plant Picea Parsonsiana in August, 1859. Over two years afterwards Mr. Gordon named it P. Lowiana in compliment to Mr. Low. We have a large number both of this and concolor, and even to superficial observers the plants are very distinct. I cannot imagine that Dr. Engelmann could have had fair specimens to examine, judging from his meagre description. In Picea concolor the leaves are sparsely distributed round the stem, and mucronate; not more than half the width of those on Parsonsiana, with remarkably large and prominent buds partially covered with light coloured resin in the matured bud. This discriminating character, which never varies, will at once prove it to be specifically distinct from Parsonsiana; the bud of the latter is not more than quarter the size of the former, and is entirely covered with dark brown resin. The leaves in Parsonsiana are decidedly pectinate and obtuse, lying compactly together. It will be difficult to find in the whole genus of Picea two trees more dissimilar in all stages of growth than concolor and Parsonsiana. I now supply you with true specimens of Picea Parsonsiana, concolor, and of grandis from the only plant raised from the seed collected by Douglas, also of his true amabilis. Having been perfectly conversant with the Conifers introduced by Douglas and their early history, I simply state facts which I know cannot be controverted. Of his Pinus amabilis a few plants were raised, and some distributed, but up to the present time I have never known a single plant or seed imported, since Douglas died, of the true kind, notwithstanding the many others which have been sold as amabilis: hence I infer that no collector except Douglas has ever run across the habitat of this fine tree. As to the P. grandis of Douglas only a solitary plant was raised, and through a mishap by the misplacing of a tally, the wrong name was put to grandis, and *vice versâ* with amabilis, so that two plants of amabilis were planted

in the arboretum at the Chiswick Gardens — one named grandis and the other amabilis; and so they stood for a number of years, until I made a journey on purpose to convince Mr. Gordon that they were identical. In this I succeeded in the presence of the late Mr. Glendinning. Then Mr. Gordon published in the supplement to his *Pinetum* that the true grandis was at Elvaston Castle—and allow me to add, that but for my attention to these matters the original plant would have been lost to this country—hence arose the confusion when cuttings of the same species were sent out from Chiswick under different names. Having said thus much about species it may be well to touch on genera. We have had a useless contention on genera. All the aforesaid trees we have by the different authorities under "Pinus" of some, "Abies" of others, and "Picea" of the rest. Now whom are we to follow? We had a dogmatic article from an American writer a few months ago on Abies and Picea. He said, "I follow Link," but he was silent as to his reason for doing so. Lindley also took Link as his authority. I think it is admitted as an axiom in botanical nomenclature that the best name for a plant is that which is descriptive of the organic structure of the plant itself; hence a name which embraces a number of plants diverse in structure must be objectionable. This was the case with Pinus, when Abies and Picea belonged to it; therefore Link acted judiciously in forming them into three genera; not so, however, in placing the Spruce Firs in the genus Picea and the Silver Firs under Abies. Latin authors give us "Picea, a Pitch tree;" and in Loudon's *Arboretum et Fruticetum Britanicum*, p. 2334, we read, "The resinous products of the Silver Fir were also well known to Theophrastus and Pliny, who both detail the modes practised by the Greeks and Romans in preparing pitch and tar." Again, Latin authors give us "Abies, a Fir tree." This is not so definite, as Fir is applied to all three genera. But we are told that "Abies" is a derivative of "Apios," Pear, from the Pear-like shape of its pendulous and persistent cones, whereas the erect, cylindrical, and deciduous cones of Picea bear no resemblance to a Pear. And now, to come nearer home than over the water for names, in what country can we find a man who has done so much for arboriculture and horticulture as the late J. C. Loudon?—who had during the indefatigable research and compilation of his voluminous works the assistance of the most able men in tree lore which could be found—Professor Don, Rauch, and a host of others whom I could name. This, coupled with the fact that British capital and British enterprise have done more to enrich our collections of valuable and ornamental trees and shrubs than all other countries together, and considering that the nomenclature in Loudon's works have been long adopted, not only in this country but to a considerable extent both in Continental and American catalogues, it can be no trifling affair to upset and confuse the whole so long as no valid reason can be given for doing so. *William Barron, Borrowash.* [Mr. Barron's letter has been for a long time in our possession. We retained it until we had had an opportunity of submitting specimens of the species he mentions, and which he was good enough to send to us, to Dr. Engelmann. The specimens arrived at St. Louis during Dr. Engelmann's journey to the very localities where the trees grow in a wild state. On his return, fresh from the forests and slopes of the Rocky Mountains, Dr. Engelmann identified the specimens sent to him, and, further, he stated that his previously formed opinion as to the specific identity of concolor and Parsonsiana was confirmed by observations *in situ*. Be this as it may, there can be no doubt that as we see them in British gardens the two plants, concolor and Parsonsiana (*alias* Lowiana, *alias* lasiocarpa, hort.) are, for all garden purposes, quite distinct. Dr. Engelmann believes that from a botanist's point of view they are specifically identical—that is, they may have proceeded from a common stock, and so indeed they may have done, but apart from their possible origin the two are amply distinct for garden purposes. Eds.]

**The Late Frost and the Roses.**—Most of my brother rosarians must have felt very anxious about their pets during the last month—at least I have. The bitter east wind and driving snow with frost almost unprecedented in this country has caused fearful havoc in the garden, not only amongst Roses, but other trees and shrubs which we have always been taught to consider hardy, but these in their turn have succumbed to the icy fingers of Jack Frost. One cannot at present calculate the damage this "wave of cold" has created. We must wait a few more weeks until the sap, beginning to rise, will soon show where the "shoe pinches;" but even now one has not to go far round the Rose borders without being able to find many and many a tree killed outright. This is to be found especially amongst the standards and half-standards, in spite of the wood being far better ripened than last year. The dwarfs, thanks to the snow, are most of them alive to the snow-line. And now comes the question—What shall we do with these dwarfs? Shall we at once cut them back to the uninjured wood, or shall we leave them as they are until they are pruned in due course, three weeks or a month hence? I say leave them alone, although I know many gardeners at once cut them down because they say the frozen part will gradually work down lower, and kill the plant altogether; it may be so, but on the other hand I think—in fact, I speak from experience—that if you cut the tree now to the live wood, and a sharp frost comes, as most likely it will, good-bye to your plant, for the frost will at once attack the tender pith, and go straight down to the roots; therefore I say leave them alone. The Roses I find most injured at present are the thornless sorts, notably Horace Vernet, a splendid Rose, but with a weak constitution; Madame Sophie Fropot, Captain Christy, Madame Eugenie Verdier, and her sister, Mdlle. Marie Finger, Charles Lefebvre and Countess of Oxford. Of the remainder Marie Baumann, Annie Wood, Duke of Edinburgh, Sultan of Zanzibar seem to have suffered most; while such splendid Roses as La France, Marquis de Castellane, Alfred Colomb, Edward Morren and A. K. Williams seem quite uninjured. But the worst has yet to be told. How about the maidens, those budded last summer? I think I never remember buds taking so well, and yet now I am quite certain, and I believe I am putting it below the mark, that quite 50 per cent. are either dead or so injured that they are worthless. I do not think I have a Tea bud alive. With regard to the Tea Roses themselves they have been well protected with mulching and Yew boughs, and from what I can see at present they do not seem to have taken much harm. If the maidens in the Rose nurseries have suffered like mine the nurserymen will have lost a large sum of money, and will make a poor show of it again this summer, as they did last, for it is on their maidens they chiefly depend for show blooms. Let us hope after such weather we may have a genial spring. *E. L. F.*

**Seedlings of Lilium Szovitzianum.** — This Lily ripens seed here more abundantly than any other. Last year I sowed some in a large pot, covering it with about a quarter of an inch of soil. Nothing having appeared above ground, I was lately throwing away the contents of the pot when, to my surprise, I found a layer of small Lily bulbs, the size of black Currants, two inches below the surface. I dare say experienced growers of Lilies are aware of this habit of some Lilies to germinate only underground for the first year; but others of your readers who may wish to grow L. Szovitzianum from seed perhaps do not know it. *C. W. Dod, Edge Hall, Malpas, Feb.* 14.

**Manuring Virgin Soil.**—We have a large piece of land which has just been cleared of timber, chiefly of old Oak. The stumps have been got out, and all the undergrowth and roots grubbed up and burnt, and the land has been well ploughed and cleaned. It is now proposed to sow corn upon it. A great difference of opinion exists as to whether the land should be manured or not. Some say that it ought to have a good liming, others contend that it must have a liberal dressing of bone manure, and others think that superphosphate of lime would be best, while others again consider that it is not advisable to put in any manure at all, having in view the fact that the pioneers of agriculture in America raise good crops off clearings without artificial aid in the way of manure, and also that the land has already received a quantity of fertilising matter in the shape of ashes from the large quantity of rubbish that has been burnt upon it. The soil is a deep, rather sandy loam, upon the Old Red Sandstone formation. If some of your readers who may have had some experience in the cultivation of newly-cleared land would kindly give their opinion, it would be of great value to us, and no doubt to others. *S. P.*

**Echeveria retusa.**—Mr. Ward has done good service in bringing to the notice of your readers the sterling merits of this plant. Knowing its all-round good qualities I can fully endorse Mr. Ward's high and justly deserved praise of its merits, and would like to add that if a few plants are kept for two or three years with good treatment they make quite large plants, than which nothing is more charming and striking for use with light flowering plants in the decoration of the greenhouse or conservatory. *F. S., Aldershot Park.*

**The Cultivation of Orchids.**—I write in the hope that you may see fit to exert the influence of your journal in support of a suggestion which I think will meet with almost universal sympathy among its numerous readers. The cultivation of Orchids is rapidly increasing in popularity, and many now have small collections who do not keep an Orchid grower. A large proportion of these are lamentably ignorant of the requirements of their favourites, and would gladly learn how to treat the various species so as to ensure success. With no wish to decry the usefulness of the one or two books which represent the sole literature on this subject, I must assert that a modern well-arranged and sufficiently detailed work does not, to my knowledge, exist. Much of the kind of information which I miss in the books already published is to be found from week to week in the Orchid columns of your paper; but, after all, these are but scraps, and do not supply the place of a properly arranged volume—the book I now plead for. I believe that the hands which could write, and the head which could furnish the information required, are to be found at the present moment; but having said this much, I wait the opinion of others as to the need for such a publication. May I ask you to ventilate this question?—and unless I am much mistaken, your readers will rally in support of a scheme which will afford mental profit and pleasure to all cultivators of the Orchidaceæ, and will prove a successful venture to the author. *T. F. H.* [If our correspondent reads French he will find Count du Buysson's book (Paris: Goin) suit him. It was reviewed in our columns, p. 366, vol. xiv. Eds.]

**The Cultivation of Sphagnum Moss.** — At this time, when we read so much about farmers growing vegetables which are mostly a glut in the market, a few words about an article for which there is a constantly increasing demand may be of value to those who have land that could be so utilised. Good Sphagnum for Orchids is getting more scarce every year, while the demand for it is increasing; therefore where there is a swamp, or low land convenient to water, so that it can be flooded at pleasure, and which is often naturally flooded at the very season when the crop should be harvested, it would be a sure source of profit to cultivate Sphagnum. It would require but very little attention, beyond keeping down strong-growing Sedges, Rushes, and such things, regular picking instead of raking it all up, and so destroying the crop (as is often done now), keeping it free from leaves of trees, &c. Where there is no Sphagnum growing naturally, a meadow or swamp should be selected, and set out in regular beds, similar to Watercress beds, only it is not necessary to have running water; then get a quantity of Moss in April or May, and set in clumps about 6 inches apart, when it may be flooded, and the owner may be sure, if it is kept at saturation, that no frost, snow, sun, or blight, will injure his crop. With Sphagnum at from 8*s.* to 10*s.* 6*d.* per sack, it is sure to pay. There would be no trouble of marketing, or need of employing agents; the grower has only to let it be known that he has good Moss, and gardeners would willingly send for it. The crop has the advantage also of not being liable to spoil through not being harvested at any given time. *J. Croucher.*

**Lily of the Valley.**—A common cause of failure with forced Lily of the Valley, and one very often overlooked, is allowing the crowns to get dry, by the tips or points being left exposed above the plunging material, which if allowed once to get thoroughly dried will never force well, however moist the roots may have been kept. May this have been the cause of the failure of the batch your correspondent at p. 155 refers to? *H. Henderson.*

**Mushrooms.**—Having heard of many failures in Mushroom growing, which, I believe, are in a great measure due to inferior spawn, allow me to say that I have tried that article obtained from several different firms, but have found none to equal the Milltrack specimen sent out by Messrs. Cutbush & Sons, of Highgate. I have at the present time beds that are a sheet of white after two months continual cutting. I can well recommend it to any gardener as a good article. *Matthew Reed, Gardens, Belmont, Mill Hill, Hendon, N. W.*

**Dendrobium nobile.**—We have a specimen of this Orchid, growing in a basket 18 inches square, which has produced 419 blooms. Some of the principal growths have as many as thirty and thirty-six blooms on them. *F. W. E., Penrhos, Holyhead.*

## Reports of Societies.

**Edinburgh Botanical:** *Feb.* 10.—The Society met at 5, St. Andrew Square, Professor Balfour in the chair. The Chairman exhibited the new part of *Herefordshire Pomona*, also a new *Text-Book on Botany*, in three volumes, by Professor Cominhoâ, of Rio Janeiro, which was beautifully illustrated alike with woodcuts and coloured lithographs. He also laid on the table some Brazilian scientific pamphlets. by Dr. Rodriguez.

Mr. J. M. Macfarlane, B.Sc., read a paper on Lepidophloios, a genus of Coal Measure fossil plants, in which he showed by comparison of external and internal structure that Lepidophloios and Halonia were parts of the same plant, the latter having probably cone-bearing twigs.

Mr. John Sadler, Curator, read his usual monthly report on the temperatures at the Botanic Garden, and the effects

thereof on vegetation. It stated that during January the thermometer was at or below the freezing point on twenty-seven occasions, while in the same month last year it was at or below the freezing point twenty-one times. There were registered collectively for the month 369° of frost as compared with 221° in January, 1880. Since February commenced frost had been experienced on seven occasions, but not severe. There had been registered collectively up till that morning only 26°. The two hardest mornings were those of the 6th and 7th, when the thermometer stood at 25° and 23° respectively. The month of January began with four days of pleasant spring-like weather, which gave rise to the hope that winter was gone. But on the morning of the 5th the thermometer fell to 22°, and there was a continuance of frost every night till the 31st, when the thermometer rose to 33°. Notwithstanding the severity of the weather, vegetation at the garden had suffered comparatively little—thanks to the good summer and autumn in ripening the season's growth. Moreover, all low-growing plants were well protected for a considerable time with a thick covering of snow, which at its greatest depth measured from 10 to 15 inches. The only shrubs which Mr. Sadler had as yet noticed slightly injured were the common green Holly and Portugal Laurels, and these were only browned in their foliage. However, it was too early yet to see the full effects of the storm, and it was quite possible that in his next report he might have to note some other species which had been killed or wounded. At the February meeting of the Society last year, Mr. Sadler said he was able to place on the table the flowers of over a dozen species and varieties from the open air, but he was sorry to say that he was unable to exhibit one that evening. He observed, however, that the spring flowering plants, especially on the rock garden, had not been dormant during the four or five weeks that they had been under the snow, and many of them, with a few days of genial weather, would be in flower. In closing his report, Mr. Sadler mentioned that the late storm had proved very fatal to many of the feathered tribe. This was principally owing to the fact that there were no "haws," and but very little fruit of any kind. Even the holly yielded no berries. The following birds had been found dead in the garden:—thrush, redwing, blackbird, robin, wood-pigeon, chaffinch, and common rook. Mr. Johnston mentioned that on January 14, in various districts, from Perth to Coupar-Angus and all through Strathmore, the thermometer had registered from 3° to 5° and even 7° below zero. So severe indeed had the frost been that large branches of Portugal Laurels, 6 inches in diameter, had literally been split open by the expansion of the sap. Mr. Sadler exhibited from the cold frames in the Royal Botanic Garden specimens in flower of Saxifraga Burseriana var. major. It is a dwarf species, with comparatively large white flowers. At the February meeting last year this plant was exhibited in flower from the rock garden, S. Stracheyi, Cyclamen Coum, C. vernum, from the south of Europe, and Corydalis Ledebouriana. Mr. Sadler gave some extracts from botanical correspondence. In a letter from Edmund Giles Loder, Esq., of Floore, Weedon, Northamptonshire, some meteorological details of the district were given, which are of interest in respect of the account of the rare exotics raised there, which was recently laid before the Society. On June 5, 1880, the thermometer had fallen to 27°, or 5° of frost. Last year the total rainfall was 32½ inches, of which nearly nine fell in July—3 inches in forty-eight hours. The exposed minimum thermometer had registered as follows:—On October 21, 1880, 18°; 24th, 16°; on November 2, 16°; and on the 22d, 15°. During this last January the readings had been, on the 13th, 6°; on the 14th, 4°; 15th, 7°. In a letter of January 11, from North Ronaldshay, Orkney, Dr. Traill noted the effects of this winter, especially on some New Zealand introductions in his garden, where they had been shaken by heavy gales of wind, experiencing also repeated snow-storms and frost, which, though not intense, was of some continuance. The Grislinia, the Pernettya and the Manuka appeared unscathed, but Myrsine of two species, which had stood last winter well, were evidently suffering. Of the Veronicas both Lindleyana and Andersoni looked bad; even V. buxifolia, which has stood well for six years, begins to fail, though V. decussata stands out best. A number of seeds from Stewart's Island, New Zealand, had just been planted, including those of trees and shrubs growing near the sea and even exposed to its spray. Although small they form clumps of foliage, acting as nurses to trees of larger growth.

Mr. John Paterson, of Lamlash, Arran, sent the following from his garden as specimens of the plants in flower during the last week of January, viz., the Snowdrop, Jasminum nudiflorum, Rhododendron Nobleanum, and the sweet Violet.

Mr. J. Campbell, Ledaig, near Oban, sent the following flowers in bloom, gathered on the 9th inst.:—Snowdrops in full flower, Rhododendron Nobleanum, Virburnum Tinus, Erica carnea, Veronica speciosa, Jasminum nudiflorum.

Mr. Sadler also called attention to a large series of drawings of Indian plants executed by Mr. Cathcart, who accompanied Sir Joseph Hooker in his Himalayan travels. These had been presented to the library at the Royal Botanic Garden by Mrs. Urquhart (sister-in-law of the late Mr. Gorrie), to whom the drawings had belonged. Mr. Sadler also exhibited four photographs of cones of Oregon Abies, sent by Professor Sargent, of the Arnold Arboretum, including one of the Abies amabilis from David Douglas' original locality on the Columbia River.

**Scottish Horticultural Association**: *Feb.* 1.—The ordinary monthly meeting of this Association was held in the hall, 5, St. Andrew Square, Edinburgh, the President, Mr. Dunn, Dalkeith Park Gardens, in the chair. Mr. Alex. Mackenzie, Warriston Nursery, read a paper on "The Fuchsia, its Domestic Culture." It was, he said, one of the most important among the domestic plants, and had been very much improved since its introduction from Chili at the end of last century. The credit of bringing the plant to England is due to a sailor, who brought it home as a present to his wife, who lived in a cottage in Wapping. It next came into the hands of Mr. Lee, of Hammersmith, by whom it was increased and sent out to the public as a new plant. There were about fifty sorts of Fuchsias found in Chili, Mexico, and Peru. The soil best adapted for their cultivation, and also the mode of growing, were then adverted to.

Mr. A. D. Makenzie, horticultural builder, read a paper on "Economy in Fuel." The construction of the boiler was the first point taken up. In the choice of a boiler the size of the fire-box and furnace should never be lost sight of, for let the merits of the boiler be what they may, it the furnace be too small to contain the requisite quantity of fuel, and the grate bar area too small to admit a sufficient quantity of oxygen contained in the air, you never can have good combustion, and your heating is bound to be deficient. He preferred a long low furnace to a short lofty one, for with a short boiler the same heat could not be raised as with a long one. There was a great saving in fuel by putting in a comparatively large boiler with a correspondingly large furnace. A good draught was also a most necessary thing; and a great deal depended upon good stoking—a matter which was very often neglected.

Dr. Paterson, Bridge of Allan, sent a fine collection of Orchid flowers for exhibition conprising over fifty varieties. It was composed of Cypripedium, Lycaste, Cattleya, Dendrobium, Calanthe, Vanda, &c. Mr. Geo. McClure, Trinity Grove Gardens, exhibited a pink Camellia bloom, being a sport from Countess of Orkney; he also exhibited a large spike of Strelitzia regina. Messrs. Downie & Laird exhibited three large trusses of Rhododendron Princess Louise. Messrs. T. Methven & Sons exhibited three pots of variegated Beet suitable for decorative purposes. Mr. W. Burns, Thingwall Hall Gardens, Birkenhead, sent some notes on the severity of the weather during January; the lowest temperature reached was on the 16th, when the thermometer stood at zero, and on the 26th the thermometer went down to 4° after sunset and remained there all night.

Mr. A. D. Makenzie, horticultural builder, exhibited a piece of wood which had been painted with a new white paint, the property of which was that it could be put on wet wood and it became dry in a short time. The piece of wood shown had been steeped in water for two hours previously to applying this new paint, and had every appearance of being a piece of dry wood before painting. It was stated that this new paint composition would preserve the wood, and if after trial it turned out to be all that was said in its favour, it would prove a valuable discovery.

**Dundee Horticultural Association**: *Feb.* 4.—The ordinary monthly meeting of this Association was held in the Imperial Hotel on the above date, the President, Mr. D. Doig, in the chair. There was a full attendance of the members. After the usual preliminary business, Mr. George Johnston, of Glamis Castle Gardens, read a paper entitled "A Few Practical Hints to Young Gardeners." He said that young gardeners who could do their work well mechanically and had gained a good knowledge of the nomenclature of plants were not to consider themselves as finished craftsmen. The gardener required tact and much forethought. He had the seasons to consider, and how and when to do the different kinds of work so as to give a return at a certain given time. A correct and methodical note-book ought to be the constant companion of every young gardener, noting the dates of sowing of the different kinds of vegetables and seeds, their produce, and their time of maturity for the kitchen. The same attention should be paid to both fruits and flowers, so as to ensure the required result at a certain time. While it was not absolutely necessary for the horticulturist to be either a chemist or a botanist, a knowledge of these sciences would be much to his advantage, and he advised every young man to make himself conversant at least with the rudiments of them. Mr. Johnston concluded by suggesting that the Dundee Horticultural Association should devise some plan whereby young gardeners could be examined in the various branches of horticulture, and certificates granted according to their respective merits.

Mr. W. S. Watt, landscape gardener, Broughty Ferry, followed with his first paper on "Style in Suburban Landscape Gardening." Mr. Watt said he had been for upwards of thirty years an anxious student of Nature, and he was confessedly an admirer of the picturesque. Under certain circumstances, however, Nature required assistance from Art ere she could assume that beauty of form, harmony of dress, or sweetness of face which captivate and add additional charms to the landscape. Mr. Watt then briefly described the various styles carried out in different European countries from the earliest period of history to the present day. He recognised only three styles as being really pure and distinct from each other in their details of arrangement. These were the architectural as applied to flower gardens in the vicinity of the mansion; the gardenesque, geometric picturesque, and the purely picturesque, as adapted to lawns, shrubberies and parks. The gardenesque was a favourite style with some; it admitted of pleasing outline in curved walks, and boundary lines, and in clumps in beds on the lawn. The style was very suitable for villa grounds of from 1 to 4 acres in extent. The geometric picturesque style, where it could be carried out in grounds of from 4 acres and upwards, he believed to be the perfection of modern English landscape gardening. A favourable locality admitting of hill and dale, cascades, rivulet, lake, rockery, grottoes, &c., would enable the clever landscape gardener to produce effects at once diversified, attractive, and sublimely grand. Although an admirer of this particular style, he thought that landscape gardeners should try to produce originality of design. He ridiculed attempts to imitate natural scenery on a small scale when the landscape gardener should have called to his aid artistic design; and mentioned that there were no less than thirty-six landscape gardeners so called in Dundee. He regretted that some aspired to practise the art who had not learned even its rudiments, and he condemned the building architect's interference, as he considered his proper sphere lay in an opposite direction. Mr. Watt concluded his very interesting paper with an appeal to young gardeners who might desire to make landscape gardening a branch of their profession to begin its study early. *Dundee Advertiser.*

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, Feb. 16, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Feb. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 10 | 28.77 | −1.01 | 49.6 | 40.3 | 9.3 | 44.6 | + 5.6 | 40.3 | 84 | W. | 0.19 |
| 11 | 29.24 | −0.54 | 41.1 | 35.0 | 6.1 | 37.4 | − 1.6 | 31.7 | 78 | W. : N.N.W | 0.04 |
| 12 | 29.82 | +0.03 | 39.8 | 29.7 | 10.1 | 34.1 | − 4.8 | 28.8 | 83 | W. : N.W. | 0.00 |
| 13 | 29.80 | +0.01 | 39.1 | 28.6 | 10.5 | 34.8 | − 4.1 | 26.9 | 72 | E. : S. | 0.00 |
| 14 | 29.56 | −0.25 | 38.7 | 35.6 | 3.1 | 37.7 | − 1.1 | 33.1 | 83 | E. | 0.21 |
| 15 | 29.60 | −0.21 | 41.2 | 35.0 | 6.2 | 37.7 | − 1.0 | 36.2 | 95 | E. | 0.30 |
| 16 | 29.77 | −0.05 | 44.8 | 32.3 | 12.5 | 38.4 | − 0.3 | 37.0 | 95 | E. : N. | 0.00 |
| Mean | 29.51 | −0.29 | 42.0 | 33.8 | 8.3 | 37.9 | − 1.0 | 33.4 | 84 | W. : E. | 0.74 |

Feb. 10.—Rough wild stormy day, occasional sunshine, frequent rain.
— 11.—Gloomy morning, a little snow. Finer afternoon; a bitter cold wind.
— 12.—Fine bright but cold morning, afternoon dull, misty at night.
— 13.—Generally a fine day.
— 14.—Dull and gloomy day throughout.
— 15.—Wet dull morning, gleams of sun at times.
— 16.—Dense fog in early morning, cleared off at about noon, occasional gleams of the sun, a fine clear night.

London: *Atmospheric Pressure.*—During the week ending February 12, in the neighbourhood of London, the reading of the barometer at the level of the sea increased from 29.420 inches at the beginning of the week to 29.930 inches by midnight of the 6th; it then very rapidly decreased, and by the morning of the 8th was 29.027 inches; an increase now took place, and the reading on the morning of the 9th was 29.576 inches; it again decreased, and by the night of the 10th was 28.762 inches, being the lowest reading in the week. At the end of the week the reading was 29.912 inches. The mean reading at the level of the sea was 29.56 inches, being 0.06 inch lower than last week, and 0.40 inch below the average of the week.

*Temperature.*—The highest reading of the week was 50°.2 on the 8th, the next in order being 49°.6 on the 10th, 46°.1 on the 7th. On the 6th the highest reading was only 38°.7. The mean of the seven high day temperatures was 44°.4. The lowest reading occurred on the 7th, 29°, the next lowest was 29°.7, on the 12th. The lowest temperature on the 8th was 41°.8, and on the 10th was 40°.3. The mean of the seven low night temperatures was 35°.4. The greatest range of temperature in one day was 17°.1, on the 7th, the next in order being 10°.1, on the 12th, and 9°.3 on the 10th; the least ranges were 5°.9 on the 6th, and 6°.1 on the 9th and 11th. The mean of the seven daily ranges was 9°.3.

The mean daily temperatures were 35°.2 on the 6th, 37°.3 on the 7th, 46° on the 8th, 42°.5 on the 9th, 44°.6 on the 10th, 37°.4 on the 11th, and 34°.1 on the 12th. On the 8th, 9th, and 10th the temperatures were 6°.9, 3°.4, 5°.6 above the average; and on the 6th, 7th, 11th, and 12th were 3°.9, 1°.8, 1°.6, and 4°.8 below the average.

The mean temperature for the week was 39°.6, being 3° lower than last week and 0°.5 above the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, was 93° on the 8th; the next in order being

87° on the 10th, 83° on the 12th, and 82° on the 11th. The lowest reading was 48°.2, on the 7th, when it was only 2°.1 above the highest temperature of the air on that day.

*Rain.*—Rain fell on the 7th, 8th, 9th, 10th, and 11th, the greatest quantity registered was 0.32 inch on the 7th, the next greatest was 0.20 inch on the 9th, the least was 0.01 inch, on the 8th; the total fall for the week was 0.75 inch.

England: *Temperature.*—During the week ending February 12 the highest temperatures were 53° at Truro, 50°.8 at Cambridge, 50°.2 at Blackheath, 50° at Bristol and Norwich. The lowest of the high temperatures was 44° at Hull. The mean from all stations was 48°.3.

The lowest temperatures were 23°.1 at Nottingham, 24° at Sheffield, 24°.3 at Wrottesley. At Blackheath, Norwich, Liverpool, and Sunderland the lowest temperature was 29°; at Plymouth and Truro it was 30°.7 and 30° respectively. The mean from all stations was 27°.3.

The range of temperature during the week was greatest at Cambridge, 24°.8, the next in order being Nottingham, 24°.7; Wrottesley, 24°.1; and Truro, 23°. At Hull, Bradford, Leeds, and Sunderland the range did not exceed 18°. The mean from all stations was 21°.

The mean of the seven high day temperatures was highest at Truro, 50°.9; the next in order being Plymouth, 48°.3. At no other station did the mean exceed 44°. At Norwich, Sheffield, Hull, Bradford, and Sunderland the mean did not exceed 42°. The mean from all stations was 43°.4.

The mean of the seven low night temperatures was lowest at Hull, 30°.1, the next in order being Sheffield, 31°.1, Bradford, 31°.7. The mean was highest at Truro, 39°, and Plymouth, 38°.9; the mean from all stations was 33°.3.

The mean daily range was greatest at Wrottesley, 12°.3, the next greatest being 11°.9, at Truro, and 9°.9 at Cambridge. The smallest daily range was 8°.2, at Norwich. The mean from all stations was 10°.1.

The mean temperature for the week was highest at Truro, 44°.5; the next in order being Plymouth, 43°.3, Bristol, 39°.3, and Brighton, 38°.8. At Wrottesley, Nottingham, Sheffield, Hull, Bradford, Leeds, and Sunderland the mean did not exceed 37°. The mean from all stations was 37°.9.

*Rain.*—Some fell at all stations, the greatest being 2.59 inches, at Sheffield; the next in order 1.88 inch, at Nottingham, 1.87 inch at Liverpool, 1.84 at Bradford, and 1.80 inch at Truro. The least fall registered was 0.75 inch at Blackheath. The mean from all stations was 1.52 inch. At Truro and Sunderland rain fell every day of the week; at Blackheath, Cambridge, Norwich, Liverpool, Hull, and Bradford rain fell on six days.

*Snow* fell on the 7th at Sunderland, Liverpool, Hull, and Cambridge.

Scotland: *Temperature.*—During the week ending Saturday, February 12, the highest temperatures recorded were 47° at Edinburgh, 46° at Glasgow, and at Aberdeen the highest temperature was 40°.8. The mean from all stations was 44°.1.

The lowest temperatures were 20° at Dundee, 21° at Glasgow, and 21°.7 at Edinburgh; at Greenock the temperature never fell below 24°. The mean from all stations was 22°.4.

The mean temperature for the week was highest at Leith, 35°.5, the next highest being 34°.8 at both Greenock and Glasgow. The mean from all stations was 34°.4.

*Rain.*—The largest amount fell at Greenock, 2.43 inches, the next in order being Aberdeen, 2.11 inches; and the least falls were 0.56 inch, at Glasgow, and 0.60 inch at Leith. The mean from all stations was 1.20 inch.

JAMES GLAISHER, F.R.S.

## Answers to Correspondents.

Effects of the Frost: *J. J. B.* It would have been useless to have put on record the facts mentioned in your letter on this subject, without stating the exact locality, which you did not authorise us to give. To this reply we should add that we cannot undertake to give our reasons for not publishing everything sent to us for publication. The most usual cause is our inability (even if it were desirable) to insert more than a small proportion of what is sent to us.

Grapes at Throapham Manor: *Truth.* The letter at p. 180, which you challenge as being much exaggerated, was received by us and inserted in good faith. We have no greater means of getting at the truth of such statements than we have of that of those made by yourself.—*Foster's Seedling*, who writes on the same subject, has not set his name and address.

Greenfly: *Reader.* Fumigate with tobacco or tobacco-paper; or syringe with quassia-water, or dilute tobacco-water.

Insects: *F. W. B.* The insects which have destroyed the leaves of your Golden Marguerites by consuming the whole of the parenchyma are the mining larvæ of a small two-winged fly (Phytomyza, sp.), which we will endeavour to rear; the pupæ being still within the dried stems of the foliage. Pick off and burn all the dead leaves. *I. O. W.* — *J. M., Notts.* The insects which have destroyed your Cyclamens by gnawing off the roots close to the corms are the white, fleshy, curved grubs of the common brown weevil (Otiorhynchus sulcatus). Shake out the mould from the pots, and replace it by newly-baked earth, taking care to pick out and kill all the grubs. *I. O. W.*

Lime in Gooseberry Borders: *A. M. P.* There is far too much lime in the soil. You cannot do better than as you propose.

Name of Fern: *G. Nunns.* Adiantum Capillus-Veneris, var. incisum. B. appears to be Odontoglossum odoratum. The flower of Oncidium cucullatum is exceptionally fine.

Names of Fruit: *Miss Hancock. Apple:* Barchard's Seedling.—*Wm. Stimpson.* Rhode Island Greening. —*John Woods.* Your Pear must be a purely local variety.

Names of Plants: *H. Colboure.* 1, Hypnum squarrosum; 2, H. purum; 3, H. tamariscinum; 4, H. sericeum; 5, Polytrichum commune; 6, Tortula muralis.—*Z. Z. Z.* 1, Thamnium alopecurum; 2, Hypnum triquetrum; 3, H. prælongum; 5, H. tamariscinum; 6, H. velutinum; 7, H. rutabulum; 8, Polytrichum attenuatum. — *D. B., Edinburgh.* Zygopetalum crinitum; a variety in which the brown of the sepals and petals is not broken up into bars.—*J. B.* Daphne odora, common.—*Sir W. M.* Masdevallia amabilis, var. lineata, figured in *L'Illustration Horticole*, t. 196.—*J. C. & S.* 1, Acacia verticillata; 2, Sparrmannia africana; 3, not recognised, no flowers; perhaps a Pitcairnea.

Orange within an Orange: *G. Hunter.* It is by no means an uncommon occurrence. We have seen many such specimens.

Pelargonium Cuttings: *C. G.* We do not know.

Primulas *B. S. Williams.* They are all fine flowers; that named coccinea is very bright, but perfectly distinct from the breed represented by Chiswick Red, with more lake in the colour; alba magnifica, very densely fringed and much imbricated, is a flower of great substance; Queen of Whites differs in being less imbricated, and is a very attractive form. When well thrown up both these must be very effective.—*P. Davidson.* You have a very good strain of the ordinary colours.

Propagating Ericas: *Reader.* Both these and Epacrises are propagated by cuttings of the young shoots planted in a thin layer of silver-sand over a well-drained potful of sandy peat, under a bell-glass. The seeds may be sown in sandy peat in an ordinary greenhouse, but the pots are best protected by laying a pane of glass over the surface. We suppose the yellow-flowered one you allude to is Erica Cavendishiana.

Setting Boilers: *S. W. T.* The dotted lines show where the ashes accumulate in the fire space.

Tritonia aurea: *Reader.* Good turfy peat and loam, with plenty of grit.

Tree Carnations: *J. C. S.* See Mr. Douglas' notes on p. 110 of our number for January 22.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* Advertisements, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

R. & G. Cuthbert, Southgate, N. — Garden and Farm Seeds, &c.

Wm. Hugh Gower, Tooting, S.W. — Garden and Farm Seeds, Bulbous Roots, &c.

James Yates, 29, Little Underbank, Stockport—Vegetable and Flower Seeds, Gladioli, &c.

George Phippen, 108, Broad Street, Reading—Vegetable and Flower Seeds, &c.

G. & W. Yates, 28, Market Place, Manchester—Vegetable and Flower Seeds.

Henry Cannell & Sons, Swanley—Illustrated Floral Guide for 1881.

Peter S. Robertson & Co., St. Andrew's Square, Edinburgh — Garden and Flower Seeds, Forest Trees, Conifers, &c.

Sherratt & Pointon, Knypersley Nursery, Biddulph, near Congleton—Garden and Farm Seeds, Bulbous Roots, &c.

John Waterer & Sons, Bagshot, Surrey—Rhododendrons and other Plants.

Samuel May, 28, Upperhead Row, Leeds—Flower Seeds, Vegetable and Farm Seeds.

Communications Received.—J. D.—J. R.—R. D.—R. P.—J. G. B.—W. J.—G. D.—H. E.—W. W. & Co.—T. Stopher.—E. A. O.—T. J.—J. Alexander.—J. T.—S. C. B.

# Markets.

*COVENT GARDEN, February 17.*

Business quiet, with no alteration in values. A fair demand for good samples of late Grapes; also for Cucumbers. *James Webber, Wholesale Apple Market.*

Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 1 6– 6 0 |
| Grapes, per lb. | 3 0–10 0 | Pine-apples, per lb. | 1 0– 2 0 |

Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Asparag., Fr., bndl. | 25 0– .. | — Cos, each | 0 6– 1 0 |
| — Sprue, per bund. | 1 6– 2 0 | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| Cauliflowers, English, each | 3 0– 0 6 | Parsley, per bunch | 0 4– .. |
| Celery, per bundle | 1 6– 2 0 | Radishes, per bun. | 2 0– .. |
| Chilis, per 100 | 3 0– .. | Rhubarb, per bund. | 1 0– .. |
| Cucumbers, each | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| Garlic, per lb. | 1 0– .. | Spinach, per bushel | 4 0– .. |
| Herbs, per bunch | 0 2– 0 4 | Tomatos, per lb. | 0 9– 1 0 |
| Horse Radish, p. bun. | 4 0– .. | Turnips, new, bunch | 0 4– .. |

Potatos:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ficus elasticus, each | 1 6– 7 6 |
| Begonias, per doz. | 6 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cineraria, per doz. | 10 0–12 0 | Genista, per doz. | 12 0–18 0 |
| Cyclamen, per doz. | 12 0–24 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cyperus, per dozen | 6 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Dracæna terminalis | 30 0–60 0 | Myrtles, per doz. | 6 0–12 0 |
| — viridis, per doz. | 12 0–24 0 | Palms in var., each | 2 6–21 0 |
| Epiphyllum, per doz. | 18 0–30 0 | Primula, single, per dozen | 5 0– 6 0 |
| Erica hyemalis | 9 0–18 0 | Scillas, 12 pots | 9 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Snowdrops, 12 pots | 6 0– 9 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 3 0– 6 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Azalea, 12 sprays | 0 9– 1 6 | Pelargoniums, 12 spr. | 1 6– 2 0 |
| Bouvardias, per bun. | 1 0– 3 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Primula, double, per bunch | 1 0– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | — single, 12 sprs. | 0 6– 1 0 |
| Cyclamen, 12 blms. | 3 0– 6 0 | Roses (indoor), doz. | 3 0– 9 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | — yellow Fr., doz. | 2 0– 4 0 |
| Eucharis, per doz. | 4 0– 9 0 | — red French, doz. | 3 0– 4 0 |
| Euphorbia, 12 sprays | 3 0– 5 0 | — Christmas, 12 bl. | 0 9– 1 0 |
| Gardenias, 12 blms. | 15 0–30 0 | Snowdrops, 12 bun. | 2 0– 4 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Hyacinth, Roman, 12 sprays | 1 6– 2 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Tuberoses, per dozen | 4 0– 8 0 |
| — red, 12 blooms | 1 0– 3 0 | Tulips, 12 bunches | 12 0–18 0 |
| Lilac, Fr., per bunch | 7 0– 8 0 | Violets, 12 bunches | 1 6– 2 6 |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | — Neapolitan, Fr., per bunch | 3 6– 5 0 |
| Marguerites, 12 blms. | 0 4– 0 9 | — Czar, Fr., bunch | 2 0– 2 6 |

## SEEDS.

London: *Feb. 16.*—Business in field seeds continues quiet, the consumptive demand being, of course, greatly retarded by the unfavourable weather. Of red Clover, and especially of fine seed, the stocks on hand are limited, whilst the arrivals from America are still meagre. There has been a better trade doing in white Clover seed; the recent decline in values having brought forward buyers. Choice samples of Alsike also meet with more attention. For spring Tares there is a steady sale at full rates. More money is asked for Sainfoin. The available supply of Timothy seed is small. With regard to Canary seed the patience of many holders seems worn out, and, consequently, in order to effect a clearance, very low prices are accepted. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## POTATOS.

The Borough and Spitalfields markets reports state that there was a good show. The demand was limited, at the following quotations:—Scotch Champions, 75s. to 85s. per ton; Regents, 80s. to 100s.; Essex Regents, 80s. to 90s.; Champions, 70s. to 80s.; Belgian kidneys, 3s. 9d. per bag; German reds, 3s. 6d. to 4s. 9d.—The import into London last week was:—Hamburg, 5389; Rotterdam, 681; Bremen, 1800; Boulogne, 1924; Ghent, 400 bags; New York, 11 barrels; Harfleur, 60 tons.

## COALS.

The following are the quotations current at market during the week:—Bebside West Hartley, 14s. 9d.; East Wylam, 17s. 6d.; Walls End—Hetton, 18s. 6d.; Hetton Lyons, 17s.; Hawthorns, 17s. 3d.; Lambton, 18s.; Original Hartlepool, 18s. 6d.; Wear, 17s.; South Hetton, 18s. 6d.; Tunstall, 17s.; Thornley, 17s. 6d.; Caradoc, 18s. 6d.; Tees, 18s. 3d.; Radford Navigation, 17s. 6d.

**Government Stock.**—Consols, for delivery, were quoted at the close on Monday at 98¾, and at 98⅞ to 99 for the account. Tuesday's prices were, for delivery, 99 to 99⅛, and 99 1/16 to 99 3/16 for the account. On Wednesday the final quotations were, for delivery, 99⅛ to 98⅞, and 99 5/16 to 99 7/16 for the account. The closing figures on Thursday were, for delivery, 99⅛ to 99¼, and 99 3/16 to 99 5/16 for the account.

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Carter's

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*From "The Garden," May 29, 1880.*—"A remarkably fine variety of Mimulus, with flower 3 inches across, of a rich reddish-orange and copiously spotted, was exhibited by Messrs. Carter & Co., High Holborn."

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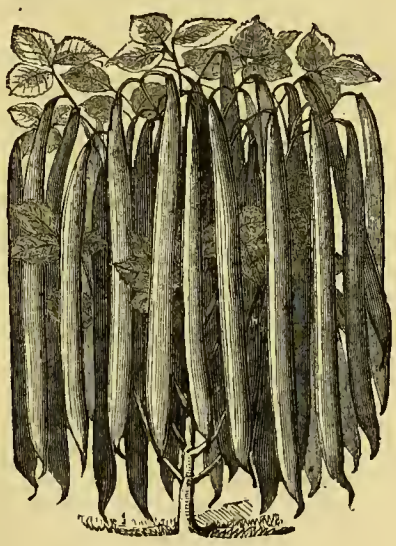

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# POTATO PLANTING.

IN THIS WEEK'S NUMBER OF

# THE GARDENER'S MAGAZINE

APPEARS

## VALUABLE PAPERS on POTATO PLANTING, together with a SYNOPTICAL LIST of 300 VARIETIES

**Grown on Mr. Hibberd's Trial Grounds from the year 1856 to the present time.**

This List affords an immense amount of useful information in respect of the CHARACTERS of the VARIOUS SORTS, as to RELATIVE LIABILITY to DISEASE, and also as to their Requirements in respect of Soil and Climate, and their Table Quality, &c.

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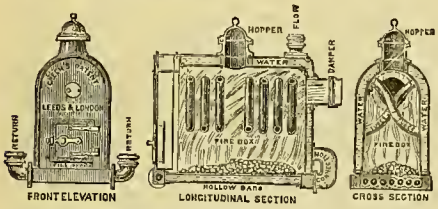


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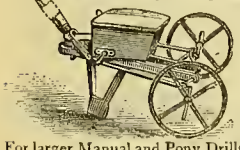

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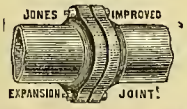


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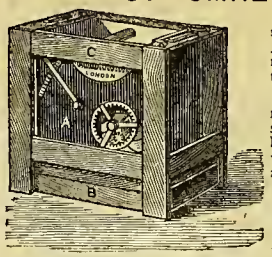


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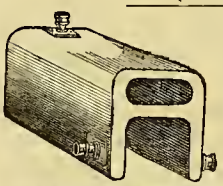

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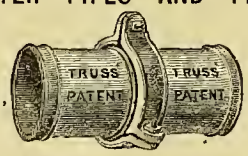


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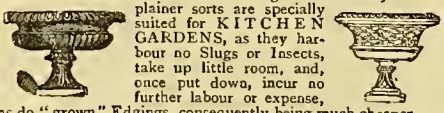

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REQUIRING GARDEN POTS of best quality are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List on application.

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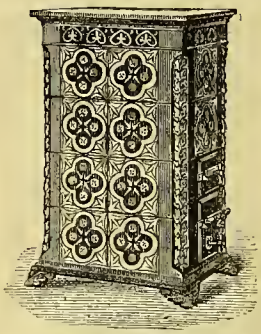

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TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

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| Children's, 2s. 6d. per dozen. | HEMSTITCHED:— |
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*HORTICULTURAL BUILDERS*

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**6 feet by 3 feet,**
BEST PINE,
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**15-oz., 9s.,**
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*Price List on application free.*

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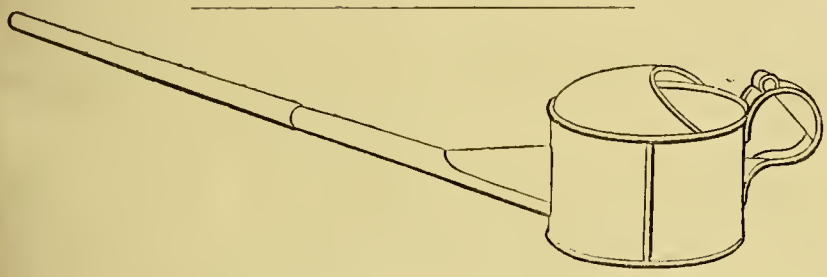

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# MESSENGER & COMPANY,
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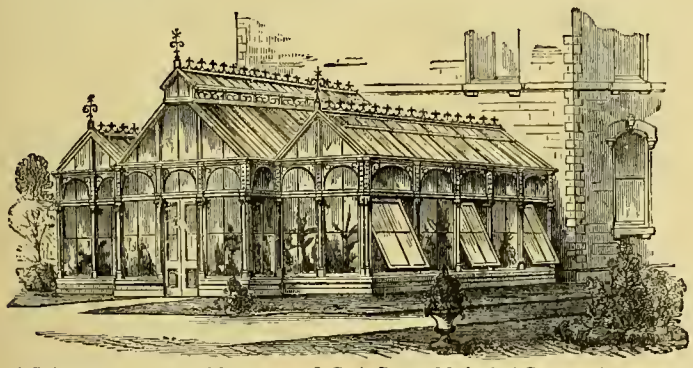

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BOULTON AND PAUL, Manufacturers, Norwich.

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W. H. LASCELLES will prepare Special DRAWINGS and ESTIMATES for GREENHOUSES, if desired, without charge, and send his Illustrated Sheets, post-free, and also Sketches of Wooden Buildings for Tool-houses, Store-houses, &c.
Horticultural Work of every description executed in the very best manner.

**BOULTON & PAUL,**
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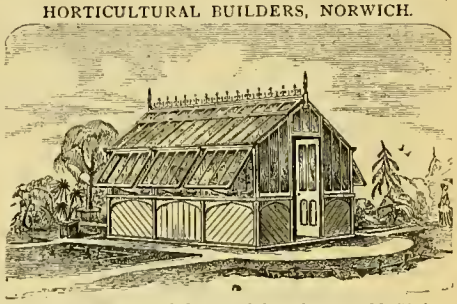

Portable Lean-to and Span-roof Greenhouses, with Fittings and Heating Apparatus complete in themselves. Delivered carriage paid to any Railway Station. Estimates given for any size Conservatories, Greenhouses, &c.
New CATALOGUE post-free for 12 stamps.

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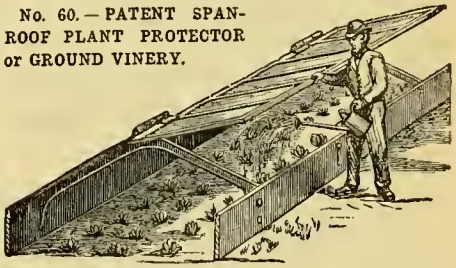

These useful frames will be found invaluable in large or small gardens for protecting plants in the open ground, or storing the same when turned out of the conservatory.

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Several may be placed together, and only one pair of ends required. Descriptive LISTS post-free.

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GREENHOUSES erected in any part of the Country, including Brickwork and Carriage, 20 feet × 12 feet, £42; 30 feet × 12 feet, £60; 50 feet × 16 feet, £100. Estimates and Plans free on receipt of size required. Also for Heating.
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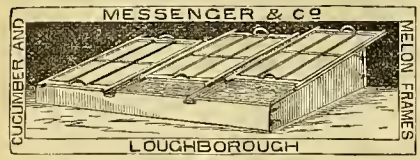


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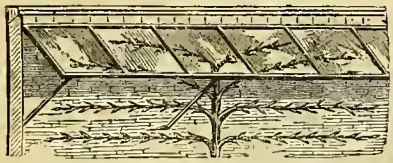

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PARHAM'S PATENT GLASS WALL COPING secures a certain crop of Apricots, Peaches, Pears, and all other Wall Fruit, on the Trees protected by it.
Price, in painted Iron Framing, with 21 oz. Glass, and Rods for front Curtain, 2 feet wide, 2s. 6d.; 3 feet wide, 3s. 9d. per foot run.
Testimonials, References, and Prospectus free.
WM. PARHAM, Northgate Works, Bath; and 280, Oxford Street, London. Specimens may be seen at either address.

**PIPES and FITTINGS,**
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The largest stock in the Kingdom. 4-inch pipes, 1s. 7d. per yard.
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WINDOW GLASS, SHEET LEAD, PAINTS, &c.
THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

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| 15-oz., 6 × 4 to 7½ × 5½, | 9s., | 10s., | 11s., 12s. |
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| 15 × 10 to 18 × 12, | 11s., | 13s., | 14s., 15s. |
| 20 × 12 to 24 × 16, | 11s 6d, | 13s 6d, | 14s 6d, 15s 6d. |
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(Per 100 ft. Box.)

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| 21-oz., Orchard House, 20 × 12, | 20 × 15, | 16s., | 17s. 3d., |
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15-oz., for Cutting up, 34s., 41s., 42s. 6d., 53s. per 300 feet case.
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LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.
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B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

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15-oz. and 21-oz., in Boxes containing 200 feet,
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*Price Lists on application.*
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THE PASTURES and WHEATFIELDS of the NORTH-WEST.—Cheap and Fertile Lands in Minnesota, Dakota, Montana and Washington, with healthy climates, railroad facilities, and assured growth of value.
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Second Edition, 1s., or 13 Stamps by Post.
SKIN DISEASES TREATED HOMŒOPATHICALLY. By WASHINGTON EPPS, L.R.C.P. One hundred cases, including forty distinct varieties of skin diseases.
London: JAMES EPPS AND CO., 48, Threadneedle Street, E.C., and 170, Piccadilly, W.

**Potato Planting.**
IN THE
GARDENER'S MAGAZINE, Saturday, February 19, appears valuable papers on this subject, together with a synoptical List of 300 Varieties of Potatos grown on Mr. Hibberd's Trial Grounds, from the year 1856 to the present time. This List affords an immense amount of useful information in respect of the characters of the various sorts, as to relative liability to disease, and also as to their requirements in respect of soil and climate, and their table quality, &c.
The *Gardeners' Magazine* is published weekly, price 2d. (specimen copy, post-free, 2½d.). Office, 11, Ave Maria Lane, London, E.C.; and Sold by all Newsagents.

**Belgian.**
BULLETIN d'ARBORICULTURE, de FLORICULTURE, et de CULTURE MARAICHÈRE. A monthly horticultural work, with superb Coloured Plates and Illustrations. Published since 1865, by F. BURVENICH, F. PAYNAERT, E. RODIGAS, and H. J. VAN HULLE, Professors at the Horticultural School of the Belgian Government at Ghent. Post-paid, 10s. per annum.
H. J. VAN HULLE, Botanical Gardens, Ghent, Belgium.


*IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.*

**If this should Meet the Eye of**
WILLIAM THOMAS, native of Newtown, Montgomeryshire, supposed to be a Gardener, will he communicate with his brother?—Address, Mrs. KING, 12, Duke Street, Portland Place, London, W.

MANAGING DIRECTOR regrets it has only been possible to reply to a few of the many excellent applications received for the situation advertised January 15, which was given on Saturday last to one of the first six selected candidates.—Netley House, Bournemouth, February 14, 1881.

WANTED, a competent GARDENER (age about 25), to go to Trinidad, West Indies. He must thoroughly understand the culture of Flowers and Market Gardening. Written testimonials required.—Address, by letter only, stating salary expected, to P. N. B., T. Ryder & Co., 31, Jewry Street, Aldgate, E.C.

WANTED, a GARDENER.—Must be a first-rate Florist; well up in all kinds of Forcing, Early and Late; well understand Stove Plants; no Vines, but Flower and Kitchen Gardening. Wages 23s. per week and house. Married man with small family preferred.—L. L., 42, Brunswick Terrace, Brighton.

WANTED, a GARDENER, where only one is kept.—Must thoroughly understand Growing Fruit and Flowers under Glass, and Flower and Kitchen Gardening.—Reply, stating age and wages, to M. M., *Gardeners' Chronicle* Office, W.C.

WANTED, as SECOND GARDENER, a married man (without family preferred). Must be experienced in Indoor and Outdoor Gardening; will be required to Milk and take Charge of Cows, &c. Wife must be a good Laundress. Wages 27s. per week, with lodgings on the premises, milk, vegetables, and gas. Good references required.—Apply, by letter, to W. F., The Manor House, Richmond, Surrey.

WANTED, a thorough good working VEGETABLE GARDENER, to undertake a Vegetable and Fruit Garden.—BOX 64, Post-office, Wrexham.

WANTED, as FOREMAN, a thoroughly experienced Grower of Cucumbers. Good wages to a reliable man.—H. DICKINSON, Shardlow, near Derby.

WANTED, a WORKING FOREMAN, for a General Nursery. Preference given to a man with some knowledge of Glass.—Apply, stating age and full particulars as to character and ability, to W. RUMSEY, Joyning's Nurseries, Waltham Cross, N.

WANTED, a FOREMAN, for the Houses; must be able to take entire Charge under direction of the Gardener, and have filled a like situation. Wages 18s. and Bothy.—W. HAYTER, Homewood, Chislehurst, Kent.

WANTED, a Market Garden Outdoor FOREMAN (married, with no family), to take the lead of a staff of men under instruction. Wages 25s. per week, and cottage.—WM. DEEDMAN, Titchfield, Hants.

WANTED, a FOREMAN ROSE GROWER, experienced and energetic.—Mr. PIKE, Gardener, Crediton.

**Orchid Foreman.**
WANTED, a young MAN, of good experience, to take Charge, under the Head Gardener, of a fine Collection of Orchids, in a Nobleman's establishment on the Continent. Liberal wages will be given to a really efficient man, who can produce first-class testimonials as to ability and character.—Apply, by letter, to JAMES VEITCH AND SONS, Royal Exotic Nursery, Chelsea, S.W.

WANTED, a PROPAGATOR: one who has been in a Market Nursery preferred.—Apply stating experience and wages required to GEORGE EDWARDS, Balham Nursery, London, S.W.

WANTED, an active young MAN, well acquainted with the culture of Ferns, and with a general knowledge of Nursery Stock, as he would be required to wait upon customers.—H. STROUD AND SONS, Florists, Lordship Park Nurseries, Stoke Newington, N.

WANTED, a MARKET GROWER of Soft-woods generally, also Bulbs, Ferns, and Cucumbers.—A steady, competent, and energetic man will find a good field in this rapidly increasing concern. Strict investigation of character, &c.—ONWARDS, *Gardeners' Chronicle* Office, W.C.

WANTED, a young MAN, used to Nursery work. Must be steady, sober, and industrious, and have a good knowledge of Bedding Plants. One used to packing preferred. Wages, 18s. per week.—W. BADMAN, Cemetery Nursery, Gravesend.

WANTED, a young MAN, of some experience in the Propagating-houses. Lodgings found.—Apply, stating experience, wages, &c., to IRELAND AND THOMSON, Craigleith Nursery, Comely Bank, Edinburgh.

WANTED, a young MAN, who is thoroughly conversant with the Seed Trade. One with a knowledge of Plants preferred.—J. BROMWICH, 25, Buckingham Palace Road, S.W.

WANTED, a CLERK of WORKS, or STEWARD, to superintend and carry out ordinary work required to a Country House and five acres of ground (not far from London), and make himself otherwise useful, residing on the spot. Must be able to correspond and keep accounts, and have a knowledge of Building and Laying-out of Grounds; also be able to engage and manage workmen.—Address, stating age, experience, and salary required, to B. B., Messrs. G. Street & Co., 30, Cornhill, E.C.

WANTED, a good active business MAN to Wait in a retail Fruit, Vegetable, and Seed Business. One who thoroughly understands the trade preferred. Wages 25s. per week. None need apply who cannot give first-class references.—ALFRED COCKERILL, 20, Drapery, Northampton.

WANTED, a JUNIOR SHOPMAN, in a London Seed Shop—a smart quick youth, accustomed to the Trade.—N., 14, Tavistock Row, Covent Garden, W.C.

## WANT PLACES.

*IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS or to FICTITIOUS NAMES at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.*

GARDENER and GENERAL MANAGER, age 36.—RICHARD LEE begs to offer his services to any Nobleman or Gentleman requiring a thorough practical man, having had the Management of the Gardens and General Estate Work for several years at Offchurch, Bury. References of the highest order.—Cubbington, near Leamington.

GARDENER (HEAD).—Married; thoroughly experienced in Growing Vines, Peaches, Cucumbers, Melons, &c.; Stove and Greenhouse Plants, and Flower and Kitchen Gardening.—T. M., 14, Enfield Road, Brentford.

GARDENER (HEAD), where two or three are kept.—Age 25, about to be married; five years' Foreman in present place.—EDWIN DYER, Arlington Court, Barnstaple, Devon.

GARDENER (HEAD), where two or more are kept.—Age 33, married, one child (age 2); ninetee years' experience in first-class places, both Nurseries and Gentlemen's Gardens. Excellent testimonials.—G. DIBLEY, 24, Vickerman Street, Parkinton Lane, Halifax, Yorkshire.

GARDENER (HEAD).—Age 34, married, a thorough practical Cultivator of first quality of all kinds of Stove and Greenhouse Plants, Orchids, Ferns, Vineries, Peach-house, Flower and Kitchen Gardening, &c.—A. COX, 1, Stanhope Road, Tunbridge Wells.

GARDENER (HEAD).—Age 37, married, no family; steady, energetic, and trustworthy. An excellent Grape Grower, also a good Plantsman, and well up in every other department of Gardening. Excellent references.—JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool.

GARDENER (HEAD).—A GENTLEMAN wishes to recommend the above, who is leaving on account of the death of his late mistress. Thoroughly understands Houses, Flowers, &c. Married.—Rev. J. HOLDEN, Lachford Manor, Bury St. Edmunds.

GARDENER (HEAD), where three or more are kept.—Age 28, married, 10 family; thoroughly practical in all branches of the profession. Seven years in present situation. Good character.—H. HUBBARD, Mr. Marshall, Stourton Lane, Stourton, Bath.

GARDENER (HEAD).—Married; thoroughly experienced in all departments. Five and a half years' good personal character. Left through breaking up of the establishment.—GARDENER, 8, Lorne Terrace, Myrtle Road, Acton, W.

GARDENER (HEAD).—Age 37; twenty years' experience; thorough knowledge of Vines, Melons, Peaches, &c., Stove and Greenhouse Plants; excellent Grower of the same. Eight years' character; total abstainer.—H. Y. 3, Reviver Terrace, Russel Road, Wimbledon, Surrey.

GARDENER (HEAD).—Age 36, married, no family; twenty-six years' experience. Thoroughly understands all branches of Horticulture. Seven years' good character from late employer.—GARDENER, Parrs Wood House, Didsbury, near Manchester.

GARDENER (HEAD), where a thorough practical man is required.—Age 30, married; thoroughly understands the profession in all its branches. First-class references. Please state wages.—A. B., H. Kersbaw, Florist, Well Lane, Streatham, Surrey.

GARDENER (HEAD).—Age 40, married, no family; a thoroughly practical man of twenty-five years' experience in all branches of the profession, Orchids, Vines, Early and late Forcing, Fruits, Flowers, &c. Fourteen years Head Gardener. Good character.—B. H., Alexandra Terrace, Penge Lane, Penge.

GARDENER (HEAD).—Age 40; thoroughly practical knowledge of the profession in all branches, Land and Stock. Good Grape and Peach Grower. Wife good Cook, thoroughly understands the Dairy, or would assist otherwise. Eight years' undeniable character.—HENRY DOWN, Aldon Offham, Maidstone, Kent.

GARDENER (HEAD), where two or three are kept; age 27, single at present.—THOMAS HEDLEY, Gardener to Colonel Sowerby, Putteridge Park, Luton, Beds, can with confidence recommend above to any Lady or Gentleman requiring the services of a thoroughly practical, trustworthy man. Fourteen years' experience in some of the best Gardens.

GARDENER (HEAD); age 33.—A GENTLEMAN, who is leaving home and reducing his establishment, wishes to recommend his Head Gardener for another place. He is thoroughly competent in all branches; a steady, energetic, and upright man.—For further particulars apply to W. FOSBERY, Estate Agent, Warwick.

GARDENER (HEAD).—Age 30, married, one child, Scotch; sixteen years' practical experience in all branches of the profession in England and Scotland. Good Fruit and Plant Grower; also Forcing of Fruits, Flowers, and Vegetables. Two years and three months' good character from last place, and first-class testimonials from previous employers.—WM. HAMILTON, Chapel House, Westcott, Dorking.

GARDENER (HEAD, WORKING), where three or more are kept.—Age 33, married; practical experience in all the various branches of the profession. Good references.—A. C., Sevenhampton, Highworth, Wilts.

GARDENER (HEAD, WORKING).—Married; thorough Plant, Fruit, and Vegetable Grower. Highly recommended; three years' character. Total abstainer.—H., 28, Haydon Road, Upper Holloway, N.

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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, February 19, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 374.—Vol. XV. { New Series. } SATURDAY, FEBRUARY 26, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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JAMES CARTER, DUNNETT AND BEALE are prepared to quote Special Prices to their Country Friends of the above, on application.
237 and 238, High Holborn, London, W.C.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

**Richardia hastata (the Yellow Calla).**

HOOPER AND CO. are now offering this exquisitely beautiful Plant at 18s. per dozen, 2s. each.
Covent Garden, London, W.C.

CHRYSANTHEMUMS.—Best Exhibition named varieties, rooted plants, 2s. per dozen, 12s. pe 100; cuttings, half-price.
T. HASLAM, Vine House, Timperley, Manchester.

**To Florists and Gardeners.**

FILBERT SUCKERS, for Flower-sticks, for Sale, 6d. per Bundle.
45, Wells Street, Oxford Street, W.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

BLOOMING RHODODENDRONS.—Fine healthy plants of the best varieties, covered with Bloom-buds, 3 to 5 feet high. An inspection solicited. CATALOGUE free on application.
H. LANE AND SON, The Nurseries, Berkhamsted, Herts.

FOR SALE, nearly 1 ACRE of Spring-Flowering PLANTS, about 20,000 WALLFLOWERS, and 15,000 SWEET WILLIAMS, PANSIES, &c. Apply to
A. BLAKE, Worcester Park, Surrey.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

ORCHIDS.—The largest stock in Europe. Thousands of these beautiful Plants to select from, at 10s. 6d., 15s., and 21s. each, at
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

**Pæonia sinensis and other varieties.**

ROBERT PARKER begs to announce that he can supply the above-named by the dozen, 100, or 1000, in nearly 150 named varieties, from 12s per dozen upwards. Descriptive and priced Lists forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

LAPAGERIAS.
WHITE, extra strong, 42s. each; do., 31s. 6d. each smaller, 21s. each
RUBRUM, strong, 10s. 6d. each.
ROSEA, strong, 7s. 6d. each.
Price to the Trade on application.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham

SPANISH CHESTNUT, HAZEL, ASH, LARCH, SCOTCH, BIRCH, ALDER, WILLOW, and THORN QUICK, all stout, well rooted, transplanted. A large quantity to be sold
Mr. GEO. CHORLEY, Coaster's Nursery, Midhurst, Sussex.

**Special Offer of Onion Seed, &c. (New and Nett).**

JAMES FARRAR AND CO. are prepared to make low quotations for above upon application, and also of Vegetable Marrow (long white-ribbed var.).
Seed Warehouse, 36, Primrose Street, Bishopsgate, E.C.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

## SALES BY AUCTION.

**6000 Lilium auratum, just received from Japan.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February, 28, at half-past 12 o'Clock precisely, an importation of 6000 bulbs of LILIUM AURATUM, just received from Japan; also 60 bulbs of a NEW WHITE JAPANESE LILY; a consignment of 1000 Double Italian TUBEROSES, from America; 160 fine clumps of Japanese IRIS, just received direct from Japan; a consignment of 2000 TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, and 3000 GLADIOLI, from New Jersey; some fine flowering bulbs of GLOXINIAS, ACHIMENES, TRITONIAS, Herbaceous PÆONIAS, and other GREENHOUSE and HARDY BULBS and PLANTS, &c.
On view morning of Sale, and Catalogues had.

**Standard and Dwarf Roses, Camellias, &c.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 2, at half-past 12 o'Clock precisely, choice named Standard, Half-Standard, and Dwarf ROSES, including Hybrid Perpetual, Tea-scented, Moss, and others; also a Consignment of good named CAMELLIAS, INDIAN AZALEAS, well set with bloom-buds; and PALMS from Ghent; ORNAMENTAL FLOWERING SHRUBS, HARDY HERBACEOUS PLANTS, choice GLADIOLI, LILIUMS, TIGRIDIAS, and other BULBS, &c.
On view morning of Sale, and Catalogues had.

**Phalænopsis intermedia Brymeriana, Phalænopsis VEITCHIANA, PHALÆNOPSIS LEUCORRHODA.**

MR. J. C. STEVENS has the pleasure to announce that he will include in the SALE, on THURSDAY, March 3, by order of Messrs. Hugh Low & Co., a Flowering Plant of each of the above-named rare and lovely ORCHIDS.
38, King Street, Covent Garden, W.C.

**Choice Imported Orchids from the Philippine ISLANDS and VENEZUELA.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 3, at half-past 12 o'Clock precisely, by order of Messrs. H. Low & Co., Imported ORCHIDS from the Philippine Islands, consisting of Vanda lamellata Boxallii, amongst them splendid masses; Cypripedium lævigatum, in the best possible condition, many of them fine masses; fine specimens of Aerides quinquevulnerum, true Saccolabium violaceum, Vanda Batemanii; also from Venezuela fine specimen Cattleya Mossiæ, C. speciosissima, and Masdevallia tovarensis, good plants with healthy foliage, amongst them some fine specimens.—At the same time will be offered good plants of Cypripedium Laurenceana, Dendrobium Lowii, and other choice Orchids.
May be viewed the morning of Sale, and Catalogues had.

**Importations of Vanda cœrulea and V. Cathcarti, also DENDROBIUM FREEMANII, D. NOBILE, &c.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, March 5, at half past 12 o'Clock precisely, without reserve, a fine importation of East Indian ORCHIDS, consisting, among others, of Vanda cœrulea, V. Cathcarti, Cœlogyne barbata, Dendrobium nobile, &c.
May be viewed the morning of Sale, and Catalogues had.

**Odontoglossum Oerstedi.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 10, a fine importation of this remarkable ODONTOGLOSSUM. For figure see *Gardeners' Chronicle*, June 30, 1877. Further particulars in later Advertisement.
On view morning of Sale, and Catalogues had.

**The renowned Collection of Orchids of JOHN DAY, ESQ., of TOTTENHAM.**

MR. J. C. STEVENS has received instructions from J. Day, Esq., to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without the slightest reserve, during the ensuing spring months, his entire COLLECTION of ORCHIDS. This Collection, which is one of the finest in the country, contains well-grown specimens of almost every species and variety worth growing. The following are the days of Sale:—

| | |
|---|---|
| THURSDAY, March 31 | THURSDAY, May 5 |
| FRIDAY, April 1 | MONDAY, May 23 |
| TUESDAY, April 12 | TUESDAY, May 24 |
| WEDNESDAY, April 13 | THURSDAY, June 9 |
| WEDNESDAY, May 4 | FRIDAY, June 10 |

Further particulars will appear prior to each Sale, and Catalogues will be ready about ten days before. The plants will be on view on the morning of each Sale, but cannot be viewed on the premises without a special order from Mr. J. C. STEVENS. To avoid any risk to the plants, they will be brought to King Street on the afternoon prior to each Sale, and when necessary the rooms will be heated.

**Important Sale of very handsome English-grown** CAMELLIAS, 2 to 3½ feet, well set with bloom-buds; choice AZALEA INDICA, GREENHOUSE PLANTS in variety, a superb assortment of 400 Standard, Dwarf, and Climbing ROSES; selected FRUIT TREES, HARDY SHRUBS, AMERICAN PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on THURSDAY, March 3, at 12 o'Clock precisely.
On view the morning of Sale. Catalogues had at the Rooms and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

**Monday Next.**
5000 LILIUM AURATUM, &c.

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, near the Bank, E.C., on MONDAY NEXT, at half-past 11 o'Clock, precisely, 5000 BULBS of L. auratum, L. Krætzeri, a new White Lily, and a case of new IRIS, just arrived from Japan; an assortment of Hardy English-grown LILIES and BULBS, gigantic roots of L. Humboldtii, Washingtonianum and parvum, CALOCHORTI, and other BULBS from California; AMARYLLIS, CARNATIONS, PICOTEES, LILY of the VALLEY, &c.
Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Established Orchids.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, E.C., on MONDAY, March 5, 200 Lots of choice ESTABLISHED ORCHIDS and a quantity of IMPORTED ORCHIDS.
Further particulars next week.

WANTED, to RENT or PURCHASE, NURSERY, FLORIST, and SEED BUSINESS, near large Town in Midland Counties preferred. Must bear strict investigation. Full particulars to
992, *Midland Counties Herald* Office, Birmingham.

WANTED to RENT, 8 or 10 Acres of LAND, for Market Garden. Near Brighton preferred. Address W. A., 2, Granville Terrace, Cross Road, East Croydon, Surrey.

## SUNNINGDALE NURSERY.

*To Gentlemen Seeking a Pleasant Healthy Occupation.*

TO NURSERYMEN WISHING TO ENLARGE THEIR BUSINESS.

**To Gentlemen's Gardeners with Means.**

THE DIRECTION of the SUNNINGDALE NURSERY, established and successfully conducted by CHARLES NOBLE, must now, owing to the age and failing health of the Proprietor (who has no son to succeed him) be delegated to more robust hands, and he is prepared to entertain proposals for importing into the business new energies, either wholly or in part. The Grounds are extensive, over two-thirds being Freehold, and one-third Leasehold, to run some time, with little chance of objection to renewal. The situation is one of the very best in England (only a few minutes' walk from a railway station); it contains within itself every kind of soil, from heavy loam to peat and pure sand; and the neighbourhood is admitted on the highest authority to be one of the most healthy positions in Great Britain. The owner is prepared to consider any *bonâ fide* proposal, either from one or more persons, and every reasonable facility will be given to persons of moderate means. Skill and enterprise will be taken into account, and as favourably considered as mere money value. The business is capable of extension, or can be limited at pleasure, and contains within itself several specialities of undoubted value.
Bagshot, 1881.

TO BE LET, with Immediate Possession, SEEDSMAN'S SHOP, HOUSE, and nearly an Acre of NURSERY GROUND, at Hemel Hempstead, within five minutes' walk of the Market Place. Rent, £42.
For terms apply to ROBINSON, Estate Agent, Hemel Hempstead, N.W.

TO LET.—A good NURSERY, well situated, presenting an excellent opening to a man of experience with small capital. Easy distance of Covent Garden Market. Good Jobbing and Landscape Gardening Business to be done. Satisfactory reasons given. Apply,
S. H., Stamford Hill Nursery, N.

**Economy in Gardening.**
TO PURCHASERS OF LARGE QUANTITIES.
Asylums, Unions, Hotels, and Public Institutions.

SUTTON AND SONS are prepared to place purchasers of large quantities on favourable terms.
Apply, stating quantities required, to
SUTTON AND SONS, The Queen's Seedsmen, Reading.

SEED POTATOS and PEAS.—A quantity of Magnum Bonum POTATOS, warranted true; also a few bags of Prizetaker PEAS. Both the above grown by the undersigned. Particulars on application.
RICHARD ROBBINS, The Hollies, Kenilworth.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**To the Trade.**

GLOIRE DE DIJON ROSES.—By the 100 or 1000. Fine plants on the Seedling Brier. Price on application.
MORRISON BROTHERS, Aberdeen.

**Potatos—Potatos—Potatos.**

OLD ASHLEAF, VEITCH'S IMPROVED ASHLEAF, MYATT'S ASHLEAF, MONA'S PRIDE, and MAGNUM BONUM.
J. HOUSE, having a large stock of the above, is able to offer them at a very low price; also WILLIAM I. PEAS (true). Prices on application.
J. HOUSE, Eastgate Nurseries, Peterborough.

**To the Trade.**

ONION SEED, White or Brown Port Onion Seed, new and of excellent quality, at special low price. Apply to
G. AND W. YATES, Seed Merchants, Manchester.—Established 1826.

PEAR STOCKS, 40*s.* per 1000. Standard, Pyramid, Maiden, and Trained FRUIT TREES. PURPLE BEECH, 6 to 12 feet. Price per dozen or 100 on application.
ACER NEGUNDO VARIEGATA, 1 to 4 feet, 30*s.* to 60*s.* per 100.
PLUM, Madame Victoria, small for training, 30*s.* per 100.
WILLIAM FLETCHER, Ottershaw Nursery, Chertsey, Surrey.

TO THE TRADE.
400,000 FIR, 2-yr., 1-yr., native Scotch.
500,000 FIR, 2-yr., 2-yr., ditto.
500,000 LARCH, 2-yr., 1-yr.
Price (now less than quoted in our Trade List) on application. The ground on which the 2-yr., 1-yr., Scotch Fir stands being required for building purposes, they will be offered cheap.
MORRISON BROTHERS, Aberdeen.

**Notice—Notice—Notice.**

AGRICULTURAL, KITCHEN GARDEN, and FLOWER SEEDS.
An allowance of 10 per cent. made on all orders above 20*s.*, and carriage paid to all parts of London within a radius of 20 miles.
Also special facilities given to Market Growers where seeds are required in large quantities. A trial respectfully invited.
COLLECTIONS for LARGE and SMALL GARDENS from 10*s.* 6*d.* to £3 3*s.* Catalogues free on application.
H. THORNTON AND CO., Nurserymen and Seedsmen, late Dancer's" Nurseries, Fulham, S.W.

**Special Offer.**

FREDK. GEE begs to offer, for cash, the undermentioned superior Bedfordshire grown SEEDS—POTATOS, CABBAGE, and other PLANTS, ROOTS, &c. Although the late severe weather has made sad havoc amongst various Plants, &c.—in many instances half of them being killed—F. GEE has a large quantity of fine Plants left, and will supply them at the following reasonable prices, for early orders accompanied with cash.
All the Standard varieties of CABBAGE, grown from his far-famed stocks, at 3*s.* per 1000 (of 1200); Red Picklers, fine, at 5*s.* per 1000. [7*s.* 6*d.* per 1000.
LETTUCE Plants, Hardy Green and others (scarce), 1*s.* per 100,
SAVOY, Large Drumhead, and finest BRUSSELS SPROUTS, at 3*s.* per 1000,
PRICKLY COMFREY, true Caucasian, crown sets, 2*s.* 6*d.* per 100, 20*s.* per 1000.

**POTATOS.**

Fine samples, grown on new, light, and heavy land; can be highly recommended to those who require a change of seed:—

| | Per Peck of 14 lb. | Per Bush. of 56 lb. | Per Cwt. | Per Ton. |
|---|---|---|---|---|
| | s. d. | s. d. | s. d. | £ s. |
| Early Ashleaf Improved, fine stock .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Early Myatt's Prolific, splendid sample .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Early and Late Rose, splendid sample, great croppers .. .. .. .. .. | 1 0 | 3 0 | 5 6 | 5 0 |
| New Burbank Seedling, and Washington, fine kidneys, great croppers; stock now limited .. .. .. .. .. .. | 2 0 | 7 0 | 12 0 | 11 0 |
| Beauty of Hebron (true), splendid cropper, fine quality; stock now left very limited.. | 2 0 | 7 0 | 12 0 | 11 0 |
| Golden Shaw (true), early; scarce .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Climax and Peerless, very productive, and good quality .. .. .. .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Snowflake, splendid quality, scarce, fine sample .. .. .. .. .. .. | 1 6 | 5 6 | 10 0 | 9 0 |
| Rector of Woodstock, fine stock, much recommended.. .. .. .. .. .. | 2 0 | 7 0 | 13 0 | 12 0 |
| Model, fine, much recommended .. .. | 1 6 | 5 0 | 9 6 | 9 0 |
| Schoolmaster (true), extra fine, quality not to be surpassed .. .. .. .. | 2 6 | 9 0 | 16 0 | 15 0 |
| Paterson's Victoria (true): finest white Regents | 1 6 | 5 0 | 9 0 | 8 0 |
| Magnum Bonum (Sutton's true).—An extra selected stock of this valuable variety, splendid seed size, clean sample. Undoubtedly the best disease-resister and heaviest cropper in cultivation .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Scotch Champion (true), very fine. An extraordinarily productive and wonderful disease-resisting variety, of fine quality .. | 1 3 | 4 0 | 7 0 | 6 0 |

Bags to hold 2 or 3 bushels charged 6*d.* each; other packages lowest prices. Special prices to very large buyers.
Many other kinds can be supplied cheap and good.
Cheap Early SPRING FLOWERING ROOTS, such as DAISIES, WALLFLOWERS, PYRETHRUMS, CARNATIONS, PICOTEES, &c. See CATALOGUE.
HERB ROOTS, SAGE and THYME, very fine plants; also RHUBARB for planting; and ASPARAGUS PLANTS. See General CATALOGUE of all kinds of superior Bedfordshire-grown Seeds, Plants, and Roots, on application to
FREDK. GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

LARCH.—Twice transplanted, grand stuff, 2 to 3 feet.
WILLIAM IRELAND, Pilton Nurseries, Barnstaple.

DAHLIAS (Double), PHLOXES, CANNAS, PETUNIAS (Single and Double), VIOLAS, VIOLETS (Single and Double), VERBENAS, DAISIES, and also all classes of Zonal PELARGONIUMS.
H. CANNELL AND SONS can offer the above in good plants, and all the best sorts in cultivation, to the Trade. Prices on application.
The Home for Flowers, Swanley, Kent.

**To the Trade.—Clearance of Building Land.**

ASPARAGUS PLANTS, 1-yr., 4-yr.; also 9-yr., splendid Forcing Stuff.
RHUBARB.—Early Linnæus, Stott's Monarch, Johnston's St. Martin's, and Ruby (a splendid colour throughout).
FREEMAN AND FREEMAN, Norwich.

MAGNUM BONUM POTATOS, delivered carriage free to any station in England or Scotland £7 10*s.* per ton, cash.
LAPSTONE KIDNEY POTATOS, at £6 per ton. } Free on rails, Hexham Station.
RED-SKINNED KIDNEY ditto, at £6 per ton. } Free on rails, Hexham Station.
SCOTCH FIR, 1-yr. Seedling.
PINUS AUSTRIACA, 2-yr. ditto.
NORWAY SPRUCE, 2-yr. ditto.
ASH, 2-yr. ditto. } Price on application.
W. FELL AND CO., Wentworth Nurseries, Hexham.

**To the Trade.**

R. AND A. MORRISON beg to call the attention of the Trade to our Advertisement below, and to assure them that our stock of LARCH and SCOTCH FIR of which we always make a speciality, is this season very large and very fine. Our LARCH are very healthy, not a speck of bug being on them last summer; of 2-yr. Seedlings we can offer 1,000,000; of 1-yr. 1-yr. upwards of 1,200,000; and of the sizes from 12 to 30 inches, as advertised, we have upward of 1,500,000 still to offer. Our Scotch FIR are guaranteed true native Highland Scotch Pine, grown from seed specially collected for us in the forests in the North of Scotland and taken out in our own kilns in the nursery. Of the different sizes advertised we have still to offer upwards of 3,000,000.
Arrangements may be made for paying carriage to Carlisle.

**Special Trade Offer.**

R. AND A. MORRISON, The Nurseries Elgin, beg to offer the following:—
LARCH, 2-yr., fine, 4*s.*; 1-yr., 1-yr., very fine, 6*s.*; 12 to 18 inches, 12*s.* 6*d.*; 18 to 24 inches, 17*s.* 6*d.*; 18 to 30 inches 20*s.* per 1000.
FIR, Scotch (Native), 1-yr., 1-yr., 6*s.* 6*d.*; 2-yr., 1-yr., 7*s.* 6*d.* 1-yr., 2-yr., very fine, 8*s.* 6*d.*; 2-yr., 2-yr., 12*s.* 6*d.* per 100
PINE, Austrian, Laricio, and Montana, 2-yr., 1-yr., 7*s.* 6*d.* 2-yr., 2-yr., 10*s.* per 1000.
ALDER, transplanted, 18 to 24 inches, 10*s.* 6*d.* per 1000.
ELM, Wych, 2-yr., 2*s.* 6*d.* per 1000.
MAPLE, Norway, 2-yr., 1-yr., very fine, 10*s.* 6*d.* per 1000.
POPLARS, argentea, fine, 18 to 24 inches, 21*s.*; 24 to 36 inches 30*s.* per 1000. Balsam, 18 to 24 inches, 10*s.* 6*d.*; 24 to 36 inches, 15*s.* 6*d.*; 3 to 4 feet, 21*s.* per 1000. Black Italian and White Egyptian same sizes and same prices.

COVERT PLANTING.

BOX, Tree, 1½ to 2 feet, per 100, 12s.
COTONEASTER MICROPHYLLA, 1½ to 2 feet, per 100, 25s.
MAHONIA AQUIFOLIA, 1 to 1½ foot, per 100, 10s.
PRIVET, Evergreen, 5 to 6 feet, per 1000, 60s.
SPRUCE FIRS, 2 to 3 feet, per 100, 10s.
JNO. JEFFERIES AND SONS, The Royal Nurserses, Cirencester.

CHEAP and GOOD.
The usual discount to the Trade.
VINES, good planting canes of Black Hamburgh, Buckland Sweetwater, and Lady Downe's, 3s. each.
MORELLO CHERRIES, dwarf-trained, 2s. 6d. each.
AUCUBA JAPONICA, 2½ feet, very bushy, 15s. per dozen.
CEDRUS DEODARA, splendid specimens, 4 to 4½ feet, 36s. per dozen.
THUYA AUREA, 2½ feet, well furnished, dense specimens, 5s. each.
THUYA GIGANTEA, 5 feet, 30s. per dozen.
COTONEASTER MICROPHYLLA, fine, 5s. per dozen.
CHESTNUT, Horse, 9 to 10 feet, stems 8 inches in diameter 1 foot from the ground, 20s. per dozen.
PRIVET, oval leaf, 1½ to 2 feet, 50s. per 1000.
SPRUCE, fine, well furnished with good roots, 3½ feet, 16s. per 100.
The EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

SUTTON'S MAGNUM BONUM POTATO.—For Sale, true stock, being the produce of seed supplied by Messrs. Sutton & Sons when first introduced by that firm. They are in prime condition, and perfectly free from disease or frost. A 2 cwt. sample will be sent carriage paid to any Railway Station in England or Wales, on receipt of Post-office Order for 18s., and address. Also EARLY ROSE, at 14s. per 2 cwt. Carriage paid. Cheaper by Ton or Truckload.
J. T. SMITH, Potato Merchant, Wisbech, Cambs.

To the Trade.—PAMPAS PLUMES.
CORRY, SOPER, FOWLER AND CO. (Limited), 18, Finsbury Street, E.C., invite buyers to inspect their Stock, just imported, of excellent quality and condition. Prices and samples on application.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 3½ feet.
SCOTCH.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted.
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

Special Spring List, No. 50.
THE NEW PLANT AND BULB COMPANY beg respectfully to invite attention to the above. CONTENTS:—Beautiful BULBOUS and OTHER PLANTS suitable for Present Planting for Summer and Autumn Flowering, in Open Ground, or Conservatory Decoration, &c. Post-free on application.
Lion Walk, Colchester.

New Pompon Chrysanthemum.
SHAW'S GOLDEN MADAME MARTHE is the finest yellow Pompon in the World, and will be grown by everybody, shown by everybody, and admired by everybody. Plants, 1s. each; post free in box, 1s. 3d. Twelve cuttings of the best varieties of CHRYSANTHEMUMS for exhibition, including one plant of Golden Madame Marthe, 3s., post-free.
SHAW'S Valley Nurseries, Knostrop, Leeds.

The Best Cucumber in Cultivation.
"VERDANT GREEN."—This splendid new Cucumber has been raised by Mr. J. McIndoe, Gardener to J. W. Pease, Esq., M.P., Hutton Hall. It is the result of a cross between Rollisson's Telegraph and Munroe's Duke of Edinburgh, and is a great improvement on these fine varieties. In length it attains about 16 inches, perfectly symmetrical in shape, without any neck, and of a beautiful deep green colour. A strong grower, free bearer, and may justly be described the best Cucumber in cultivation for summer or winter use, either for table or exhibition purposes. It has been awarded First Prizes at the following exhibitions:—York, against eighteen brace; Bishop Auckland, thirty-one; Saltburn-by-Sea, twenty-three; and Edinburgh, sixteen.
*From* Mr. J. HUNTER, *Gardener to the* Right Hon. the Earl of Durham, *Lambton Castle*:—"I have grown your Verdant Green Cucumber, and find it of medium size, fine quality, and retains its dark green colour longer than any variety I am acquainted with. It is of vigorous growth, free bearer, and practically a first-rate all-the-year-round sort."
VERDANT GREEN CUCUMBER, sent out for the first time at the moderate price of 1s. 6d. per packet, post-free.
KENT AND BRYDON, Seed Merchants, Darlington.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SEED POTATOS.
GRAMPIANS, Robertson's true stock, 20 tons, at £6 10s. per ton.
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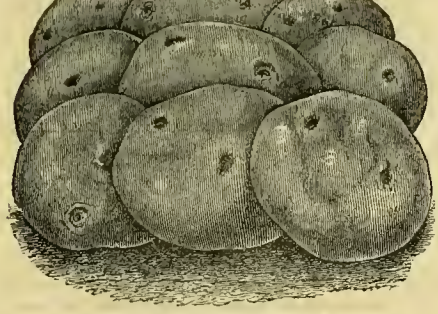

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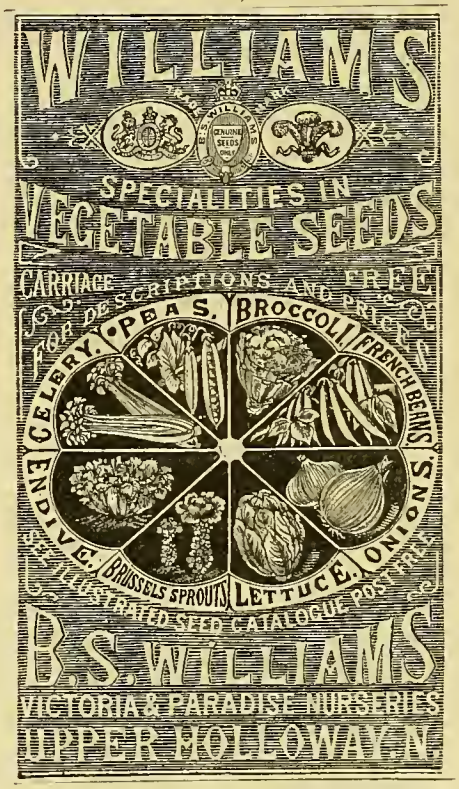


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WHITE ELEPHANT.—A choice new American Potato, of very great promise, raised from the same seed-ball as the Beauty of Hebron, which it resembles in many respects, but more productive; in fact, we may claim that the White Elephant not only possesses the unexcelled qualities of the Beauty of Hebron, but also the wonderful productiveness of the old California of twenty years ago. Price 1s. 3d. per pound, 7 lb. 7s. 100 other choice kinds in stock.
DANIELS BROS., Seed Farmers, Norwich.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

KING NOBLE or EARLY GOLDEN SHAW; the best early Potato of its class, being as early as the true old Ashleaf, and as fine a flavour, but produces four to six times the quantity. Dwarf and compact habit. First-class for early work. Per peck, 4s.; per bushel, 14s. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
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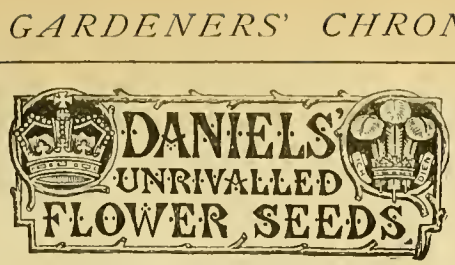
ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1870.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" " ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

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# FLORAL NOVELTIES
## FOR SPRING, 1881.

| | Per packet—s. | d. |
|---|---|---|
| AGAPANTHUS umbellatus candicus... | 2 | 6 |
| ANTIRRHINUM nanum picturatum... | 1 | 6 |
| BEGONIA hybrida gigantea ... ... | 2 | 6 |
| GODETIA Whitneyi, new spotted ... | 1 | 6 |
| ESCHSCHOLTZIA californica alba fl. pl. | 1 | 6 |
| ESCHSCHOLTZIA carminea ... ... | 1 | 6 |
| MIGNONETTE, new Golden Queen ... | 1 | 6 |
| PANSY, Snow Queen ... ... ... | 1 | 6 |
| PRIMULA alba magnifica ... ... | 5 | 0 |
| PRIMULA, Chiswick Red ... ... | 5 | 0 |
| PRIMULA rubro-violacea ... ... | 5 | 0 |
| PYRETHRUM aureum selaginoides ... | 2 | 6 |
| SENECIO SPECIOSUS ... ... | 2 | 6 |

**GODETIA, LADY ALBEMARLE.**
*Splendid Magenta-crimson Flowers.*
Per packet, 6d. and 1s.

### Our Half-Guinea Collection contains:—
6 Choice varieties Pæony Aster
6 " " Dwarf German Ten-week Stock
4 " " New Double Zinnia elegans
6 Choice Half-hardy Annuals for Bedding-out, including Phlox, Marigold, Lobelia, &c.
12 Choice Hardy Annuals, the most useful and showy kinds, including Nemophila, Sweet Pea, Tom Thumb Nasturtium, Viscaria, &c.
4 Choice varieties Everlasting Flowers } For Winter Bouquets
2 Choice Ornamental Grasses }
1 Packet Camellia-flowered Balsam
1 " Petunia, Choice Mixed
1 " Portulaca, Fine Double
1 " Verbena, Choice Mixed
½ Ounce Mignonette
1 " Mixed Annual Flower Seeds.
*Other Collections of Choice Flower Seeds 5s., 7s. 6d., 15s., 21s., and 31s. 6d. each.*

From J. E. Denniston, Esq.—"The Collection of Flower Seeds I had from you last year turned out a most satisfactory investment—everything doing well. The Stocks, Phlox Drummondi, and Asters were very fine. I was specially pleased with the Balsams, which were much admired."

*BEAUTIFULLY ILLUSTRATED CATALOGUE*
Gratis to Customers.

WILLIAMS' for ORCHIDS either for the Cool-house, Mexican, for East India-house, either in Specimens or small plants. The largest Collection of Specimens suitable for Exhibition in the Trade.

WILLIAMS' for ANÆCTOCHILI and GOODYERAS. This interesting class of plants has for some years been much neglected, a fine Collection may, however, be seen here.

WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

W. H. ROGERS, Red Lodge Nursery, Southampton, can offer the following, good:—
CAMELLIA STOCKS, in single pots, all fit for immediate working, 30s. per 100.
SKIMMIA JAPONICA, with Flower-buds, and nicely berried, 25s. per 100.
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ROSES, Climbing, in pots, 40s. per 100.
CLEMATIS FLAMMULA, in pots, 50s. per 100.
" MONTANA, in pots, 50s. per 100.
EUONYMUS OVATA AUREA, in pots, 50s. per 100.
AZALEA AMŒNA, 9s. and 12s. per dozen.
ERICA, hardy, twelve sorts, 40s. per 100.
AZALEAS, Ghent, very fine, 24s. per dozen.
AZALEA MOLLIS, new, 24s. per dozen.
ELÆAGNUS REFLEXA VARIEGATA, in pots, 12s. p. doz.
SKIMMIA FRAGRANS and OBLATA, in pots, 12s. per doz.
RHODODENDRONS, choice named, all the most beautiful varieties, nice bushy plants, £5 and £7 10s per 100.
" Standard, magnificent specimens, full of blooming buds, 10s. 6d., 15s., and 21s. each.

B. S. WILLIAMS begs to intimate that in the event of any of his Customers not receiving his ILLUSTRATED CATALOGUE, if they will kindly communicate with him, a Copy will be sent.
Seed Merchant and Nurseryman, Upper Holloway, London, N.

**To the Trade.**
ACER NEGUNDO.—Stocks, fine, 3 to 4 feet, 4s. per 100; 4 to 5 feet, 6s. per 100, or 40s. per 1000; 7 to 8 feet, straight, 8s. per 100, 60s. per 1000.
THORN QUICK, transplanted, fine, 2½ to 3 feet, 20s. per 1000.
W. C. SLOCOCK, Goldsworth "Old" Nursery, Woking.

**Seedling Thorns and other Forest Trees, Hardy**
CONIFERS and SHRUBS, CHEAP.
MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

**Extra Strong Vines.**
FRANCIS & ARTHUR DICKSON & SONS offer as above, splendid well ripened, short-jointed Canes, both Fruiting and Planting sizes, raised without bottom-heat, and thoroughly clean and healthy. Priced LIST, including all the best varieties, on application.
The "UPTON" Nurseries—Chester.

JULES DE COCK, The Ornamental Plant Nurseries, Ghent, Belgium, offers to the Trade many thousands of healthy CAMELLIAS, of the best sorts, from 1 to 1½ foot high, without buds.

**Seventh Year of Distribution.**
TELEGRAPH CUCUMBER (Warranted), 18 Seeds, 1s.; 7 Seeds, 6d., post-free. The Seed has been collected from handsome, well-grown fruit. Price per ounce on application.
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AZALEA INDICA, with buds.—A large stock of the above still on hand, which can be supplied at a very moderate price.
JULES DE COCK, The Ornamental Plant Nurseries, Ghent, Belgium.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts, have a large and fine stock of Pyramid and Standard FRUIT TREES, of which a Descriptive CATALOGUE will be forwarded on application.

R. AND G. NEAL have to offer fine Dwarf-trained APPLES, PLUMS, and MORELLO CHERRIES; also 1-yr. ASPARAGUS. Price on application at
The Nurseries, Wandsworth Common, S.W.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Samples and Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**Fruit Trees, &c.**
WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.
Ottershaw Nurseries, Chertsey.

BEAUTY of NORFOLK.—Choice new Seedling Potato, of extra fine quality. This may be described as a late Beauty of Hebron, being of the same habit of growth and quality, but more robust, and ripens a fortnight later, is a good disease resister, and first-class for Exhibition. Per pound, 1s.; 7 lb., 6s.; 14 lb., 10s. 6d. 100 other choicest kinds in stock.
DANIELS BROS., Seedsmen to H.R.H. the Prince of Wales, Norwich.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, offer :—
ASH, Mountain, 3 to 4 feet, 20s., 5 to 6 feet, 30s. per 1000.
AREA THEOPHRASTI, 3 to 4 feet, 8s. per 100.
ALDER, 1½ to 2 feet, 14s., 3 to 4 feet, 26s. per 1000.
FIR, Silver, 2-yr. and 2-yr. transplanted, 6s. per 1000
,, Scotch, 9 to 12 inches, 15s. per 1000.
,, Spruce, 6 to 9 inches, 5s., 9 to 15 inches, 8s., 1 to 1½ foot, 10s., 1½ to 2 feet, 15s. per 1000.
LARCH, 9 to 12 inches, 12s., 1 to 1½ foot, 15s., 1½ to 2 feet, 18s. per 1000.
LIMES, 3 to 4 feet, 100s. per 1000; 6 to 7 feet, 25s. per 100.
OAK, 1 to 2 feet, 12s. per 1000.
PINASTER, 9 to 12 inches, 8s. per 1000.
POPLAR, Black Italian, 3 to 4 feet, 20s., 4 to 5 feet, 28s. p. 1000.
SYCAMORE, 2 to 3 feet, 20s. per 1000.
ANDROMEDA FLORIBUNDA, 1 to 2 feet, 80s. per 100.
BERBERIS DULCIS, 9 to 12 inches, 20s. per 1000.
BOX ELEGANTISSIMA, 9 to 12 inches, 12s. per 100.
CEDRUS ATLANTICA, 3 to 5 feet, 20s. per dozen.
,, DEODARA, 1½ to 2 feet, 50s. per 100.
CRYPTOMERIA ELEGANS, 1½ to 2 feet, 18s., 2 to 3 feet, 25s. per 100.
CUPRESSUS ERECTA VIRIDIS, 1 to 1½ foot, 20s. p. 100.
DOGWOOD, Red, 1½ to 2 feet, 40s., 2 to 3 feet, 60s., 3 to 4 feet, 80s. per 1000.
EUONYMUS RADICANS VARIEGATA, 3 to 4 inches, 20s., 4 to 6 inches, 25s. per 1000.
HOLLY, Golden Queen, 1 to 1½ foot, 100s., 1½ to 2 feet, 150s. per 100.
,, Silver, 1 to 1½ foot, 40s. per 100.
JUNIPER, Irish, 12 to 15 inches, 12s. per 100.
,, tripartita, 6 to 9 inches, 12s. per 100.
PICEA NORDMANNIANA, 3 to 4 feet, 18s. per dozen.
RETINOSPORA PLUMOSA, 4 to 6 inches, 10s., 9 to 12 inches, 20s., 12 to 15 inches, 30s. per 100.
RHODODENDRON PONTICUM and Hybrid, 9 to 12 inches, 70s., 12 to 18 inches, 120s. per 1000.
,, JACKSONI, 6 to 9 inches, 25s., 12 to 15 inches, 40s. per 100.
WHIN, Double, 1 to 1½ foot, 80s. per 1000.
YEWS, 9 to 12 inches, 8s., 1½ to 2 feet, 20s., 2 to 3 feet, 25s. per 100.

W. H. ROGERS, Red Lodge Nursery, Southampton, having a large surplus Stock of Dwarf Pyramidal APPLES and PEARS of the most approved sorts, can offer them at the low price of 50s. per 100, mostly in a bearing condition.

## SEED POTATOS.

**True Selected Stocks, and Free from Disease.**

| | Per Peck. | Per Bush. | Per Cwt. | Per Ton. |
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| | s. d. | s. d. | s. d. | £ s. d. |
| Magnum Bonum (Sutton's) .. | 2 6 | 7 6 | 12 6 | 10 0 0 |
| Scotch Champion .. .. .. | 2 0 | 7 0 | 11 0 | 8 10 0 |
| Johnson's Downshire .. .. | 3 0 | 10 6 | 17 6 | 15 0 0 |
| Early Rose .. .. .. .. .. | 2 0 | 7 0 | 11 0 | 8 10 0 |
| Beauty of Hebron .. .. .. | 3 6 | 12 6 | 20 0 | 17 10 0 |
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*Special Quotations for Large Quantities.*

One Hundred other Choice kinds in Stock. Price LIST on application. All orders of 20s. and upwards delivered free to any Railway Station in England or Wales. Five per Cent. discount for cash. No charge for bags or packages. Cheques and Post-office Orders payable to

**DANIELS BROS.,**
THE QUEEN'S SEEDSMEN, NORWICH.

W. B. ROWE AND CO. (Limited). have to offer :—
PEARS, Horizontal Trained, Fruiting.
,, Standard, good.
YEWS, English, 2 to 3 feet.
PRIVET, Oval-leaved.
,, Common, 2-yr. struck.
ASPARAGUS, 1-yr.
HOLLIES, Seeding, fine.
STRAWBERRY PLANTS.
FIR, Spruce, 1½ to 5 feet.
Barbourne Nurseries, Worcester.

**Cheap Offer of Fruit and Other Trees,**
SHRUBS, HERBACEOUS and SPRING BEDDING PLANTS.

T. L. MAYOS, having to give up two portions of his Nurseries this Spring, offers the above at 25 per cent. off Catalogue Prices for Cash. Orders will be executed in rotation until stock is sold. CATALOGUES Free. Apply, Highfield Nurseries, Hereford.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.
EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Seeds of Superior Quality. Carriage Free.**

OUR DESCRIPTIVE PRICED and ILLUSTRATED CATALOGUE of Select Vegetable and Flower Seeds, Potatos for Planting, &c., is now ready, and will be forwarded post-free on application.
DICKSON AND ROBINSON, 12, Old Millgate, Manchester.

EVERGREEN HEDGES, in great variety, very cheap.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

# ARTHUR VEITCH MEMORIAL

A Fund, to be called the "ARTHUR VEITCH MEMORIAL FUND," the proceeds to be dispensed through the GARDENERS' ROYAL BENEVOLENT INSTITUTION, for the benefit of aged and infirm GARDENERS, or their WIDOWS.

This movement having met with the warm approval of the leading Horticulturists in the United Kingdom, the Committee beg to direct the attention of Intending Subscribers to the List of Hon. Collectors for the Fund advertised in the *Gardeners' Chronicle* of February 5.

Subscriptions (not to exceed One Guinea from Head, or Half a Guinea from Under Gardeners) are respectfully solicited from all classes of Horticulturists.

The Fund will be open Three Months, and when closed each Donor will receive a Subscription List, showing the amount given by each Subscriber.

**Hon. Treasurer.** J. ROBERTS, The Gardens, Gunnersbury Park, Acton, W.

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CABBAGE PLANTS, very strong autumn-sown Early Enfield, Rainham, Robinson's Drumhead, Russell's (true) Thousand-head, &c., at 3s. 6d. per 1000 (1200), 35s. per 10,000 (12,000).
N.B. Plants warranted free from club-root, grown on strong soil from best seed stocks. Low quotations for very large quantities. Descriptive LIST and testimonials on application.
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

WORMLEIGHTON'S SEEDLING.—This splendid new variety of Potato obtained the First Prize, as the best Seedling Potato not in Commerce, at the Great International Potato Show, held at the Crystal Palace, in September last. Price 2s. 6d. per pound, 7 lb. 15s. 100 other choice kinds in stock.
DANIELS BROS, The Queen's Seedsmen, Norwich.

**CAMPANULA PERSICIFOLIA ALBA, fl.-pl.**

IT is most remarkable that one of the purest white double-flowering hardy plants and the quickest and easiest to grow and force should have been unheard of for early flowering until last year. For Bouquets it is most invaluable; it continues in flower so long and each flower is set in the most convenient form, on a long wiry stem which renders it quite an acquisition, in fact it ranks next to the Camellia. The *Gardeners' Chronicle* says it is one of the finest of all plants for cut flowers 1s. each, 8s. per dozen.
Almost the same remarks apply to RUBUS ROSÆFOLIUS var. coronanus, or Bridal Rose, which is a gem for the produce of white flowers all the winter. 3s. each. 36s. per dozen.

**H. CANNELL & SONS,**
THE HOME FOR FLOWERS, SWANLEY, KENT.

Contractor to Her Majesty's Government. By appointment to H.R.H. Prince of Wales.

## POTATOS.

**Best and Cheapest House in Berkshire for all kinds of Seed and Eating Potatos.**

LARGE STOCKS of the above, comprising every variety worth growing.

**SPECIAL OFFERS:—**

**100 Tons Scotch Champions,** good seed size, no waste in cutting, in quantities not less than 1 ton. Price £4 10s. per ton. Can supply from either light or heavy soils.

**50 Tons Seed Size Victorias,** at £5 per ton.

**Also,** large quantities of the **well known Berkshire Favourite,** for present consumption; recommended by thousands as the best obtainable variety at this time of the year: £5 5s. per ton. All free on Rail.

*CATALOGUE of both kinds, GRATIS and POST-FREE, on application to*

**C. FIDLER, Potato Grower, Reading.**

## AIGBURTH BRUSSELS SPROUTS.

*The Best Flavoured, Hardiest, and Most Productive Variety in Cultivation.*

**In use from October to March.**

This is the only variety which has withstood the recent severe weather; it has been tested by the most practical Gardeners and pronounced the best sort in cultivation. The Royal Horticultural Society's trials of Brussels Sprouts at Chiswick also placed the "Aigburth" variety in the place of honour—1st. The *Gardeners' Chronicle* remarks in leading article, January 29, p. 136, "The trial of Brussels Sprouts at Chiswick served to show the decided superiority of certain stocks in a remarkable manner: the best were the 'Aigburth.'"

*In Sealed Packets only, post-free, 1s. each.*

**ROBERT P. KER & SONS**
BASNETT STREET, LIVERPOOL.

**TO THE TRADE.—SPECIAL OFFER.**
**VINES—VINES—VINES.**

W. G. CALDWELL AND SONS can still supply strong FRUITING CANES of the following varieties, at 4s. 6d. each; Planting Canes, 3s. each:—

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| Alnwick Seedling, | Foster's Seedling, |
| Black Humburgh, | Lady Downe's, |
| Duke of Buccleuch, | Madresfield Court, |
| Gros Colmar, | Trebbiano, |

The Nurseries, Knutsford, Cheshire.

**THE LARGEST ROSE GARDEN IN ENGLAND.**

**CRANSTON'S NURSERIES.**
(ESTABLISHED 1785.)

*New Rose Catalogue for* 1880-81 now ready and may be had post-free on application.

**Awarded over 60 First Prizes for Rose Blooms this season.**

CRANSTON'S NURSERY and SEED CO. (LIMITED) King's Acre, Hereford.

WILTSHIRE SNOWFLAKE.—A splendid new Seedling Potato, raised by Mr. Jas. Lye, Clyff Hall, Market Lavington; it obtained First-class Certificate at Devizes in November last, and reported by the Royal Horticultural Society as a most promising variety: *vide Gardeners' Chronicle*, November 20, 1880. Price 1s. per pound, 7 lb. 6s. 100 other choice kinds in stock.
DANIELS BROS., Seed Merchants, Norwich.

**Illustrated Catalogue of Ferns.**

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

# SEED POTATOS.

## H. & F. SHARPE'S

## WHOLESALE CATALOGUE of SEED POTATOS

*Is published, and contains all the best kinds worthy of cultivation,*

INCLUDING THE FOLLOWING, VIZ.:—

**RIVERS' ROYAL ASHLEAF.**
VEITCH'S IMPROVED ASHLEAF.
MYATT'S PROLIFIC KIDNEY.
**MONARCH KIDNEY.**
ALMA KIDNEY.
GLOUCESTERSHIRE KIDNEY.
**BEAUTY OF HEBRON.**
**PRIDE OF ONTARIO.**
AMERICAN EARLY ROSE.
SNOWFLAKE.
**SUTTON'S MAGNUM BONUM.**
WALKER'S IMPROVED REGENT.
PATERSON'S VICTORIA.
SCOTCH CHAMPION.
KING OF THE FLUKES.
BREADFRUIT.
BRESEE'S PEERLESS.
EXTRA EARLY VERMONT.
RED-SKINNED FLOURBALL.

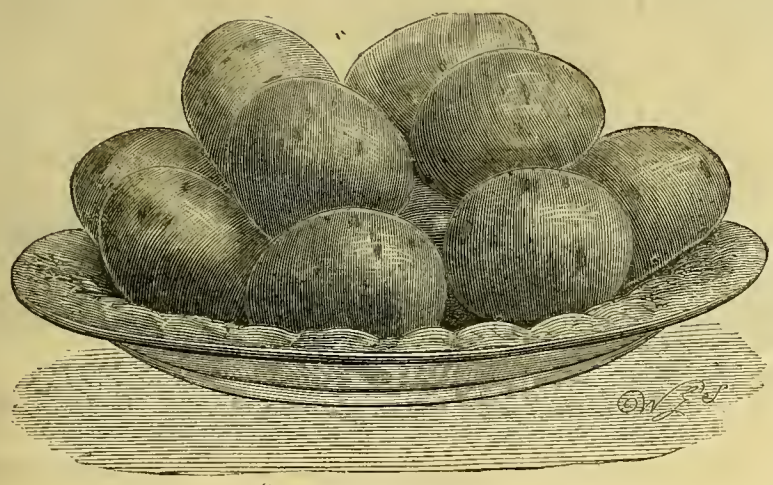
The above have been selected from the very finest stocks entirely for Seed purposes—can therefore be recommended with every confidence.

*Further particulars may be had on application.*

SEED GROWING ESTABLISHMENT, WISBECH.

# PRIZE STOCKS of POTATOS.

The Best White Round Potato, hitherto free from disease, grown on virgin soil, and will thus be a splendid change of seed.



Our Stock of "Schoolmaster" Potato is unsurpassed, having been awarded 1st Prize, Crystal Palace, 1879; 1st Prize, Manchester, 1879; 1st Prize, Birmingham, 1879; Two 1st Prizes, Crystal Palace, 1880; 1st Prize, Birmingham, 1880.

DISH OF "SCHOOLMASTER" POTATOS.

The Two Single Dishes of "Schoolmaster," exhibited by Mr. KERR, at the Great International Potato Exhibition, held at the Crystal Palace, London, September 22 and 23, 1880, were the **Two BEST DISHES of POTATOS in the Show.**

Our Mr. KERR being the most successful *bonâ fide* Grower and Exhibitor of Potatos in the Kingdom, parties entrusting us with their orders may depend upon getting true varieties. Our Stock is most complete, and one of the very best in the kingdom.

**Send for our POTATO LIST, which contains every kind worth growing and all the New Varieties.**

## KERR & FOTHERINGHAM,

**THE ROYAL SEED ESTABLISHMENT, DUMFRIES, SCOTLAND.**

# ODONTOGLOSSUM ŒRSTEDI.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 10, a fine importation of this remarkable ODONTOGLOSSUM. For figure see *Gardeners' Chronicle*, June 30, 1877. Further particulars in later advertisement.

*On view morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

*OSBORN & SONS'*

## SEED CATALOGUE for 1881

Will be forwarded (post-free) upon application.
It contains a descriptive List of all the most useful varieties of
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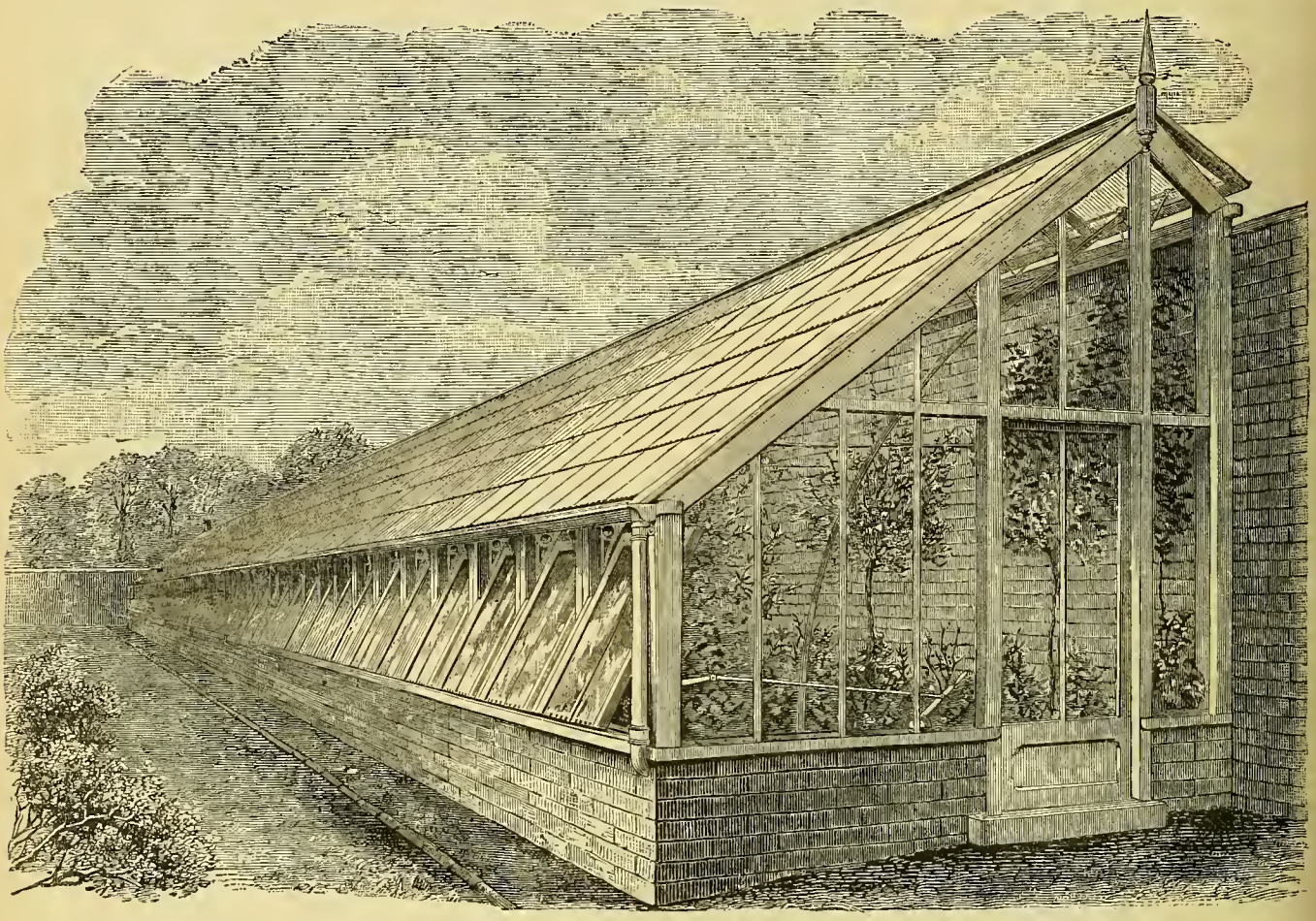

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# Gardeners' Chronicle.

*SATURDAY, FEBRUARY* 26, 1881.


## A PLURALITY OF GARDENS.

ONE common feature in great families in this country is the possession of several large places, some of which are used as residences, others are perhaps kept as show places, and yet others are mere market gardens or a sort of family incumbrances, maintained at small cost and where gardening does not live or thrive but merely drags out a miserable existence. We have been so accustomed to regard all matters relating to primogeniture, succession, entail and the settlement of land as matters relating to agriculture almost solely, that the horticultural aspects of the subject have been largely overlooked. If we look for gardens where horticulture is found in its highest because most prized forms it is invariably in localities where the family owns but one good country residence, and in which the rural life of the owner is almost exclusively spent.

In how many large places is it not a common form of apology that we hear offered for the lack of this or that desirable garden feature, "Oh, our family is here only for a month or so in the year, and we have no inducement to provide that which no one will be here to see or admire." The garden exists perhaps more for the pleasure of the gardener than for that of the owner, but there being no outside interest in it there is little within, and the place is brought to its lowest level. What must be very obvious is that if such changes in entail and settlements were brought about as should provide for each of these fine country places or gardens a separate owner, gardening must very largely benefit in the end. In the neglected gardens labour is kept at the lowest point. Of plants few or none are purchased, no impetus is given to horticultural development, and all is stagnation. Even worse, too, happens, for no family can consume the production of half a dozen large gardens, and thus the larger portion goes into the market: something, no doubt, to the benefit of the public, but greatly to the injury of the legitimate trade, who find it hard work to exist in face of the excessive competition produced from gardens that are so highly favoured as not to require a favourable balance-sheet as a condition of existence, have no rent to find, and pay very reduced rates and taxes.

Now it is obvious that the existence of high-class horticulture in this country must of necessity be dependent upon wealth, and it must always of necessity constitute a luxury, but the highest appreciation for it is not always associated with the greatest wealth; and it is further apparent that a wider distribution of wealth, such as would follow the dispersal of all these duplicate gardens into the possession of many owners, would be more conducive to the promotion of a horticultural taste. No taste can be looked for where there is found the burning anxiety to secure large market returns on the owner's part, or where the gardener, mayhap, has the stimulus to push as much produce into the market as possible by the promise of a fair

commission. Things of this kind are all very well in trade, and the more prosperous the garden trade is the better it is for the community; but it is none the less a fact that it is unjust for fine country gardens, which are not hampered by fiscal restrictions, to be maintained by their rich owners to exemplify the profitable attributes of gardens in a market sense, rather than to show the higher elements and beauties of gardening, as some have done in the past, and will, we trust, continue to do in the future, purely for love of the most beautiful science that exists and is practised amongst us.

It may be pleaded that even now, under existing arrangements, there are some of these duplicate gardens where gardening is displayed in its best form. That may be so; but the examples are too few, and rather serve to show even how much better that horticultural display would be were the owner's constant domestic interest associated with his garden. If the accumulation of land in the hands of one person is a national evil, so also may the accumulation of houses, gardens, and parks in the hands of one owner become a horticultural evil. It is not a question of the existence of the aristocracy, or of a plutocracy, or any other ocracy; the more the aristocracy and the wealthy exhibit their appreciation of gardening, the more will they ally themselves with the life and existence of the nation.

We may see some luxuries and pleasures die out with equanimity. Hunting, racing, and some similar sports may be evidences of wealth, but they add comparatively little to the national life or strength. Horticulture, on the other hand, is an ennobling and an eminently national source of pleasure; it adds to the wealth of the people; it gives rational amusement and recreation to rich and poor; it closely allies castes and sections in one common bond, and it is so universally favoured that we may be sure as long as it exists in vigour amongst us, so long will the national life be vigorous and healthy. *X.*

## New Garden Plants.

Aloe Lynchii ×, *Baker.**

(A hybrid between Aloe striata and Gasteria verrucosa.)

This is a very curious hybrid between two very dissimilar Cape Aloes, which may now be seen in full perfection in a flowering state in the succulent-house at Kew. Its parents are Gasteria verrucosa and Aloe striata (of which latter A. paniculata, albocincta, rhodocincta, and Hanhuriana are synonyms or slight varieties). It was raised about four years ago by Mr. R. J. Lynch, now Curator of the Botanic Garden at Cambridge, and has been in the collection ever since, but has never flowered till this present spring. In general habit it resembles its Aloe far more than its Gasteria parent, but the leaves are narrower and thicker, and although they show distinctly the entire white cartilaginous border of the Aloe in the lower two-thirds, yet it runs off into the horny spots of the Gasteria. Towards the tip and all over both sides, the leaf is furnished with small white round immersed whitish spots like those of Gasteria disticha. The flowers in shape are completely those of a huge Aloe, without any tendency to form a ball at the base, but they have the short segments and the lax disposition of the Gasterias. Altogether, it is very interesting to see how in the hybrid the characters of its two very dissimilar parents are blended, and after this it does not seem as if it would be impossible to cross any one Aloe with any other.

*Description.*—Leaves 10—12 inches, in a dense nearly sessile rosette, lanceolate, incurved, 10—12 inches long, 2 inches broad at the base, narrowed gradually to the tip, half an inch thick, nearly flat on the face, rounded on the back, dull green, not at all lineate, dotted all over with small immersed irregularly arranged white spots, bordered in the lower two-thirds with an entire white cartilaginous line, but towards the tip with raised white horny spots. Inflorescence $2\frac{1}{2}$ feet long, of which the peduncle is under 1 foot, the rest occupied by a broad lax panicle, with 7—8 erecto-patent laxly racemose branches; end raceme 5—6 inches long, $2\frac{1}{2}$—3 inches broad when expanded; lower pedicels about half an inch long; bracts lanceolate, as long as the pedicels. Perianth, cylindrical, 12—13 inches long, red at the base, pale yellow at the middle, greenish towards the tip, segments oblong-deltoid, equally falcate, $\frac{1}{6}$—$\frac{1}{5}$ inch long, stamens and style just reaching out of the perianth tube. *J. G. Baker.*

* *Aloe Lynchii* ×, Baker.—Subacaulis, foliis 10—12 dense rosulatis lanceolatis pedalibus 5–6 lin. crassis facie subplanis dorso rotundatis ubique maculis parvis rotundatis albidis crebris immersis haud seriatis decoratis margine dorsum integris pallidis cartilagineis sursum maculis corneis albidis emersis præditis; floribus in paniculam amplam ramulis pluribus laxe racemosis dispositis, pedicellis patulis flore duplo brevioribus; bracteis lanceolatis, pedicello æquilongis; perianthii cylindrati subpollicaris segmentis tubo quadruplo brevioribus; genitalibus tubo subæquilongis.

Microstylis chlorophrys, *n. sp.**

A fine little gem from Borneo, introduced by Mr. W. Bull. It is a very good pendent to the lovely Microstylis metallica. It belongs to the group of Microstylis versicolor. The whole plant is of a brownish or purple tint, so that the light green borders of the leaves (sepia-brown above, light purple beneath) offer a contrast of the nicest effect. They are oblong-acute, very much undulate at borders. The peduncle is light rosy with purple ribs; the flowers purple, with the ears of the sagittate lip ochre-coloured. The curious shape of this organ is quite peculiar, and offers the best feature of the species. It is trifid. The middle lacinia is prolonged, triangular, bidentate, and the very much shorter lateral laciniæ are bidentate, with antrorse teeth. *H. G. Rchb. f.*

Octomeria cochlearis, *n. sp.*†

This is a curious little plant. The cochleate, very strong leaves, are glaucous, purple beneath, with numerous transverse furrows. The flower is whitish ochre, bent sideways, very Restrepioid from its tailed sepals and petals. The fine trifid light sulphur lip has two keels in its basilar disk with a very small one included. The side laciniæ are semi-ovate, the much larger middle one is obtuseangled, triangular, with a retuse emarginate apex containing a small apiculus. It is full of hairs, and there is a mauve-purple irregular blotch on its disk. It was imported from the Brazils by Dr. Wallace, President of the New Bulb Company, Lion Walk, Colchester, where it flowered last November. *H. G. Rchb. f.*

* *Microstylis chlorophrys*, n. sp.—E. grege Microstylidis versicoloris. Foliis oblongis acutis margine valde undulatis; racemo paucifloro; bracteis triangulis uninerviis ovaria pedicellata longe non æquantibus (roseis); sepalis triangulis; tepalis linearibus acutis, labello sagittato trifido, laciniis lateralibus abbreviatis bidentatis dentibus antrorsis, lacinia mediana triangula bidentata longe producta, lamella transversa oblonga medio apiculata in basi. Ex Borneo, introd. cl. Bull. *H. G. Rchb. f.*

† *Octomeria cochlearis*, n. sp.—Caule secundario brevissimo laminam folii vix æquante; folio oblongo elliptice apiculato, marginato, cochleari excavato; pedunculo uno (semper?), flore porrecto; sepalis lanceis acuminato caudatis; tepalis a basi latiori caudatis, labello trifido, laciniis lateralibus semiovatis erectis, lacinia mediana triangulo obtusangula antice retusa cum apiculo in sinu, carinis geminis in disco basilaris, carinula interjecta. Ex Brazilia imp.—*H. G. Rchb. f.*

## THE CLAPTON NURSERY.

Imported Orchids.—Beyond the pleasure that those who are fond of plants derive from their possession, there is a fascinating interest attached to their cultivation consequent upon the uncertainty of their living and thriving; and the more uncertainty there is in the cultivation of any particular family of plants the greater the interest which many people take in growing them. To this feeling, quite as much as the singular beauty of their flowers, and the grotesque habit of growth possessed by Orchids, may be attributed their gradual elevation to the highest position in the estimation of many who indulge in gardening pursuits; for there is no question that although Orchids are tenacious of life, and when they fail to thrive decadence is usually very much slower than that of most plants, yet as generally treated there is more uncertainty about them than with most things. No further evidence of the rapid increase in their popularity is needed than the fact of the immense quantities that of late years have been continually imported from both the eastern and western hemispheres. Week after week, all the year round, they come by tons at a time, and still find buyers at good prices. Speaking of importing these plants, if there is more uncertainty in their cultivation than in that of other things, their importation is attended by infinitely more risk than their after-growth. The epiphytal habit of the great majority of the species—their roots clinging almost as fast to the bark of the trees that support them as if they were part of it—causes them to suffer severely; then there is usually the long and tedious journey from the place of collection to the seaboard, the carriage, often for hundreds of miles, having to be effected in the most primitive way; after which comes the sea voyage, where every condition is opposed to their wants; and when approaching the shores of their destination the weather not unfrequently is such as to give the death-stroke to an existence already so much enfeebled. Nothing less than a vitality greater than that possessed by most members of the vegetable kingdom could enable Orchids to outlive the hardships they have to go through before they reach their destination.

Amongst the first of those who went largely into Orchid importing were Messrs. Low, and such they continue. It is doubtful if at any previous time the Clapton establishment contained such an immense quantity of established and recently-introduced stock of valuable species as it now does. The following are some of the kinds which are present in more than ordinary numbers and condition:—Cattleya speciossissima: under this name have appeared some of the most beautiful and scarce of all the Cattleyas, varying even more in their general aspect than the different forms of C. Mossiæ; the bulbs are rounder than those of the latter kind, the leaves usually narrower and more pointed. Of this fine sort there has recently been an accession that would fill an ordinary-sized waggon, mostly large masses, with from twenty to sixty and eighty bulbs each, a great portion of them having their leaves as fresh and plump as if grown here. Of C. Mossiæ there are even more than the last-named, principally big pieces, some of them 2 feet across, very stout and plump in both bulbs and leaves: some of these are the strongest and most distinct-looking I have seen. In the same house are great quantities of Cypripedium Lawrenceanum, with very big, highly-coloured leaves, the variegation decided. So strong are these that although only just got established in the pots they are in flower. Here also was a lot of the true old form of Dendrobium fimbriatum from Burmah, with very large racemes of the deepest orange-yellow flowers, on stout bulbs, very much shorter than this kind is usually seen with. D. Bensoniæ, also from Burmah, is plentifully represented.

In another large house are numbers of one of the finest of all Aerides—A. crassifolium, nice strong pieces established in pots. Oncidium Lanceanum is also present in quantity. This fine old distinct species is not so much grown as it deserves to be, for when well managed it is one of the handsomest and most distinct of all Oncids. Next were whole stages full of Cypripediums, including C. Argus, C. Parishii, C. Haynaldianum — the last is not unlike C. Lowii in appearance, but produces as many as seven flowers to a scape. With these were several thousands of the handsome C. lævigatum, often looked upon as difficult to manage, but here growing as freely and vigorously as a weed. Cattleya Mendelii and C. Dowiana in quantity. A whole stageful of Vanda Parishii and a novelty of recent introduction, Dendrobium Cobbianum, and the fine species, D. Lowii, first found by Mr. Hugh Low in the North-west of Burmah; when Mr. Boxall visited the same locality for the plants now in hand he found Mr. Low's name cut in the trees where the first plants had been obtained. D. heterocarpum philippinensis, a large-bulbed species, that makes growths 8 or 9 feet long flowering for half their length. D. luteolum, the Burmah variety: this is one of the most enduring kinds, the flowers lasting as much as six weeks. D. primulinum giganteum, also from Burmah; D. macrophyllum giganteum, with bulbs 4 feet long, just out of bloom; D. densiflorum, the Burmah form, with stout short bulbs not more than 6 to 9 inches long, flowering from every growth; D. hedyosmum, from Burmah—flowers white, with olive-green labellum, powerfully scented like Violets.

One remarkable thing connected with most, if not all the species of Dendrobium found in Burmah, and that are also existent in Assam, is that the flowers produced by the plants from the former country are much superior to those borne by such as come from Assam. To those who are fond of miniature Orchids, the pale orange-flowered D. capillipes will be just to their liking; it was here blooming on every bulb from 2 to 3 inches high.

A house in three divisions, 150 feet long by 30 feet, is completely filled with Aerides, and Saccolabiums from Burmah, just got well established, the roots running in all directions; amongst these are a quantity of the fine old plant, Saccolabium Blumei majus, the variety that bears very long racemes of flower; it is one of the finest of all Saccolabiums. Of Phalænopsis it might be supposed there was enough to stock the kingdom; they occupy a considerable space in one or two large houses, besides the principal one devoted

to them, which is 66 feet long by 24 feet, and at present is such a sight for flowers as requires to be seen to be understood. Standing at one end and looking on the long wide centre stage, they appear one sheet of white and mauve colour. In addition to the ordinary varieties of P. Schilleriana, P. amabilis, and P. grandiflora, there are many of extreme rarity, amongst which is P. leucorrhoda, supposed to be a natural hybrid between P. amabilis and P. Schilleriana, partaking as it does in leaf and flower of both; the flowers are those of a good form of P. Schilleriana in size, with the slightest shade of violet in the white colour. P. intermedia Brymeriana was just out of flower, having been blooming all through the dull, severe weather. This is another supposed natural hybrid, between P. amabilis and P. rosea—flowers like P. amabilis, the distinguishing feature being a highly-coloured lip of large size. There are several other quite distinct looking Phalænopsis, thought to be new from the decided appearance of the plants. Here was the rare Angræcum Ellisii, got fairly established, the large old flower-spikes showing its free habit of blooming.

In another house is a large importation of Anæctochilus Lowii, doing well; and another rarity, Cypripedium Wallisii, from Ecuador. Orchids are not usually found with sportive colouring in the leaves, like many other that have been cultivated through many generations of seedlings, but they evidently do not escape altogether the sportive tendency in a wild state, for here was a plant of Vanda Parishii with broad, distinct yellow bands running right through the centre of the leaves. There is another large house, some 90 feet by 20, filled with more Aerides, Saccolabiums, and Vandas, established plants, that show by the abundance of roots they have that they like their quarters. Vanda lamellata Boxallii, from the Philippines, has flowered lately, and surpassed the high estimation previously formed of it.

Odontoglossum vexillarium and O. Roezlii are in quantity and well done, having the stout foliage indicative of robust health. The cooler sections of Odontoglossums, O. crispum, O. Pescatorei, O. cirrhosum, O. Insleayi, O. gloriosum, and others, that succeed under like conditions of temperature, fill several very long houses — tens of thousands of plants differing in size from the usual trade examples up to strong flowering specimens. Of O. crispum and O. cirrhosum in particular there is an immense stock, in the finest possible condition, as evidenced by the number and strength of the bloom-spikes they are bearing in different stages of development. Pilumna fragrans, occupying a considerable space, will soon be a mass of elegant white sweet-scented blossom.

The above are a few of the different species of Orchids present in the largest quantities at the Clapton Nurseries, but these remarks are far from giving an adequate idea of these plants as they exist here as a whole, which collectively fills some twenty-five houses, most of which are much above the ordinary size; in fact, the prevalent idea that Orchids do best in small, confined houses is here confuted; but although the houses are long, and in many cases wide as well, they are still mostly low, and the advantage of having the plants near the glass is fully realised, and latterly further acted upon, for in a good many of the houses stages composed of wood bars, made with openings between each bar in the ordinary way, have been fixed some 2½ feet above the surface where the plants formerly stood. Under these stages is a body of moisture-holding matter, such as coal-ashes, or something of a like description, from which a slight moisture is constantly rising amongst the plants above. There is no attempt to give a trim appearance to the plants; they are treated so as to secure a condition of rude health. So much for the bright side of Orchid importing; yet it has its converse. Although an ordinary observer passing through the various houses filled with thriving plants might very likely be led to suppose that it was all sailing in smooth water, such is far from being the case. In one of the houses I passed through there were some plants of Vanda suavis and V. tricolor, with a few Dendrobiums and other things that altogether would stand on a moderate sized dining-table; and these were all that there was to show for a year's venture in Java.

When consignments come to hand consisting of 20 or 30 tons, ship measurement, opening the cases is exciting work, and when the plants are in good order, very gratifying, as, beyond the mere pleasure of seeing a fine lot of healthy rarities, there is something to compensate for the heavy expense of collecting and freight; but when the contents are in a state to only require emptying out on the rubbish heap, it is very depressing, for although vegetable matter possesses a certain value for gardening purposes, yet it is a terribly dear way of getting it when composed of dead Phalænopsis, Angræcums, Saccolabiums, or the like. And another thing not to be lost sight of is the fuel required to keep up the necessary warmth, especially during such weather as we have recently had. A lengthened experience and close observation in the matter of pipes and boilers has not enabled Mr. Low to keep his plants warm enough without a considerable expenditure in fuel. I understand that over £100 worth was consumed in January, and this bought in the cheapest market, the stock laid in when prices were at the lowest. The boilers used are flued terminal-end saddles, which do their work well, and heat the great extent of glass required here for plants of all kinds, with a reasonable consumption of fuel. *T. B.*

## NEW GARDEN FERNS.

Asplenium apicidens, *n. sp.*

Fronds pinnate, oblong, chartaceous, smooth; pinnæ few, stalked, oblong, slightly marginate, the base bluntly auricled or lobate on the anterior, and cut away on the posterior side, the apex abrupt, the margin serrate, the teeth near the apex of the pinnæ elongated and acutely pointed; veins simple or forked, terminating within the margin; sori short, oblong, oblique, usually placed on the anterior side of the anterior branch of the vein, and forming a somewhat crowded series on each side the midrib, rather nearer to it than to the margin; indusium membranous, entire; stipes and rachides smooth, dull brownish-grey; caudex decumbent, furnished with dark-coloured striped lanceolate scales.—Hab., South Sea Isles.

At first sight this Spleenwort appears to bear close resemblance to A. Vieillardii (schizodon), but the resemblance is superficial, the two plants being quite dissimilar in the form and arrangement of the sori. It was, however, imported along with that species by Mr. B. S. Williams from the islands of the South Sea, and is an evergreen stove Fern of considerable interest. The plant has a thick decumbent caudex, clothed with dark brown scales, from which spring up the smooth, firm, but scarcely leathery fronds, on smooth dull greyish-brown stipites. They are about 1 foot high, including the stipes, pinnate, with the few pinnæ 2 to 3 inches in length, and from ¾ inch to 1 inch broad. The pinnæ are stalked, bluntly auricled or shortly lobed at the anterior base, the posterior side excised, with a tendency to enlargement, the whole surrounded by a thin scariose margin, which is toothed. The teeth, which are shallow near the base, are elongated and conspicuous near the apex, where they end in a sharp white apiculus. The veins are oblique, set at an angle of 45°, falling short of the exterior edge, conspicuous mostly once-forked, but occasionally simple, the anterior branch bearing on its anterior side a short oblong sorus; the sori thus form a series of short oblique lines nearer the midrib than the margin. The indusium is firm, prominent, entire at the edge.

Though evidently allied to A. Vieillardii, this plant, as will be seen, differs essentially in its sori, which are much shorter, and set, as are the veins, at a much more obtuse angle with the midrib; those of A. Vieillardii are placed at a remarkably acute angle, so as approach to parallelism with the midrib, while in A. apicidens they stand at an angle of 45° with the midrib. *T. Moore.*

Asplenium contiguum, *var.* fissum, *nov. var.*

Fronds subbipinnate, ovate, subcoriaceous, smooth; pinnæ few distant stalked, with about two basal segments, and an elongate, attenuate, distantly-toothed apex, the teeth linear, simple or forked; basal lobes (or pinnules) cuneate, deeply and unequally toothed at the apex; veins nearly parallel with the costa, one branch running into each marginal tooth; sori near to and parallel with the midrib; indusium membranous, narrow, entire; stipes and rachis smooth, dull grey.—Hab., South Sea Islands.

This Fern is no doubt a divided form of the well-known A. contiguum, a plant in which the pinnæ are usually simple, and the sori lie close beside the costa. Here, on the other hand, a few of the basal lobes are separated quite down to the rachis, and as they stand wide apart the fronds appear to be bipinnate. It was imported from the South Sea Isles a year or two since by Mr. B. S. Williams. *T. Moore.*

## FRUITS AND SEEDS.*

Sir John Lubbock, M.P., delivered a lecture at the London Institution on Jan. 17, on "Fruits and Seeds," before a very numerous audience. He said that our eloquent countryman, Mr. Ruskin, commenced one of his works by a somewhat severe criticism of his predecessors. He reproduced a page of *Curtis' Magazine*, and complained that it was a string of names and technical terms. He did not deny the fact, but in order to identify a plant you must have synonyms and technical terms, and to complain of them would be like complaining that Johnson's *Dictionary* was very dry reading. The lecturer then proceeded to read amidst much laughter Mr. Ruskin's description of a swallow, which he (Sir John Lubbock) said would never have conveyed to his mind the idea of a common swallow; in fact, he did not know what idea it would have conveyed to him.

Fruits and seeds differed much from one another. Some were large, some small, some sweet, some bitter, some good to eat, others poisonous, some smooth, some covered with hairs, and so on. During the time of growth the seed required protection, which in many cases was subserved by curious movements of the plant itself. Plants were said to sleep, closing up at nightfall—one species if it had had a severe shock during the day could not get comfortably to sleep for two or three nights afterwards. Alluding to the Vallisneria, which, he said, was often to be found in our aquaria, the female plant sent up a spiral column through a considerable distance of water, and the male flowers become detached and float upon the surface. In our aquaria, however, the plant did not often flower. Referring to the peculiarity which some plants had of dispersing their seeds, he said in the case of the "squirting Cucumber" the outer wall of the Cucumber was in a state of great tension, so that when touched it was apt to throw the seeds into one's face.

The common sweet Violet expelled its seeds in the same way, and the capsules containing the seed might be easily found by looking amongst the leaves at the base of the plant. The seed-vessels are even in some cases actually buried in the ground by the plant. The Violets with the elongated stalks always ejected the seeds, and those with no stalk did not do so. Even the species which did not thus disperse their seeds were so placed that if jerked by a high wind they would be carried some distance from the capsule. This threw light upon the curious fact that so many plants with small heavy seeds had capsules which opened, not at the bottom, as might have been expected, but at the top. The seeds waited, as it were, until there was a high wind, and were then thrown out and ejected to a considerable distance instead of being dropped down at the root of the plant, as would otherwise be the case.

In some other instances the plants or parts of them were rolled along the ground by the wind. In one case in South Australia the seed was driven over the sand for miles until it came to a damp place, where it rooted itself and sprang into flower. The cases in which the seeds were rolled along the ground were, however, comparatively rare. Much more frequently they were wafted through the air. The seed of the Sycamore, the Maple, the Elm, the Birch, the Pine, the Fir and the Ash was attached to a leafy wing and carried to a considerable distance. In many cases the fruits and seeds were dispersed by animals. The animals were attracted to them by their brilliant colours, as in the case of the Cherry, the Peach, the Raspberry and the Strawberry. These coloured fruits formed a considerable part of the food of monkeys in the tropical regions of the earth, and we could not doubt that these animals were guided by their colours just as we are guided in distinguishing ripe and unripe fruit. This raised the question whether our remote ancestors were able to distinguish colour. Mr. Gladstone had contended that they could not, but he (Sir John Lubbock) was of a contrary opinion, and thought that if monkeys and apes could distinguish colours man even in his lowest state must also have been able to do so.

The fact of the seeds being a temptation to such

* A lecture delivered by Sir John Lubbock at the London Institution.

animals as mice and squirrels was not altogether a disadvantage, as the seeds were thereby often carried and buried in the ground, and they could very well afford to spare a few seeds for the squirrels and the mice. Some seed-vessels, such as the Martynia and Harpagophytum, had very formidable hooks attached to them, which had been known even to kill a lion. These hooks adhered to the skins of animals, and the seeds were thus dispersed. Out of thirty species having the hook, he did not find one water plant [? Trapa], or a plant of more than 4 feet high; it was only found in forest trees and shrubs, and small climbing plants. There was, in fact, strong evidence that wings in the case of trees, and hooks in the case of herbaceous plants had accompanied the seeds, in order that they might in one case be carried by the wind, and in another by animals. Having called attention to the close resemblance which existed between some fruits and seeds, and various kinds of insects, he concluded by remarking that there was not a fruit or seed even of our commonest plants which would not amply justify and richly reward the most careful study. Those who might never have the opportunity of devoting themselves altogether to a scientific career, must feel that whatever their profession or occupation might be, a love for science not only did much to lighten their leisure hours, but also helped to nerve and strengthen them for the business of life.

## THE KEW ARBORETUM.

### The Maples.—VI.

Acer saccharinum, *Wang.*; Gray, *Manual of Botany*, p. 119. Figs.: Emmerson, *Trees and Shrubs of Massachusetts*, p. 558; Loudon, *Encycl. of Trees and Shrubs*, pp. 85, 108, 109. *A. coriaceum*, Hort.

Sugar Maple, Rock Maple. "Northern New Brunswick to the western shores of Lake Superior, southward through the Northern States and along the Alleghany Mountains to Georgia; west to Minnesota, Eastern Nebraska, and Arkansas. Most common at the North.

"Wood hard, close-grained, smooth, compact, susceptible of a fine polish; extensively used for flooring, cabinet work, and turnery; preferred for shoe lasts. Two accidental forms, 'Curled Maple' and 'Bird's-eye Maple,' are highly valued for cabinet work.

"A tree 60 to 80 feet in height, with a trunk 2 to 4 feet in diameter; in uplands. Maple-sugar is principally manufactured from the sap of this species; the ashes of its wood are rich in alkali, yielding large quantities of potash." Sargent, *Catalogue of the Forest Trees of North America*, p. 13.

One of the noblest of North American trees by reason both of the beauty of its form and foliage. In the Kew plant the leaves are smooth, dark green above, paler below with rusty tomentum in axils of veins; in size they are 3 or 4 inches long (with reddish petioles about the same length), and nearly 6 inches across.

*Var.* nigrum: Acer nigrum, Michx. f., *North American Sylva*, tab. 43, p. 237.

Black Sugar Maple. "Western Vermont to Missouri, and south to (?). A large tree; along streams in lower situations than the species, from which it is perhaps specifically distinct." Sargent, *Catalogue of the Forest Trees of North America*, p. 80.

The leaves of this resemble those of the type, except that they are darker green, thicker in texture, and have somewhat more rounded sinuses. (We give a figure of the leaf, fig. 48). A variegated form is cultivated in some foreign gardens. The Acer nigrum of some Continental catalogues certainly does not belong here. I am informed by M. Van Volxem that the A. nigrum novum of several Belgian and French nurseries comes near A. creticum, but has smaller leaves and is more compact and contracted in habit than that species.

*Var.* floridanum, Chapman, *Flora of the Southern United States*, p. 81.

A small tree. Leaves, flowers, and fruits, scarcely half as large as those of the ordinary form. This very distinct variety has not yet found its way into British gardens. *G. Nicholson, Kew.*

Fig. 48.—leaf of acer saccharinum, var. nigrum.

## CALCEOLARIA FUCHSIÆFOLIA.

This fine shrubby Calceolaria (fig. 49) appears to have been first cultivated in this country by Messrs. Veitch, but it was only on its reintroduction, three or four years ago, by Messrs. Rodger, McClelland & Co., of Newry, that it was offered to the public. I then gave it the name of C. fuchsiæfolia,* believing it to be distinct from any described species, though identical with specimens in Kew herbarium named C. deflexa, Ruiz and Pavon, by Mr. Bentham. My principal reason for disagreeing with so great an authority was that I could not see any likeness in my plant to the original figure published by Ruiz and Pavon. Subsequently my C. fuchsiæfolia was figured in the *Botanical Magazine*, plate 6431, and Sir Joseph Hooker there states that its identity with C. deflexa cannot be questioned. He also suggests that C. cerasifolia, Bentham; C. viscosa and C. involuta, Ruiz and Pavon, are forms of the same species, thus giving it a wide range in the Andes of South America, at altitudes from 8000 to 12,000 feet. This is perhaps the correct view, though from a horticultural standpoint some of the forms are distinct enough. Ruiz and Pavon's figures are very rude, and some of them do not accord with the descriptions, hence some allowance must be made in limiting the species. The name deflexa seems to have been given in allusion to the direction of the leaves, as that is the only connection in which the term is mentioned in the description. C. involuta is perhaps the most appropriate of the admissible names for the collective species. However, whatever name is adopted for the plant there is no doubt it is a very

* *The Garden*, 1879, p. 258, with a coloured plate.

ornamental one in a greenhouse or conservatory in winter. *W. B. Hemsley.* [The specimen from which our figure was taken was forwarded by Messrs. Rodger, M'Clelland & Co., of Newry. Eds.]

## THE SALVIA.

This extensive and very beautiful genus of plants has been brought into very prominent notice lately, and many persons have been made acquainted with their peculiar characteristics that were not so before. The great value of some of them as flowering plants for winter decoration has been amply demonstrated.

Besides the few species grown and exhibited so well by Mr. Cannell, of Swanley, there are scores of others of equal beauty, if they can yet be found in cultivation. Salvia africana, cultivated fifty years ago, is a very beautiful species, with blue or violet flowers, which produced spikes of bloom more than a foot in length from November until February. A gentleman writing in the first volume of the *Floricultural Cabinet* says that he was also very successful in flowering it out-of-doors in September by striking cuttings of it in February and March. The plants were grown on in a greenhouse until the beginning of summer, and then planted out against a south wall, where they reached the height of 6 or 8 feet, and produced spikes of flowers that were quite splendid. The winter-flowering plants were struck from cuttings taken off these plants in September, and bloomed profusely through the winter in small pots.

The following species were cultivated for greenhouse decoration in those days, viz. :—S. splendens, S. formosa, S. pseudo-coccinea, S. Grahami, S. chamædryoides, S. involucrata, S. cardinalis, and S. dolichostachya. All these are winter-flowering species; some are well known and grown in many places at the present time, others are known by name only, and it would be well if such easily grown plants could be brought more prominently into notice.

Salvias are very beautiful too as autumn-flowering border plants; and most of the above, if propagated early, and planted out in a good position, will flower until the cold nights cause the blooms to drop off before they open. The splendid blue flowered species, S. patens, should be grown in every garden. The tuberous roots are treated very much in the same way as the Dahlia. They may now be placed in a little heat, and the cuttings should be put in as soon as they can be obtained. For certain positions in the flower garden this fine brilliant blue Salvia gives a colour at once striking and unique. The culture of these plants, especially those that flower in the summer and autumn, is specially to be recommended for those who have large wide borders to fill up, as some varieties will grow 4 and 5 feet high, and as much through. *J. Douglas.*

Fig. 49.—Calceolaria fuchsiæfolia. (see p. 268.)

Linnean Society. — At the meeting to be held on March 3 the papers to be read are :—1, "Reparative Processes in Plants," by Mr. S. G. Shattock; and, 2, on "Anebia and Macrostomia," by Mr. C. B. Clarke.

## Orchid Notes.

Work in the Houses.—Though I would not have any of your readers think that I consider the present month a time when unusual activity is necessary, a time when extra watchfulness is required, or a season when a greater amount of labour is requisite in this department than at others—whilst I do not intend to convey the idea that there is just now such an abundance of work to be performed that if it is once done we may calmly wait and have little concern for the rest of the season—I however do mean, and desire to impress upon all those who have now for the first season, or it may be the second year, taken charge of a collection of Orchids, that the early spring months are times when every day is of very great importance, and every opportunity that offers itself should be utilised.

I propose to give some cultural directions which it is hoped may be of assistance to them. The very severe winter is past, and during that trying time much labour was at a standstill; now we find ourselves well on into days that are longer, when more light is at command, and many things are pushing into life and leaf. This being the case we must make a start forthwith, remembering that work well done now, whether in regard to cleaning, potting, or blocking, will make its results apparent during the coming season, in the increased health and strength of the plants, a more sturdy and vigorous growth, and withal a cleanliness and freedom from attacks of insects.

During the past few months the Calanthes will have kept the houses gay. These will now be finished in most cases, with the exception of C. Turneri and C. nivalis. Some Dendrobiums also may have been brought in, and are probably now in flower. Let these, more particularly such forms as D. nobile and its varieties, D. crassinode in its various shapes and forms, D. Wardianum, D. Freemanii, &c., be kept only moderately moist. The strength and beauty, and in fact the quantity, of the flowers are dependent upon the ripened growths made during the late summer and autumn, and are comparatively little influenced by the conditions under which they may now be growing and flowering; that is to say, that the present treatment and conditions, however good, will not make up for the deficient growth and immaturity of the bulbs, presuming the bulbs may not be showing so freely as we may have desired. If the plants are at present just moist, if in baskets or pots, the bulbs will continue plump whilst in flower, the eyes at the base of the bulb will speedily push away, and the active energies of the plant, at first noticeable and apparent in the blooming, will be taken up and carried on by the new shoots, and, all other conditions being satisfactory, another great bulb will be formed, sturdy, stout, and plump.

Bear in mind that now, since many of the plants are comparatively at rest (though that is not always an absolute essential), there are many things that will benefit by potting or top-dressing; this operation has so often been described in detail that it will not be necessary that the method should again be repeated. One fact—an important one—must, however, be borne in mind: whether it is pots, pans, crocks, or soil, be sure and keep everything scrupulously clean; by this means we ensure a more certain absence of fungus and filth, as Orchids in a pre-eminent manner may claim to be grown at best under very artificial methods, and in many cases with very little clear and decisive knowledge of the conditions under which they are met with in their native habitats. *W. Swan, Fallowfield.*

### The Constable-Burton Orchids.

There are few individuals engaged in Orchid growing but would have been interested and might have gained a wrinkle by a sight of the above plants, which formed the subject of a brief notice at p. 210; still more so if they had been seen in the houses where grown, with an insight into the treatment they had been submitted to. I have had an opportunity of seeing a few of the finest specimens of which the collection was composed, that have passed into the hands of Messrs. Veitch. Speaking of these Constable-Burton Orchids, it would be more correct to describe them as a selection than a collection, for they were few in number as compared with the vast quantities that many cultivators of the present day possess. But what they lost in numbers was amply made up by the unusual strength and vigour of the plants, and of which a description conveys only an inadequate idea. The plant I saw of Cattleya Skinneri has bulbs up to 15 inches long, twelve of them showing flower. Of C. labiata the largest bulbs are fully 10 inches long. C. Trianæ has fourteen leading growths, the biggest bulbs of which measure 9 inches in length. All the above are, if anything, proportionately thicker than long, with huge leaves of the board-like consistency usual with strong imported plants, but which never come nearly up to the plants under notice in size. There are three specimens of Saccolabium præmorsum, grown on bare pieces of round timber, like an ordinary fence rail. These apparently have been hung up by one end, the plants attached to the top of each, the thick roots entwining round and overlapping each other like a close network of cords, so as to nearly cover the wood, and from the quantity of these roots in a living state they have evidently retained their vitality much longer than they ordinarily do under cultivation. The leaves of the plants are also of unusual strength and size, the longest running from 18 to 20 inches long, with proportionate substance. These Saccolabiums have not kept their bottom leaves in quite such numbers as might have been expected from their strength; this is most likely owing to the complete absence of any moisture-holding material in contact with the roots, the absence of which when the plants were dry during the resting season caused the leaves to fall off sooner than they otherwise would. They are showing from five to eight flower-spikes; each one has three spikes pushing from the bare stem below the leaves, which is a very unusual occurrence, and is indicative of their vigour. Although the whole of the plants are in rude health, such as is very rarely seen, it is evident, from their appearance, that they have been grown under anything but the painstaking course of treatment generally looked upon as necessary with Orchids. One thing is clear—there has been no coddling or continued vapour-bath sort of treatment, accompanied by the dread of letting them have air enough for a sufficient time daily when growing. Theirs is not a flash-in-the-pan kind of growth not unusually seen in Orchids, when big soft leaves and bulbs are produced at the expense of vigour, the plants succumbing after their energies are exhausted. The value of Orchids causes them to receive more attention at the hands of the grower than is bestowed on most other plants. Where one dies through neglect a dozen are killed with mistaken kindness. *T. B.*

### Orchids in Flower at Wilton House, Southampton.

Amongst the many fine examples of cultivation in the collection of H. J. Buchan, Esq., the following are in flower:—

Ada aurantiaca
Cœlogyne cristata
,, ,, citrina
Colax jugosus
Cypripedium insigne Maulei
,, venustum
,, hirsutissimum
,, insigne
,, barbatum
,, pardinum
,, Sedeni ×
,, Roezlii
Lælia albida
Lycaste Skinneri, some first-rate varieties
Miltonia cuneata
Maxillaria nigrescens
Masdevallia amabilis
,, polysticta
Dendrochilum glumaceum
Odontoglossum cirrhosum
,, Alexandræ (several good varieties)
,, Rossii majus (one of the best varieties I have ever seen)
,, Hallii
,, triumphans
,, Andersoni
Odontoglossum Pescatorei (several good forms)
,, Insleayi leopardinum
,, cariniferum
,, pulchellum majus
,, gloriosum
,, Reichenheimei
,, hastilabium
,, maculatum
,, Wallisii
Oncidium barbatum
,, Cavendishii
,, tigrinum
,, maculatum
,, cheirophorum
,, Wentworthianum
,, bicallosum
,, altissimum
,, cucullatum
,, incurvum
,, divaricatum
,, sarcodes
,, phymatochilum
,, pubes
,, Weltonii (syn. O. fuscatum, Miltonia Warscewiczii)
,, leucochilum

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Rhododendron Veitchianum lævigatum.—We were much gratified a few days since, in passing through the York Nurseries, to meet with so fine a specimen of this truly beautiful greenhouse shrub. It was about 5 feet high, and nearly as far through. It is evidently a profuse flowerer, and forms one of the most attractive objects at the present time. We noticed that nearly every branchlet was adorned either with buds or blossoms. The flowers are borne sometimes solitary, but more generally in threes; they are very large and handsome, being of snowy whiteness, and each blossom from 5 to 7 inches in diameter. The segments are broad and slightly frilled. The flowers are powerfully and most agreeably perfumed.

## Garden Operations.

*PLANT HOUSES.*

Stove.—Where it is requisite to increase the stock of stove fine-foliaged and flowering plants, the present is a good time to take cuttings of most kinds. Success in propagation will be more certain than if performed sooner in the year, unless exceptional advantages are at command at any season. No establishment of any pretensions should be without a propagating-pit, which will amply repay in a short time any outlay in its erection. Crotons of the most approved kinds, if struck now, will make good serviceable plants for the decoration of the dinner-table during the ensuing summer. Select healthy, good-coloured single shoots for this purpose. In selecting cuttings for specimen plants, choose those with four or five young breaks on them, in order to lay the foundation for a good bushy plant. Dracænas, if grown somewhat tall, may be either rooted into a smaller pot at the desired height, or taken off straightway and inserted in small pots and plunged in a brisk bottom-heat for a few weeks, when they will quickly make fresh roots. The tops of the old but still useful D. terminalis will strike freely in the latter way, so will D. Cooperii and D. regina. Dwarf plants with good colour can be had quicker in this manner than by striking from eyes or the fleshy roots, though by the latter process the stock can be quickly increased. Small offsets of Pandanus Veitchii with good variegation should be taken off at the junction with the main stem. If plants for the dinner-table are desired the smaller the offset the better, as the beautiful arching leaves of this kind are thereby sooner developed than from a larger piece. P. graminifolius is a most serviceable green-leaved kind; this will also strike readily from offsets or cuttings. The variegated Pine-apple (Ananassa sativa variegata) may be propagated for decorative purposes, and suckers taken now will soon make useful stuff; the prettiest plants are perhaps to be obtained from the crown. When well rooted they may be suspended from the roof, where the leaves will not be so likely to meet with injury, and in which position they will soon put on the pink tinge which adds so much to their beauty. The small side shoots of Cyanophyllum magnificum will strike freely now; they ought to be established in small pots before we obtain a somewhat high temperature in the stove. Marantas should be increased by division; almost all the varieties make good decorative plants, and if divided now, before commencing to grow rapidly, they will soon establish themselves. Pots of cuttings may be struck of Tradescantia in its varieties; also of Panicum variegatum, both of which will be found most useful during the summer months for making a finish to flower-pot stands and baskets for the drawing-room, &c. A good quantity of the dwarf-growing Lycopodiums should be propagated now to have the pots well furnished for decorative purposes; and where much in request a constant supply should be maintained. Of stove flowering plants, such as Gardenias, Ixoras, and Allamandas, cuttings may now be inserted with every hope of success. When well rooted grow them on quickly, by which means they will soon take the place of the older plants, which, either from their age or unwieldy size, have not the same attractions as smaller ones. The propagation of most kinds of winter flowering plants for the stove may be deferred a few weeks longer, it being better to grow the plants freely than to let them become starved and stunted in their earlier stages; this latter point is one of the common evils in plant culture, and one very often overlooked. A temperature of 65° as a minimum with a rise of 10° by fire-heat, allowing the same to rise to 85° by sunshine, will suit the majority of stove plants for the next few weeks. Keep up a corresponding degree of moisture and use the syringe liberally to check the increase of insects.

Greenhouse.—Plants of the soft-wooded Ericas, as E. hyemalis and others, that have done flowering should be cut down before they commence to grow from the points of the shoots. After they have broken out into fresh growth they should be repotted and kept for a few weeks in a closer temperature till they have rooted freely into the new soil. These remarks apply equally to the winter and early spring blooming Epacrises. As soon as they have done flowering cut them down, to obtain as early a growth as possible, by which means they may be easily had in flower when there is a scarcity of good cut blooms in

October and November. Autumn-sown Mignonette will now be growing fast; see that the plants do not suffer for want of water, and give occasional doses of guano. If allowed to become dry the foliage will soon turn brown. Autumn-struck cuttings of the Lobelias should be potted on, to make good plants for baskets and the fringing of groups of plants on stages and elsewhere during the summer. Plants of the common and giant Musk will also be most serviceable as a contrast. Tropæolums of the Lobbianum type are highly ornamental in pots, if a position can be granted them where the long trailing shoots can hang gracefully down, making good subjects for walls or brackets.

Forcing Department. — Roses in pots and turned out will now be coming into bloom without any undue amount of forcing. Keep a sharp watch for that annoying little maggot which if left undisturbed will soon make short work of the buds, every one of which is valuable if ever so small. Give manure-water occasionally to aid the plants in the development of their blossoms. The finer kinds of Hyacinths will now be advancing into flower; where a large quantity are grown it would be advisable to take stock of the better sorts as a guide in making out the next bulb order. The Amaryllis in varied colours will now be coming freely into flower; do not let them open their flowers in too warm or moist an atmosphere: if allowed to do this the flowers will not have the full substance of petal nor will they last nearly so long. For conservatory work these plants are grand, the wonder is that they are not more grown than they are. Keep strong clumps of Spiræas liberally supplied with water as they advance in growth; when the foliage is well developed great assistance may be given to the plants if the pots are stood in Strawberry pans till they have perfected their spikes of bloom. *James Hudson, Gunnersbury House Gardens, Acton, W.*

## *HARDY FRUIT GARDEN.*

Complete as speedily as possible any planting in this department that, from weather or other causes, has been delayed; secure to stakes, and apply a mulching at once. Finish all pruning and tying of fruits, with the exception of protected Figs, which it will not yet be safe to uncover in most localities. As the nailing of Peaches and Nectarines is finished, give the whole surface of the wall a good drenching from a garden engine, with a mixture of soft-soap and sulphur in the water, to which may be added either tobacco-powder or water. Apply the same dressing to other fruit walls previously finished, and if the strength of tobacco in the mixture be increased for Cherry walls it will be the more effective in checking the spread of the black aphis when it puts in an appearance later on. When using, keep it well stirred, as the sulphur, being heavy, speedily sinks to the bottom; and apply with some force in order to reach all nail-holes or other crevices. As there is every promise of a plentiful bloom on fruit trees on walls, attention ought to be turned to the means available for its protection before the appliances are required. The stock of nets and frigi-domo should be looked over, and new ordered where required. Where boards are used as temporary additional coping it is necessary to have them painted occasionally; see if this is needed, and get protecting material in readiness generally. The boards we use are attached to the permanent stone copings by bolts and nuts 4 feet apart; iron bands, which are used to strengthen the boards, afford firm hold for the nut-heads. As the boards are attached to the under side of the stone it is necessary to prevent wet running back to the wall. This is done in making them by attaching a thin bevelled piece of wood to the upper side joining the stone, which gives the required fall outwards; while tenter-hooks along the edge afford an easy means of attaching nets, &c. Where efficient appliances for bloom protection are not in stock they ought to be provided without further loss of time. Prepare ground and plant out Strawberries from beds of autumn runners. Strawberries will well repay any extra trouble that may be taken in trenching and manuring the ground in preparation for them. A break may be got in readiness to receive the successional batches of forced plants as they leave the houses. The varieties that find favour vary much according to soil and climate; Garibaldi, President, and Elton Pine may, however, be mentioned as three well-known sorts that seem to suit all districts. They form a useful succession, and may be depended upon by those who require only a limited number of kinds. Complete the thinning-out of crowded and crossing branches in orchards. Choose an opportunity after a shower to dust freshly slaked lime over any trees that are infested with moss. If there are any inferior varieties of Apples or Pears requiring to be headed back in order to be worked with superior sorts let them be cut over at once. See, however, that those to be operated upon are in a healthy state, failing which the trouble of grafting will be, in all probability, so much time and labour lost. Prepare clay for future use by working it well, and adding cow-dung and chopped hay. *R. Crossling, St. Fagan's Castle, Cardiff.*

## *FRUIT HOUSES.*

Orchard House. — Where the trees have been forced enough to have now passed the flowering stage the temperature of the house may be kept up to 65° at night, if the weather continues mild; if it sets in cold, with frosty winds, better let the temperature drop 5° or more. If it is seen that the fruit is set, the trees may be syringed on the mornings of fine days, but in dull damp weather it is better to be content with merely damping the paths and borders, also the walls of the house. The trees will also be starting into active growth and forming young leaves. If there are any of the aphis tribe on the trees they will readily be perceived by the curling of the leaves; it is very difficult to get rid of them in any other way than by fumigating with tobacco-smoke until they are all killed. Syringing the trees will not destroy the aphis, though it keeps off red-spider, another troublesome pest when artificial heat is much used. The Strawberry plants on the shelves can also be kept free of red-spider by drenching the under sides of the leaves with the syringe or garden-engine. Judicious ventilation at this season is of very great importance. In calm weather, even if it is cold, the ventilators should be open a little, as a very small aperture causes a sufficient circulation when the weather is cold. The unheated house should still be kept very cool, so that the trees may be kept as late as possible. The matter of six days late in blooming may sometimes save the crop from being lost by frosts when in bloom. The trees will now be budding, and if the weather is mild the roots are active, it is therefore very important that they should be sufficiently moist. The soil in the pots is apt to become very dry, but this should not be, and now it is essential that the soil should be kept moderately moist. The trees should now be put into the positions in which they are to remain during the summer. The Pear and Plum trees that up till this time have been left out-of-doors should also be placed in their positions; these do not usually require water until they have been in the house for perhaps ten days. If the gravel on the paths requires renewing, this ought to be done now. The Strawberry plants in pots on shelves are now starting into growth, making plenty of fibrous roots. They must now be aided by weak manure-water at every alternate watering; be careful also that none of them suffer for want of water. *J. Douglas, Loxford.*

### Orange Trees in Pots.

Instructions were given at p. 111 to have the trees thoroughly cleansed when other work would not be pressing. If this has not been done it ought to be seen to now, so that the trees may start clean and healthy. Some of the trees will now be in bloom, and will require to have a continuous circulation of air. I like to leave every alternate top light open about an inch all night. Let the trees be well exposed to the light at this season. If a house is (as it ought to be) quite set apart for the culture of this fruit, there is no difficulty in giving the trees full justice. Where they are placed in Cucumber and Melon houses some care must be taken to place them in a suitable position to catch the rays of the sun for the greater portion of the day. Water freely at the roots now, and surface-dress those trees that have not been recently potted. I use for this bone-dust, cow-manure, pounded charcoal, and good yellow loam in equal portions. A handful of this on the surface of a 15-inch pot is sufficient at one time. If the pots can be plunged in a tan bed to half their depth they succeed better, but they do quite well without it. *J. Douglas, Ilford, Essex.*

### Vines.

The weather, though mild, is still very unfavourable for forcing early Vines, for the sun has not been seen here for eight days in succession, consequently only slow progress has been made. Keep the earliest house 63° to 65° at night, raising it to 70° early in the day. Give air for a few hours daily when the temperature rises to 68°, taking care to avoid cold draughts, for it is much better to increase the air gradually as the heat rises, than to put it all on at once. Close the house early, if with bright sunshine the temperature may be allowed to run up to 90° when the house is closed, damping walls, paths, and borders with tepid water, and allowing the temperature to fall to 70° at 6 o'clock P.M. If red-spider makes its appearance through the rather hard firing, paint the pipes when very hot with sulphur, but not before the Grapes are thinned and as large as peas, or it will, perhaps, while they are tender in the skin, cause them to rust. It is much better to keep it down with sponging until that time. The succession-house started early in January will now be showing bunches, and had better be kept warmer, raising the temperature till it reaches 63° at night, with a rise of 10° by day, damping well the paths, &c., several times daily. If late varieties of Grapes were started on Feb. 12 they will soon be on the move; keep them for the present in a night temperature of 58°, with a rise of 10° by day. Any young canes that are very strong had better be drawn down in a horizontal position, to induce them to break regularly. Hamburgh-houses intended for a late supply should be kept as cool as possible. All thick-skinned varieties not already started had better be so at once, also the Muscat of Alexandria, for if not started by March 1, they will not ripen thoroughly in the autumn, neither will they keep so well through the winter as if started at that time or a little earlier. Pot Vines swelling their fruit must have liberal supplies of tepid manure-water, and if wanted very early they will now stand a few degrees more heat and a liberal supply of atmospheric moisture. Late Grapes hanging in the fruit-room will this damp weather require great care. Keep the Grape-room as near as possible at 45°, and admit air only by the top ventilators, with a little heat to dispel damp, filling up the bottles with soft water as required. *Joshua Atkins, Lockinge Gardens, Wantage.*

### Pines.

Those plants which have shown fruit during the winter will now require staking, and for this purpose Ash may be used. The stakes should be cut into lengths about 3 feet, and pointed, then kept in a dry shed for a few months before using to make them more durable. Put two stakes to each plant close to the sides of the pot, then take a piece of strong raffia about 3 feet long, put it over the crown, holding the two ends together towards the stakes, twist the two round each other twice, and make a knot half-way between the crown and the stake, make two more twists, and tie both ends securely to the stake. Let the ties on the stake be 5 or 6 inches higher than the crown, so that as the fruit rises in the plant it is not hung or injured, but is supported in an upright position. A corresponding piece of raffia should be put over the other side of the crown, and tied likewise to the other stake; this keeps the fruit in a vertical position during the swelling period, at the same time allowing full liberty for the fruit to expand. A little care and attention to these operations are well repaid, the results being even handsome fruit with symmetrical crowns. When the plants are in flower discontinue syringing overhead for a few days. In dull weather, if stagnant moisture is allowed to accumulate on the fruit, some of the pips become abortive, thereby causing deformity. Those plants that have stood in the beds all the winter and are supplied with bottom-heat from fermenting materials alone, will now require the beds to be renewed altogether or partially; for this work choose a dry, mild day, and before lifting the plants out of the pits the new material ought to be at hand. If Oak leaves are used these should have been previously fermented and turned over once or twice. Take the old material and replace it by new, treading it well down as it is put in until it reaches the depth of 4 feet. When the bed is well consolidated put a layer of fresh sawdust over it about 10 inches deep, then replunge the plants at the required distances. If tan is used extensively some care and judgment is required not to use too large a body of new material at one time; it should rather be mixed in proportionate parts as the old becomes spent. It retains heat a long time, and if kept dry decomposes slowly. All our young stock has been wintered in an old pit, heated by a flue; the only bottom-heat is a tan-bed from 3 to 4 feet deep; this was made up last September with about one-half new tan, and at the time of writing the bottom-heat stands at 80°, the pots are full of healthy roots, and the plants vigorous. The only merit of the pit is, that the sashes are well glazed, which excludes drip. *D. Wilson, Castle Hill, Devon.*

North American Ginseng. — Judging from an article that recently appeared in the *Commercial Bulletin* of Boston the North American Ginseng root (Panax quinquefolium) is an important product, being still imported in large quantities from thence to China for medicinal purposes. We had an idea that the true Chinese Ginseng (Panax Schinseng) even was at the present day comparatively little valued, as it is known by Europeans and by many Chinese to have no real properties, and that the North American species was still less valued, but the writer in the paper to which we refer says:—"The traffic in the American root is now principally in the hands of a few Chinese merchants in San Francisco, and the average annual exports amount to about 700,000 dols. The trade was once in the hands of Boston and Salem merchants, and subsequently in those of New York parties. Very little Ginseng is received at the present time either in Boston or New York, but it would speedily find a market if any were produced. It is now dug principally in West Virginia, Pennsylvania, Wisconsin, Michigan, and Minnesota. Several attempts have been made to cultivate the plant in North Carolina but without success. It grows best in a wild state in the forest, and the Indians say that from ten to thirty years are required for a root to mature."

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | Feb. 28 | Sale of Lilium auratum Bulbs, Tigridias, and Gladioli, at Stevens' Rooms. Sale of Lilium auratum Bulbs and English-grown Lily Bulbs, at the Auction Mart, by Protheroe & Morris. |
| Wednesday, | Mar. 2 | Sale of Roses, Fruit Trees, Shrubs, &c., at Stevens' Rooms. |
| Thursday, | Mar. 3 | Linnean Society meets at 8 P.M. Sale of Imported Orchids, by order of Messrs. Low, at Stevens' Rooms. Sale of Camellias, Azaleas, Roses, &c., at the City Auction Rooms, by Protheroe & Morris |
| Saturday, | Mar. 5 | Sale of an Importation of East Indian Orchids, at Stevens' Rooms. |

IT was with considerable regret that we ventured, in a previous article, to advocate the removal or destruction of old trees, badly placed, from landscapes which they narrow or mar rather than enrich or adorn. But injudicious planting has been by no means confined to our remote ancestors, and hence in numerous places there are quantities of young or middle-aged TREES IN THE WRONG PLACES that may easily be transplanted into the right ones. This is far more pleasant work than the removal of old trees, as it leads to little or no destruction of arboreal grandeur or beauty, but simply to its richer and more effective display.

The theory of the irremovability of trees has been carried too far. No doubt a large degree of fixity of tenure is essential to their well-being; but it is by no means impossible to remove trees of very considerable age and stature, not only with safety, but often with advantage to the trees, and the marvellous transformation of common-place into rich or glowing landscape. The mechanical difficulties may be said to have positively vanished at the bidding of such men as STEWART, MACNAB, and BARRON, so that the actual transplantation of trees becomes a mere matter of mechanical skill and expense. We shall, moreover, shortly be in a position to give details as to a very rapid and efficient method of removing small trees which we have lately seen in operation. There is therefore no need in the present day of allowing trees to grow on in the wrong place, when they may safely be removed into the right. The choice now is not between trees that are an eyesore or their destruction, but the practical question is, Shall they continue to disfigure or be made to adorn the landscape? Practically trees up to at least fifty years old are now portable; they may be lifted and conveyed a mile, twenty, or a hundred miles with impunity. Nevertheless it is not wise to trust too much to our mechanical facilities for the transplantation of trees, as it is extremely doubtful whether our forethought in preparation and the wisdom of our after-treatment have kept pace with the improvement in our lifting and transplanting machines. By the aid of the latter landscapes may be made in a day, or at most a week or two, the effect in many instances being marvellous as a fairy tale. These rapid transitions are in harmony with the spirit of the age. Everything must now be done by express. A mile a minute seems slow travelling to some; telegrams threaten to supersede the penny post; and the telephone has been called in to render our intercommunion simultaneous. In harmony with all this there has arisen a cry, especially from our commercial classes, for what may be called instantaneous landscapes. The full furnishing, the rich mellowness of age, must be given in a few months. It can be, has been done to a great extent by the transplantation of large shrubs and trees. The growth of half a century, sometimes far more, have been placed in open fields or around raw bricks; shrubs of good stature have been moulded into belts and clumps, green turf has been laid down, and, presto! behold a garden, pleasure-grounds, parks.

But to ensure success in such operations we must not only have powerful machinery and the requisite skill and force to use it, but the plants and the soil should both be carefully prepared, and the former need special care afterwards. Most of the failures that have occurred in this simultaneous mode of forming landscapes have arisen from overlooking these facts rather than from mere faults in the mode or time of transplanting. As to the plants, they should be carefully selected, and the roots and tops pruned a year, two, or even three years before transplantation. As a rule, large trees and shrubs are transplanted because they are too thick. They are severely overcrowded before thinning. This begets abnormal tenderness in the trees, growth is rapid, and the bark thin. The mere removal of such trees into more open and exposed positions, supposing every root was lifted and replanted intact, would prove a severe check to them. But of course some roots will be lost, more probably injured by removal. Thus crippled and placed in a more open and exposed place the trees become checked and stunted to such an extent as frequently never to recover. The mode of removal, the after-treatment, are too often blamed, whereas the fault lay in the tree itself. Its attenuated stems and branches, thin bark and abnormally tender constitution, rendered success impossible. In all attempts at planting in a landscape of considerable extent reject every tree that has been drawn up by overcrowding. Select those that have been grown in the open, and, if possible, on more exposed sites and soils than those in which the tree are to be placed. If such material cannot be found, then it is better not to attempt furnishing with large material, however promising it may be. It will only prove a waste of force and of time, and it is far more satisfactory to plant small trees and watch them growing into beauty than to plant larger ones and be compelled to see them become smaller or more unhealthy day by day. But even with the best material from the best sites the roots should be prepared for planting some time previously. The simplest mode of preparing them is to dig a trench round the trees from 18 inches to 3 feet from their boles according to their size, and a yard or so deep. Let all the roots found be cut clean off with a sharp knife, and fill up the trench with some of the best soil or lightest compost at command. In a year or two this compost will be filled with a network of feeding roots. In transplanting the tree the trench should be dug out, so that its inside shall impinge on the outer extremity of the compost. The root mass will then consist of a solid centre of undisturbed earth, fringed with a rim of roots and compost. If all this is preserved success is well nigh certain. Even should the foreign earth fall off the roots will remain.

As to the depth of the ball, that will depend considerably on the age of the tree, character of the soil, &c. It may seem paradoxical to advise that the younger the tree the deeper the ball should be; but it is of the utmost importance in the removal of youngish trees to preserve the tap-root if possible, though if it cannot be kept intact, the mass of it should be, and the more the better. It is not only the holdfast but the moulder of the form of the tree. Both these facts are far too much overlooked in the transplantation of trees for ornament. Culturists are so much in the habit of waging war against tap-roots to foster fertility, that they are apt to overlook their potent influences on the form and stability of trees. As old trees are already formed, tap-roots are of less moment to them, In fact, age, the sterility of subsoils, and other causes mostly either destroy or modify the tap-roots of aged trees. Having served their purpose they pass away or are lost amid the general character of the other roots. It is far otherwise, however, with younger trees, to which tap-roots are so valuable as to be worth all the extra labour, that their finding, preservation, and careful replanting in vertical positions involves.

But the top should also be prepared as well as the roots. This consists in judicious thinning, foreshortening, and regular balancing. All superfluous weakly wood should be cut out. This reduction of top area is philosophical in theory, and most useful in practice. Transplant as we may, there is of necessity a considerable disturbance and destruction of roots. As the action and reaction of the tops and roots of trees may be said to be reciprocal and equal, it follows that the tops should be reduced in an equal ratio. Nor is this all: a concentration and augmentation of growing force is wanted as much as, or more than its reduction. These latter objects are secured by the foreshortening of vigorous branches as well as the removal of weakly ones. By reducing the length of the boughs, stronger breaks are developed in closer proximity to the trunk or bole of the tree. This is just what is wanted. With a vigorous bole well furnished with strong branches as near to it as possible, the strength of the tree is brought within narrower limits and into more manageable compass. The tree is thus enabled to husband its resources and reserve its force, a maximum of energy is stored up in a minimum of area—points of the utmost moment to the future vigour and perfect form of the tree.

These new and stronger growths above have also their counterparts in similar growths below, and in this way the added soil or compost becomes a matted mass of strong and healthy roots.

The regulation and careful balancing of the top of the tree about to be transplanted is more for its future benefit than its advantage now; but, of course, in so far as these reduce its area and concentrate its vital force, they are useful as other prunings. But the exact balancing of the top boughs, as well as the reduction of the top, alike help the tree to stand firm in its new quarters with little or no support—points of the utmost importance to its future well-doing. It is hardly too much to add that hundreds of trees that have been transplanted with considerable expense have been pulled out of form, or right over, in spite of expensive staking, through the persistent operation of lop-sided tops that a quick eye and a sharp knife might have pruned into self-sustaining vertical stability in a few minutes.

—— HYACINTHUS CANDICANS.—Among the most beautiful hardy bulbs is that named Hyacinthus (or Galtonia) candicans. It was introduced from the Cape, and described in Mr. WILSON SAUNDERS' *Refugium* by Mr. BAKER. On its first introduction in 1872, when we figured the plant (1872, p. 1099), we spoke of it as a greenhouse plant, and as one well adapted for growth in windows, like the popular "Onion plant," than which it is, to our thinking, much more attractive. Since that time its hardihood has been well established, and its fine spikes, 5 feet and upwards in height, form noble objects in the border or bed. For technical reasons, M. DECAISNE has separated the plant as a distinct genus under the name Galtonia, and it must be admitted that the difference in habit from the ordinary Hyacinth is very great. In the floral construction, however, there is less difference. Our illustration (fig. 50) was taken from a mass grown in the nursery of Mr. POUNSETT, of Walliogford. The bulbs have been in the open ground for three winters without any protection. Mr. BARR, and other growers, bear like testimony, and of our own experience we can testify to the survival of the plant in a wet clay soil during the winter of 1879-80. On all accounts, then, this noble plant deserves to be brought fully under the notice of amateurs and others.

—— SNOWDROPS.—On Saturday, the 19th inst., Earl SPENCER gave a dinner to the Prince and Princess of WALES in St. James' Palace, and on this occasion the floral decorations on the dining-table and other parts of the room were composed entirely of Snowdrops. The floral arrangements were carried out by Mr. JOHN WILLS, on behalf of the General Horticultural Company, and

nearly 10,000 blossoms of Snowdrops were used in the decorations. Small and elegant fronds of Fern were used in conjunction with the Snowdrops, and the shoots of Ficus repens were employed on the shafts of the candelabra, and such places. There was a singularly soft and chaste aspect of the decorations in the gaslight, and simplicity was found in combination with effectiveness. The blooms of the Snowdrops were obtained from various sources, but mainly from the fruit orchards of Somersetshire and Wiltshire, where they grow wild in the greatest profusion. There are those who frequent Covent Garden Market who make a point of furnishing the season's supply, and their practice is to have an agent in the localities in which the Snowdrops grow, who superintends the gathering of the flowers, bunching, and transmission to London. Some twenty to thirty flowers are placed in a bunch, and they command prices varying according to the demand for the flowers. All the flowers used on this occasion were the single form, which is preferred to the double. It is in Lincolnshire in particular that double Snowdrops are grown, and from this county is drawn every year a considerable portion of the large supplies required by the London seed trade. In the West of England the single variety only is cultivated, and orchards carpeted with these floral harbingers of spring have existed for many years past, the plants growing and spreading annually with that marvellous profusion found in Nature.

—— The Jardin des Plantes, Paris.—The list of seeds collected in 1880, and available for exchange, is very long, occupying no less than twenty-one quarto pages, each with four columns. Directors of botanic gardens, and amateurs requiring exchanges, should apply to M. Decaisne before the end of the present month.

—— Esculent Tubers of Sagittaria.—Dr. C. C. Parry reports, in Case's *Botanical Index*, that the tubers of Sagittaria sinensis are commonly on sale in the Chinese market at San Francisco, and are somewhat extensively cultivated in the vicinity. This plant closely resembles our native species, but has much broader leaves. There is a figure of it in the *Botanical Magazine*, plate 1631. The late Dr. Seemann collected a leaf of it near Canton, where it was cultivated.

—— The Schedule for the Whit-week Show of the Manchester Botanical and Horticultural Society is now circulated. The prizes offered in the principal classes for stove and greenhouse flowering and fine-leaved plants, Orchids, Ferns, Ericas, Azaleas, and Pelargoniums, are on the same liberal scale as heretofore, and doubtless, as they have hitherto done, they will bring out a fine display, such as to attract not only those who are directly interested in matters horticultural, but also the residents generally of Manchester and the neighbourhood, who have learnt to appreciate the treat which is here annually provided for them. We see that in addition to the usual prizes offered by the Society for Orchids Henry Shaw, Esq., of Buxton, gives two of £10 and £5, with an additional one of £3 by the Society, for the best half-dozen specimens, single plants, made-up examples not being admitted. It is to be hoped that these prizes will bring out a competition that will

Fig. 50.—Hyacinthus candicans. (see p. 272.)

enable Orchid growers to show what can be done without resorting to the course of putting a number together, for although the practice is so prevalent with exhibitors, still it is only a question of time to grow large specimens without making up, as no doubt some of the finest plants in the country are the result of a single piece grown on without any addition by massing a number together.

—— Bananas in Fiji. — One of our correspondents in Fiji informs us that a specimen of Banana has been grown there with no less than 800 fruits. At the same time a Pine-apple was shown weighing 15 lb.

—— Right-hand and Left-hand Contortion of the Corolla.—In a communication to the Linnean Society (17th inst.) Mr. C. B. Clarke maintains that Linnæus' definition of right-hand twist in the case of climbing plants, flowers, &c., is correct, and that the criticisms on it published by M. Alph. de Candolle in his *Phytographie* are founded on a misconception. The author holds that everybody understands the same direction (viz., the watch-hand direction) by the term right-hand twist; that the apparent direction of rotation of the heavenly bodies appears reversed if the spectator looks north instead of south; that the direction of rotation is the same whether the observer supposes himself within or without the helix; but that the apparent direction of contortion of a helix becomes altered if the spectator reverses the direction in which he looks along its axis.

—— Setting up a Cedar.—Most visitors to Syon will remember the fine Cedar of Lebanon that stands beside the broad walk that leads to the east end of the mansion. During the fierce storm of the 18th ult. the wind drove the tree over so much on to its west side that it was feared it would fall altogether were not some measures adopted to make it secure. But for the fact that the ground was frozen so hard it is possible that the roots might have been torn from their hold altogether; but this tightness of the soil no doubt saved the tree from what otherwise might have been an irretrievable disaster. It is computed that the massive head with its huge expanded branches weighs about 20 tons, and to lift this bulk into an erect position was a work of no small difficulty. Mr. Woodbridge, however, proved equal to the occasion, and borrowing in one direction a hydraulic press, in another screw-jacks, and elsewhere powerful ropes and tackle, he had the tackles secured to the boles of two large trees on the north and east sides, and the ropes fastened high up in the Cedar; these being rove into the blocks were ready for action. Meanwhile stout planks and blocks of wood of various sizes were obtained, and these formed foundations for the press and jacks which were fixed beneath the huge branches on the west side of the tree. When all was ready the press, jack, and ropes were put in motion. The tree presently, though slowly, began to heave, and after two hours hard but persistent labour, the great Cedar was once more erect and in its place. Some massive hollow cast-iron columns with crutch heads to fit the limbs are being cast, and these will be fixed upon a concrete base to give the tree the needed support, and it is hoped to maintain it as an ornament at Syon for many years to come.

—— Messrs. Osborn's Fulham Nursery.—The interminable piles of bricks and mortar that are continually spreading outwards from the city like an ever-encroaching wave, have already overwhelmed places without number once looked upon as secure beyond the reach of the builders' insatiate grip. East, west, north and south, there is the same absorbing process at work, and wherever there happens to be a spot that for a time resists the advance, forthwith the knight of hoarding and scaffold-pole at once begins his work of circumvallation, saying to every tree and shrub, "If I cannot grub you up, I will at least make your existence uncomfortable or impossible by pouring the fumes of a thousand chimneys on you." But the man of trowel and hod can generally afford to pay more for the land than it is worth for other purposes, and so he gets his way, and immediately changes the scene. The old nurseries that stood amidst pleasant fields well outside London in times past are favourite places for the builders' camp. Many who gazed with pleasure on the lofty Palms, the grove of Camellias, the Orchids and other rarities that once filled the Hackney nurseries would now have a difficulty in telling to a couple of miles where these things so long grew. The transformation is not a long process. The swallows that but last summer used to glide over the shrubs in Dancer's nursery, Fulham, will either have to betake themselves to fresh feeding grounds, or shape their flight among the chimney-pots that have there sprung up as if by magic. Next in turn we hear is likely to be the Fulham Nursery—Messrs. Osborn's—for generations associated with rarity in trees and shrubs. Shades of Ferrur and Gray, Catesby, Collinson, Miller and Compton, you little thought when in the flesh that the trees you loved so well would fall before the builder's mattock. Yet such most likely will be their fate, as the lease, we understand, is all but out, and the spot which so long has been the home of trees and shrubs from many climes will, in all probability, resound with the rattle of wheels between parallel lines of dwellings. This nursery has always been noted for many rarities in trees seldom met with elsewhere, old examples of which here exist, that it looks like a crime to destroy. Amongst shrubs both evergreen and deciduous, the collection of hardy Azaleas, comprising all the best Ghent and American varieties, are in themselves a feature. Many of the specimens have attained a large size, from 6 to 8 or 10 feet through by 6 or 8 feet in height, which each spring form an immense group of mingled deep and delicate colour equalled by few things in cultivation. As regards these Azaleas there is one thing in their favour which will save them from destruction; though large they will move like a Rhododendron, their naturally compact masses of roots enabling them to be taken up and replanted almost without feeling the effects of removal. For immediate effect it is seldom such plants are to be met with. It is fortunate for Messrs. Osborn that they have at the opposite side of the road enough freehold on which to erect new hot-houses, greenhouses and other necessary buildings, with land as well for general stock which, combined with their nursery at Sunbury, will prevent any interruption in their business.

—— The Fungi of France.—M. C. C. Gillet is publishing a series of nicely executed coloured lithographs, in small size, of the fungi of France, with descriptive letterpress, analytical tables of species, and other aids to identification. We strongly recommend the publication to the notice of students of fungi. It may be had from Messrs. Williams & Norgate.

—— Children's Gardens. — Now that Board Schools are doing so much for the education of children, could not some arrangement be made whereby in the country they could be taught something of gardening? for assuredly were that done seed would be sown in their minds, and tastes imbued, that would lead to good results, and give them no end of pleasure in life. "I know this," writes J. S., "from experience with my own, who each had a piece of ground in which they planted both vegetables and flowers; and I remember that their ingenuity in forcing Rhubarb was novel, as they covered it with a chimney-pot, in which they suspended daily a bottle of hot water, and then stopped up the top. The root of Rhubarb was a joint affair, but in the flower department there was a good deal of rivalry, and much rejoicing with the one who produced the first bloom. It is not to be expected that every child can have a garden, but there might be one attached to most country schools, where each and all could be instructed in the way to graft, bud, and otherwise propagate and increase various plants, as well as to sow seed properly, and be initiated in the way it grows, and what conditions conduce to its success or failure. Knowledge of this kind would surely be more valuable than much of the history they have their heads filled with—or, rather, which they are expected to have—and which they take no interest in; but bring something tangible before them that they can see, and it will be found they take it in at once. Squeers' system at Dotheboys Hall had at least the advantage of being practical, but the encouragement to spell 'Botany' correctly was doubtful when after doing it they were sent out to weed; and yet many youngsters now-a-days would most likely be glad of that change as a means of escape from more difficult studies. Masters of schools have no doubt quite enough to do without any addition to their work, but much of the teaching I propose could be given as object lessons, when a plant might be taken, its name given, uses explained, properties, &c., and whether edible or not. Such instruction as that sets children thinking, and makes them more observant of the things they pass daily; whereas without having their attention and training directed to such matters they heed them not, and go out in the world unacquainted with the commonest things in the vegetable kingdom that grows up around them. Many parents that have their children with them can attend to this part of their schooling themselves, and I would most strongly urge it on them, especially gardeners and others, who have such opportunities in directing their minds to the beauties of Nature."

—— Botanic Gardens.—The powers that be seem often very ignorant of the proper requirements of a botanic garden and very niggardly in its support. It is not so many years since an officious minister made himself very objectionable in this country, and now we learn that a similar functionary is endeavouring to cripple the utility of the already small garden at Liège, by proposing to erect zoological museums and other buildings unconnected with botany on the ground. As the students number over 200 the requirements for illustrative specimens tax all the meagre resources of the garden, which, so far as we understand, demands extension rather than restriction. Botany is becoming so important as a general branch of biology that every facility should be offered for its prosecution rather than the reverse. We trust our Liège colleagues may be able to do more than hold their own under this attack.

—— Jay Gould's Conservatory.—We learn from Case's *Botanical Index* that the splendid conservatory belonging to Jay Gould at Islington-on-the-Hudson, New York, was burned to the ground on the morning of December 11, 1880. It was said to be the largest in America, and was well filled with rare and valuable plants. The men were working up to 2 o'clock A.M. under the direction of the head gardener, and at 3 o'clock the night-watchman discovered the flames. He awakened the entire force of men, and they connected the fire apparatus, but the water was frozen, and their efforts useless. The flames, fanned by a high wind, swept through the immense structure, licking up everything, and in half an hour from the time the fire was discovered there was nothing but a mass of ruins. The building was 480 feet long, and constructed in the Moorish style. The entire loss is 150,000 dols., upon which there is no insurance. It is understood that a more elegant building will speedily replace the one destroyed.

—— The Products of Fiji.—Our contemporary, *The Colonies and India*, in a paper on the products of Fiji draws attention to the abundance of Cocoa-nut trees to be found in the islands, and the value of Copra as a commercial article. Everywhere in the group we are reminded, with the exception of Viti Leon, the Cocoa-nut Palm grows luxuriantly, and the appearance of the islands from the sea, with the groves of Palms stretching for miles along the coast-line, their graceful fronds waving directly over the pellucid light green waters of the lagoon, is very striking to a visitor. Each Palm, when in full bearing, produces about 100 nuts a year, and an acre of ground will carry about eighty Palms. About 10,000 nuts suffice for the manufacture of a ton of Copra worth £14, and rather more than a ton of fibre, worth about £15; so that an acre of Palms at their prime should give a return of about £25 per annum. As yet, however, most of the fibre is wasted, owing to the want of proper machinery for its manipulation, and it is reckoned that £50,000 a year is thus thrown away in the group. The value of the Copra exported in 1875 was £40,000; in 1876, £46,000; in 1877 it had risen to £79,000, and in 1878 to £122,000; so this, at present the staple product of the colony, has then trebled its exported value in four years. The fibre exported in 1875 was valued at £1796, and in 1878 it had risen to £3133. Very excellent Coffee has already been produced in small quantities, and both climate and soil are well adapted for the growth of the shrub in many parts of the islands, though only 1200 acres were under Coffee in 1879. Very wisely the Government has done its best to further this industry, having sent large quantities of seed into the interior of Viti Leon to enable the natives to form Coffee gardens. As far as can be judged, too, Cocoa would do well in the

islands, and the young Cocoa trees that have been planted are reported as thriving. Tea and Cinchona might also be grown in several inland districts; and Tobacco grows admirably, but as yet planters have not sufficient knowledge to enable them to manufacture it to advantage. There would be, too, in New Zealand and Australia, a ready market for any quantity of tropical fruits, such as Oranges, Lemons, Bananas, Pine-apples, and Mangoes, which would stand the seven or eight days voyage; and there is no apparent reason why spices, such as Cinnamon, Nutmeg, Cloves, and Pepper, should not do well in the group, provided science and experience were brought to bear in their cultivation.

—— Death of Prof. Tennant.—We greatly regret to have to announce the death of Professor Tennant, the well-known mineralogist, on the 23d inst., aged seventy-three. For a long series of years Mr. Tennant acted as Professor of Geology and Mineralogy, and afterwards of Mineralogy only, at King's College, London; he was also lecturer on these subjects at the Woolwich Military Academy. Mr. Tennant was as full of information as he was generous in imparting it and modest in displaying it. His eager desire to help his students, to be of service to his friends, and to promote any good cause, will long endear his memory to those who knew him.

—— Publications Received.—Carter's *Practical Gardener*, edited by E. J. Beale, F.L.S.—*Roses in Pots, &c.*, by William Paul, F.R.H.S, 5th edition (Kent & Co.).—*Our Kitchen Garden*, by Tom Jerrold (Chatto & Windus).—*A Handy Book on Window Gardening*, by H. C. Stewart, F.R.C.S. (Barrett & Son).—*The Tomato*, by William Iggulden (*Journal of Horticulture* Office, 171, Fleet Street).—*The Fields of Great Britain*, by Hugh Clements (Crosby Lockwood & Co.).

—— The Weather.—General remarks on the weather during the week ending February 21, issued by the Meteorological Office, London:—The weather has been exceedingly dull and gloomy, with a great deal of mist or fog, and some showers of cold rain or snow. The temperature was equal to the mean in "Ireland, N.," and slightly above it in "Ireland, S.," but in all other districts readings were from 2° to 4° below the average for the season. The thermometer was generally lowest during the 20th and 21st, when a few degrees of frost were registered in nearly all districts. At Glenalmond, however, a reading of 21° occurred on the 16th. The rainfall was less than the mean everywhere, the fall being very slight in Scotland and the west of England. Bright sunshine was extremely scarce, hardly any being registered in Ireland, "England, N.E.," and none in "Scotland, E.," while the greatest percentage in "England, N.W.," was only 13°. Depressions observed.—No important depressions have appeared over our islands during this period; pressure was lowest to the westward during the first few days, and highest over Scandinavia and Denmark, causing moderate southerly winds. From the 18th till the end of the period, however, the barometer was lowest over France and Spain, so that moderate or light easterly breezes prevailed over the whole of our islands between those dates.

—— Gardening Appointment.—Mr. David Taylor, for the last thirteen years gardener to the Earl of Antrim, Glenarm Castle, Co. Antrim, Ireland, is leaving that place, having been appointed Gardener to the Duke of Grafton, Wakefield Lodge, Stony Stratford, Buckinghamshire.

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Curculigo latifolia.—The Kew Museum is indebted to Mr. F. W. Burbidge (now Curator of the Trinity College Botanic Garden, Dublin) for a very complete series of specimens illustrating the manufacture of cloth in Borneo (where they were obtained by him during his travels) from a species of Curculigo, which has been identified by Mr. Baker with C. latifolia, Dryand. The Dusan in N.W. Borneo, near Kina Balu, prepare the fibre by macerating and beating the leaves. It is woven into a very close cloth, about 10 inches wide, in a loom of very simple construction, such as is used in Brittany for weaving saddle girths. A heavy wooden sword is used for driving close the woof after it is thrown by the shuttle between the threads of the warp. The strong fibrous leaves of Curculigo seychellensis are employed in the Seychelles for wrapping plugs of tobacco (Baker, *Flora of Mauritius*, p. 368), and this is apparently the only other known instance of the economic use of a hypoxidaceous plant. *Kew Report.*

# Home Correspondence.

The Hemlock of Socrates.—I thank Mr. C. Borgia for his information (given on p. 245), that Cicuta virosa contains the substance known in the *Pharmacopœia* as conia or concine. I was under the impression that this alkaloid was prepared exclusively from Conium maculatum. I have, however, searched many books, medical as well as botanical, and can find nowhere an authentic record of a case of poisoning known for certain to have been produced by Cicuta virosa. In asking my "somewhat quaint query," I purposely guarded myself against the obvious suggestion that I should try the effect of the plant on myself. In Sowerby's *Botany* it is said that the symptoms produced by Cicuta virosa are distinct from those produced by Conium maculatum, and as the former is reputed to be a deadly posion to cattle, which I know eat it with impunity, it occurred to me to inquire whether it is certain that it is poisonous to man. With regard to the plant which poisoned Socrates, and many other innocent or guilty Athenians, I admit that the question is of no more importance to moral philosophers or classical scholars than the question about the variety of Apple which Sir Isaac Newton saw fall is to astronomers; but to any who combine with the above studies a fondness for botany or for medical science the subject is not without interest. I know that the claims of Conium maculatum have been disputed, and I have seen a report of the controversy somewhere, but cannot find it now, though I recollect that the late Professor Christison thought on medical grounds that the commonly received opinion was wrong; still, there is no fact in ancient history which has not been disputed at some time. I remember not many years ago a learned and plausible book being written to prove that Julius Cæsar landed in England at Hastings, and that his army forded the Thames at Westminster. Speaking from memory I think that Professors Sibthorp and Daubeny, both of whom devoted special attention to the identification of the trees and plants mentioned by the Greek and Latin classical authors, concluded that the Conium of the Attic writers, and the Cicuta of Pliny, was the Conium maculatum of modern botany. Pliny, after a description which, it is true, might apply to some other umbelliferous plants besides Hemlock, tells us that the poison of the strongest quality was prepared from the Cicuta, which grew in Laconia, Crete, Megara, and Attica. Now if the statement of Bentham is correct (*British Flora*, vol. i., p. 326) that Cicuta virosa is entirely absent from Southern Europe, Conium maculatum being found there, it is rather a strong argument against the poison-cup of the Athenians having been prepared from the former plant. *C. Wolley Dod, Edge Hall, Malpas, Feb.* 19.

Galanthus Elwesii.—In your issue for March 1, 1879, Mr. William Goldring says:—"The plants at Kew of Galanthus Elwesii have the petals wholly green save the white wrinkled border, and are quite destitute of the broad white horizontal band above the middle, as shown in the woodcut, and also in the *Botanical Magazine*, thus showing that it is not an absolutely reliable character." I have some dozens of this Galanthus which I have obtained from Austria-Germany, and more than one English house, and all my blooms have been similar to the woodcut referred to. I have also tried to obtain Mr. Goldring's variety from private sources, but no one seems to know anything about it. Perhaps some of your correspondents may have seen it, and can say where it may be procured. It would be a great pity for such a distinctly marked variety to be lost to cultivation. *Jay Aye.*

Marechal Niel Rose.—Many inquiries have been made as to the best way to cultivate this Rose, and, above all, Which is the best stock? has been asked. I visited a garden the other day and saw two large lean-to houses entirely planted with it to produce cut blooms for sale. They were planted near the front wall inside the house, and were trained to a trellis fixed to the roof. The plants were looking remarkably well; they had just started into growth, nearly every bud on the strong growths of the previous year was producing a flowering shoot. I asked the owner what stock they were worked upon, and he told me every one of them were on their own roots, and further that he would not plant a Maréchal Niel if it was worked on any stock. There is a growing tendency to recur to the old practice of propagating Roses from cuttings, and my own experience goes to prove that many varieties of hybrid perpetuals and a larger proportion still of Tea Roses succeed remarkably well in this way. The more delicate varieties amongst Teas that do not succeed satisfactorily on their own roots do well on the seedling Brier; two-year-old stocks are the best. They are propagated by budding, and the buds should be put on close to the surface of the ground. The hybrid perpetuals require much the same treatment. Most of the robust growing varieties may be propagated from cuttings. Some of the very weakly varieties make no growth from cuttings; take for instance that very pretty variety Madame Noman. I never had any flowers of it worth looking at until I budded it on the seedling Brier, when each plant of it grown in rich soil produced many fine flowers and buds. I think October is the best month to put in the hybrid perpetuals as cuttings, but the Teas I have put in during September and been very successful with them. I plant about six in a 5-inch pot in light sandy soil, and cover the pots with close hand-glasses until roots are formed; in this way not one cutting in a dozen fails. I also make a point of taking each cutting off at a joint; and leave what gardeners call a heel. Of course in September the weather is rather warm, and it is necessary to shade the glass from the rays of the sun; a good plan is to place the glasses on the north side of a wall or close fence. *J. Douglas, Loxford, Ilford.*

Chorozemas in Small Pots.—Many of our finest and most useful plants are so neglected, except when grown as specimens or for exhibition purposes, that their utility when grown in a small way is seldom brought prominently before the masses, and the object of these remarks is certainly among the number. Plants trained upon great balloons formed of wire are to be seen often enough, but small plants grown in a natural way are the exception, not the rule; and yet how useful they are for many purposes of decoration. Cuttings struck during the early part of last summer, and pinched once or twice, are now flowering in 4-inch pots in a manner that strikes one with admiration at first sight. I never expected that Chorozemas would flower so freely in so young a state. The secret of success appears to be to hasten the growth of the plants in the early part of the year, and to expose them fully to the action of sun and air; in other words, to grow them without any shade, in order to thoroughly ripen the shoots from their base to their extremity. I know of no more beautiful object than one of these plants with from four to six shoots 18 inches or so in length, and with lateral growths radiating from each shoot all bearing a profusion of charming orange-magenta flowers. A single stake is put to each plant, which is loosely fastened to the support, so that its natural habit is not defaced, as in the case of formal training. Such plants raised upon inverted pots are very showy, when arranged with flowering bulbs and other spring flowers, and they also furnish dainty sprays for glasses which are at once charming and effective. *Cultivator.*

Double Lychnis.—I quite agree with Mr. Dod's remarks on the general beauty and decorative value of these plants (see p. 213), and also appreciates his hints contained therein as to treatment and propagation. To ensure a good annual flowering of L. chalcedonica, fl.-pl., which, as Mr. Dod remarks, is the best, it is well to adopt the following method, viz., to divide the clumps every second or third year, say, into three or four pieces, unless a large stock is required, and then these should be increased in the way described at p. 213. It is not advisable to divide the plants annually, as by so doing they receive a check, and after such an operation fail to produce their usual amount of flowering stems so welcome during the late summer months. I am sorry I cannot assist Mr. Dod in procuring the other varieties he mentions, but I would advise his writing to some few of the nurserymen who make a speciality of herbaceous plants, as it is not usual to publish a complete list of all they may have in stock. A whitish form of the double L. Viscaria existed in Messrs. Rollisson's collection at Tooting some years ago, but I have never met a pure double white form. *E. Jenkins.*

The Late Frost and the Roses.—I quite agree with "E. L. F." that most rosarians must have been very anxious about their Roses. I am very sorry to find them much worse than I expected. I do not think that H. P.'s would have suffered much by the frost if there had been no wind; and as a proof of this Roses here in a sheltered position are scarcely touched where 30° of frost was registered, while those growing in an exposed position with 25° of frost are half of them killed down to the snow and mulching line. Standards are not hurt much where not exposed, but most of them have suffered where exposed to the full force of the wind, and many are quite dead. About 90 per cent. of the dwarfs budded last year are quite safe, therefore I hope it may not be so bad as "E. L. F." surmises for the nurserymen. No doubt they will suffer largely by standards in tender sorts and Teas. Now, as to pruning the injured Roses, "E. L. F." advises us to leave them alone, as if cut a sharp frost might kill them down to the roots; but I not think that 15° would hurt them after they are pruned; in fact, a few frosts after pruning are better than warm days. As a practical Rose grower, I would advise all injured Roses to be cut down the first week in March to sound wood. By cutting thus early bleeding is prevented—a point that is often lost sight of; being cut early, they break much slower

and are therefore much less susceptible to spring frosts. I have seen Roses cut at the beginning of April, and every warm morning for a time after, they may be seen with drops of sap on the ends of the shoots as large as Peas, and dropping on the ground, instead of remaining in the plant. If injured Roses are not cut down they will break very irregularly and weakly, and about midsummer many of the plants will die, or only exist. The Roses most injured here are Comtesse d'Oxford, Horace Vernet, Mdlle. Eugènie Verdier, Cheshunt Hybrid, Alfred Colomb, Marie Baumann, Boule de Neige, and many others. It is very curious to see plants of the same variety, and in the same row, some killed and others safe. Roses have escaped best that are on the seedling Brier, and the Rosa multiflora Russelliana stock (some recently planted on the latter stock), are almost safe, the only exception being Comtesse d'Oxford, which is slightly discoloured. Many shrubs are much injured here—Portugal Laurels, common Laurels and Aucubas, Laurustinus, Deodars and Yews in some cases, also Chinese Privet. *J. Brown, Great Doods, Reigate.*

**Plant Labels.**—Mr. Wolley Dod's letter, p. 237, shows well what hardy plant labels ought to be. Since the prize was offered several useful labels have come to my knowledge which I had not before heard of. I think we ought to have a good exhibition, and in this view would ask any of your renders who are making use of labels at all out of the common way, and all label makers, to send specimens to the Society of Arts, John Street, Adelphi. I should hope that the Society would exhibit all that they receive, old and new, and then hand them over to the Royal Horticultural Society. Perhaps I should explain why the prize was not offered through the latter Society, in whose province the object may seem more properly to be. Having been in years past a member of the Council of the Society of Arts for a considerable time, I was at home in the Society, and knew that there were among its members many with ingenious heads, whose attention had not been called to plant labels, while in the Royal Horticultural Society many of the Fellows knew by experience what labels ought to be, and had already exercised their ingenuity upon them. *George F. Wilson, Heatherbank, Weybridge.*

**Ilex decidua.**—In one of your previous numbers (p. 689, vol. xvi.) you give a figure of Ilex decidua. This is here a common shrub in the rich alluvion of the Mississippi. Its leaves are much smaller than in your figure, which represents a luxurious cultivated specimen, I suppose; but its principal ornaments are the abundant coral-red berries which cover the female bushes throughout the winter (apparently not touched by birds), and which are most charmingly set off and contrasted by the snow covering of the ground. *G. E.*

**The Compass Plant.**—In the paper received lately of January 15 I notice an account of the Compass Plant (p. 74). When common here, years ago (it is now driven out by cultivation in this neighbourhood), I have often examined it with compass in hand. The leaves at their base are arranged, as may be expected, in the ordinary spiral position, but during their development the petiole is twisted so that the blade faces east and west, and its edges point north and south. The stem-leaves, being sessile, show at their base their original position, but their midrib is turned about the middle, or in the small upper leaves, towards the tip, so that the upper part of the leaf assumes the meridional direction, while the lower part remains fixed in its original position. The large flower-heads, on short and very thick peduncles, are almost invariably turned eastward. Sir Joseph Hooker's remark about the appearance of a plain covered with this Silphium from a railroad train is quite correct, and any change in the direction of the road becomes visible at once through the altered appearance of the leaves of the Compass Plant. The equal distribution of the stomata on both faces of the leaf is a matter long known to me, and this species of Silphium may be readily distinguished from all the others by this character. Only S. compositum comes near to it; all the others have a vastly greater number of stomata on the under than on the upper side. But why is that so? In connection with this it is interesting to notice that other Compositæ with vertical leaf-blades have a similar anatomical structure. This is especially the case with Lactuca Scariola—a plant unknown here before, but extremely abundant now of late years on waste places. Its leaves not only assume a vertical position, but also a meridional one, similar to those of the Silphium, though perhaps less pronounced. *C. E., St. Louis.*

**Ixiolirion and Triteleia, &c.**—Before the very severe frost set in I had Ixiolirion tartaricum and Triteleia laxa some 2 or 3 inches above the soil. One night we had 26° of frost—this was before the snowstorm—and when the snow disappeared I quite expected to find these plants dead. I am happy to say they were only slightly scorched, and are now recovering fast. Montbretia Pottsi is coming up strongly. None of these had the slightest protection, and as my situation is very cold, being high on the Mendip Hills, I think we may consider the whole of them perfectly hardy. *Jay Aye.*

**The Proposed Boiler Trial at Manchester.**—The knowledge how to select the best boiler is a consummation much to be desired, and if it were possible to arrive at it through a public trial, a better place for the purpose possibly could not be found than Manchester. There is, however, nothing new in the proposal—it has been tried there and at other places ere now, and the result is understood as having been anything but satisfactory, and the reason why will not be difficult to understand. Your correspondent "Ben," at p. 213, is very enthusiastic on the matter, and wonders that "practical (!) contests are not oftener carried out," and goes on to state that "thousands of pounds are given as prizes for good fruits and showy flowers." He cannot surely wish us to believe that there is any comparison. Good fruits and fine flowers are the result of trials carried out under the most favourable circumstances, while it is impossible to estimate the merits of a boiler in a temporary open air trial, however carefully carried out; satisfactory comparison and trial may be made with almost every other garden requisite except the boiler. Experience gained by actual practice appears to be the only reliable guide in the matter. I think the question of trial or no trial of boilers at Manchester may safely be left to the able superintendent, Mr. Findlay, who has had ample opportunities to judge of its practicability. *G. T.*

**Window Flower Boxes.**—Amongst other specialities in terra-cotta Mr. Matthews, of the Royal Pottery, Weston-super-Mare, has lately introduced some very ornamental terra-cotta window boxes, which must largely supersede the ordinary wooden window box on account of their more durable character. The examples that we have seen (see figs. 51, 52, pp. 276, 277) are strongly made, tasteful in designs and finished off in the moulding with the care that distinguishes Mr. Matthews' manufactures. More than this we need not say in their praise.

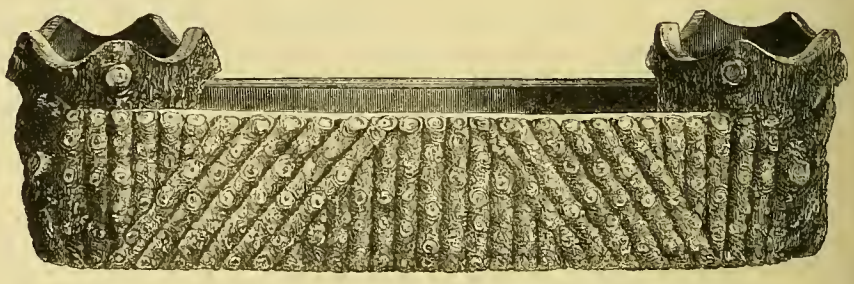

Fig. 51.—A terra-cotta window-box.

**Snowdrops under the Snow.**—Permit me to thank Mr. A. D. for his interesting remarks on early Snowdrops (see p. 214). I trust the northern cultivators will speedily furnish sufficient facts to set the matter of the earlier flowering or otherwise of the Snowdrop north of the Tweed at rest. "A. D.'s" idea that cold fosters growth in the Snowdrop is an ingenious one, and is so far supported by the fact that Snowdrops refuse to be forced, and resent any great amount of heat by declining to flower at all. It would be most interesting and useful if those who will favour us with their experience of the time of flowering of their Snowdrops in the open air would also relate their success or otherwise in their attempts to force it. With us no Snowdrops flower till April 1, and the general crop is never expanded till Valentine's Day, or from that till the end of the month. This season the Crimean Snowdrop has hardly yet (Feb. 15) broken ground. This here is more of a March than a February bloomer. In regard, however, to Snowdrops under the snow, they are fostered by heat, not cold. Snow conserves the heat of the earth to a most unsuspected extent. For example, Snowdrops under the snow during the late severe weather grew away fast in a temperature of 32° or more, while those that were not so protected were exposed to zero. Hardy as the Snowdrop is, it no doubt grows faster in the former than the latter temperature: hence, taking for granted for the present the earlier flowering of the Snowdrop in northern latitudes, the thicker covering of snow may doubtless be the cause of it. Not, however, because the snow is cold, but it conserves so much heat as virtually to keep the Snowdrop warmer in cold climes, where the snow is abundant, than in warmer ones where there is less snow. Neither is the beneficent quality of the snow confined to the Snowdrop. On the contrary, the safety of all the more dreary vegetating northern climates is owing to the warm mantle of the snow. In severe winters the safety of our flocks and herds is ensured by the same means. Were proof of this needed we have only to look at the parched appearance of our grassland and meadows at the present time. Wherever the sweeping wind of January 18 cleared all the snow off the grass there it is bare and brown; but where the snow wreaths laid the thickest there all is green, and already there has sprung forth a fair bite for the flocks and herds. This rapid growth of vegetation under the snow has led some to think that there is not only warmth under it, but manure in it. This, too, is probable. The air is full of smoke, that is, soot particles, and dust and dirt of all kinds, and no sieve could be contrived more admirably adapted for sifting them all out and bringing them down to earth than the closely meshed snowflakes. *D. T. Fish.*

**Linum arboreum.**—"F. W. B.," who speaks, unless I mistake the initials, *ex cathedrâ*, confirms my opinion that Linum arboreum has become a scarce plant in cultivation. The reasons probably are, first, that it is not quite hardy in England, being killed in most parts of the island in severe winters; though I believe that in Cornwall and Devonshire, as well as in Ireland, it would reach a good old age. Secondly, it has generally been confused with Linum flavum, and treated as a very hardy plant, which that is. Thirdly, it has not been generally considered worthy of a place in a limited greenhouse collection, for though it flowers all winter the flowers, like those of other Linums, open only in the sun. Besides, it strikes and grows slowly, as Curtis remarks. The best use I ever saw made of it, as I said before, was for a spring bed; and when plunged in pots in the open border in April and May, I never saw either the flowers or the leaves injured by frost. "F. W. B." asks, whether my plant is the same as his. I enclose a piece of it, and should be glad to know, as I formerly knew it under the name of Linum flavum. *C. Wolley Dod, Edge Hall, Malpas, February* 19. [It is the same. Eds.]

**Justicias.**—Years ago these were great favourites, and used to be grown in almost every stove, but why such valuable decorative plants, as several of the species are, should have dropped out of cultivation I am at a loss to conceive, especially when we consider that they bloom in the winter. Yellow flowers are not very plentiful at any season, and they are much less so all through the dull period referred to; but with a few plants of Justicia flavicoma, a stove or warm greenhouse may be quite enlivened with that very desirable colour, which contrasts so well with brilliant Poinsettias, Sericographis, Euphorbias, &c. Cuttings put in now will make nice stuff by next autumn; but if large plants are required it is necessary to cut back any old ones in stock, and when they break again to shake them out and repot in smaller pots, after which they should have a brisk moist heat to get them to start freely. The best cuttings are those formed from the young growths, although the tips of the old shoots root freely if placed in sandy soil under a bell-glass and stood on a shady shelf in the stove. Justicia speciosa is another useful kind, having good foliage and a nice compact habit, but the next best to the J. flavicoma is J. carnea, that produces very large elongated bunches or spikes of flesh-coloured blooms from the points of all the strong branches. The treatment required for this and others of the species is the same as for those mentioned, and the soil they do best in is a mixture of fibry peat and loam in about equal proportions, to which a free

sprinkling of sharp silver-sand should be added to keep the whole open. For growing Justicias and other stove plants of similar nature I like a pit during the summer, in which they can be plunged in leaves and tan that are gently fermenting, as there they can be easily got at, watered and syringed, and treated more in accordance with their several requirements. By stopping the shoots once about the middle of June well furnished plants may be obtained, and to induce these to flower freely the thing is to aim at getting the growths ripened. This may easily be done by full exposure to the sun and light during the autumn, and by giving plenty of air at all times when the weather is warm and favourable. Except greenfly, which sometimes get on the young leaves, Justicias are not subject to insects, and therefore give little trouble in keeping them healthy and clean. *J. S.*

The Frost and Stocks.—I fear the severe weather has dealt a terrible blow at all our beautiful winter Stocks, and that few are left alive to give bloom. Kinds that endured the severe cold of the previous winter have utterly collapsed under the terrible weather we had last month. It is a great trial to market growers who grow the Brompton and the Queen Stocks largely to supply cut flowers. It is also a blow to those who grow for seed. If a few more such winters were to come we should lose our winter Stocks altogether, and yet we find writers asking "What has become of many old favourite plants?" My reply is, "Ask the hard winters," and echo will answer "Where?" *A. D.*

Hamamelis arborea.—Having had the pleasure some few days ago, when walking through the Royal Exotic Nursery, of seeing this beautiful new hardy deciduous shrub (fig. 38, p. 205), I cannot refrain from inditing a line or two in its favour. To say that the individual flowers are exceedingly interesting, curious and pretty, is to give but a faint idea of what it is like; its charming and attractive appearance, together with its free-flowering habit, drew out the involuntary ejaculation, "That's a good thing; what is it?" Judging from the specimen seen I should say that, independent of its proving to be a grand acquisition for the pleasure-grounds, it may also in a young state prove very useful for growing in pots for decorative purposes; but this opinion must be taken for what it is worth, as taste, like a great many other things, varies. There can, however, be but little doubt that it is destined to become one of the most popular shrubs that has been introduced into our gardens for some considerable time—at least, such is the opinion of *J. Horsefield, Heytesbury.*

Galanthus Redoutii, &c.—Several years ago Mrs. Danford kindly sent me some mixed bulbs collected in the Cilician Taurus. Amongst them were five or six which I took be some species of Scilla or Ornithogalum; these have only this spring recovered sufficient strength to bloom, and prove to be the pretty and very distinct little Galanthus Redoutii, which from its foliage and mode of growth no one would take to be a Snowdrop till the bloom appears. Muscari lingulatum, another choice little gem which I owe to Mrs. Danford's kindness, is just opening its lovely sky-blue flowers. *H. Harpur Crewe.*

Soot and the Winter.—Soot as a manure is generally considered good, but soot in the air and on the foliage of plants I, for one, protest against. I have for some years been trying to get up a collection of Ivies, but every winter they get spoilt, and the last frost has quite killed H. Rœgneriana. I consider the cause to be that the soot in the atmosphere injures growth in summer, so that the plants are not so robust as those in the country. Such things as Stachys lanata, Cerastium tomentosum, and Box edging, die constantly. Sedums are apt to die, as S. sexangulare has this winter. A curious thing has occurred with this. Ten years ago we had S. acre aureum for a margin plant in great quantity; at first it changed to the green form, and then gradually its place was taken by Sedum sexangulare. When I first discovered patches of the latter I pulled them up, but gradually S. acre vanished and S. sexangulare took its place, it was at first very vigorous, but it is now almost all dead. *J. Croucher, Sudbury House, Hammersmith.*

Petasites—At p. 212 your correspondent, Mr. Richard Maries, speaks in praise of Petasites (Tussilago) fragrans alba. It strikes me that Mr. Maries may be alluding to P. alba, a totally distinct species from P. fragrans. I have grown it for years, as its white flowers come in usefully when scarcely anything else is in bloom. It is tidier and less weakly in its growth that P. fragrans, but is sadly inferior to it in this respect, that it has little or no scent. *H. Harpur Crewe, The Rectory, Drayton-Beauchamp, Tring.*

Early Bird Potato.—Probably Mr. Morgan in asking his question about this Potato is not aware that it is but an Ashleaf, and differs nothing in earliness or general character from that old kidney. I grew it here the first year it was sent out, having seed direct from Mr. Turner, and tried it with the old Early Lemon, a good old Ashleaf Kidney, and the Kentish Ashleaf of the strain grown a few years since at Chiswick, and it was exactly alike in all respects except that I found the old Lemon Kidney rather the best cropper. I have kept the Lemon Kidney pure since then, but the Early Birds went in with the Ashleaf, as I could not consistently determine them to be anything else. The person who selected it, but whose name I now forget, stated at the time it was first exhibited that it was a selection from the Ashleaf, and we know that selections in Potatos mean nothing. No doubt it is a good and true strain, and in that sense merits approval. *A. D.*

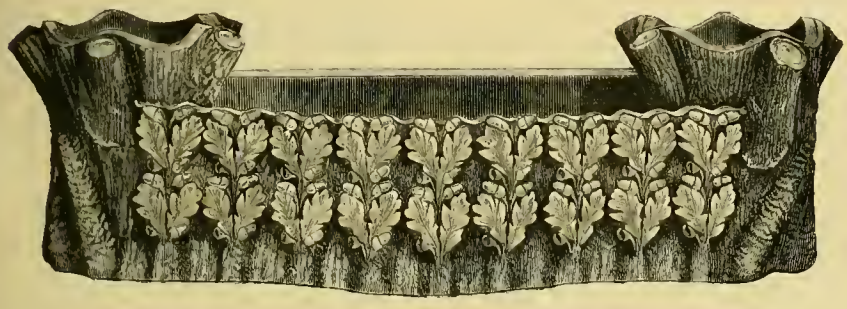

Fig. 52.—A TERRA-COTTA WINDOW-BOX. (SEE P. 276.)

Acer Negundo variegatum for Forcing.—Acer Negundo variegatum is a strikingly ornamental plant outdoors during the summer on account of the beauty of its foliage, but delicate as are the tints then, when the leaves are young, they are more so during the early spring, when the plants are gently forced, which brings out the variegation better than it is ever seen in the open. We often use them here between Camellias growing in large vases, where they have a capital effect, the light foliage of the Acers showing up in pleasing contrast with the heavy deep green of the Camellias and their red flowers, and forming quite a relief, as they do also if worked in here and there on a greenhouse stage among gay colours, which they help much to tone down and subdue. For this purpose small twiggy plants are best, arranged so that the loose branches peep out above others, or standards may be used in the same way; but these are too formal unless placed as the centres of groups or at regular distances to show up of themselves. *J. S.*

Pruning and Thinning Epacris.—Perhaps there is no class of plants so largely grown in private gardens that are worse managed than Epacrises. The great number of naked stumps and weakly growths that we so frequently see is the result, perhaps not of absolute neglect, but of procrastination in pruning and thinning. Plants in flower are cut as low as they are required at the time, and in due course they break away into growth, and are left unnoticed until it is thought a pity to cut them back to within two or three eyes of the base of the growth made the previous year, which should always be done if plants are to be kept in a decent presentable state. Old plants, too, are often a huge thicket of weakly, flowerless shoots, which could be improved by judicious thinning, which means having fewer but stronger shoots and a full crop of flowers. It only requires the courage to thin out old plants sufficiently to convert them into useful stock for supplying cut flowers, and they might be brought forward in advance of more valuable plants. Now is the time to see to work of this nature, as it is by starting the plants into early growth in the spring that the flowering period is hastened. *Cultivator.*

Dryas octopetala.—Respecting Mr. Dod's remarks at p. 213 on Dryas octopetala and others, I would say that it is not unusual for the plants to turn brown during winter. This is most certain to happen to some extent, even when kept comparatively dry in pits and frames; but its recovery in spring, from my own experience, has not been slow, but otherwise—it soon becoming a dense carpet of green: a raised position, somewhat shady, on the rock, and well drained, suits it best. D. Drummondi I have found to be almost deciduous; D. tenella forms more compact tufts than either of the others, and seems very closely allied to D. octopetala minor. I have also found it named D. intermedia, which I believe it is synonymous with. I would advise Mr. Dod to place a pane of glass in a sloping position over his plants, so as to keep them somewhat drier at the root; also a sprinkling of sandy peat among the twigs of his plants previous to pegging down, and abundant supplies of water in spring. *E. Jenkins.*

Æchmea Marie Regina.—This fine Bromeliad has flowered here this season. It threw up a flower-stalk about October last, but the dull weather prevented it from flowering so freely as it might have done. The bracts on the stalk, which is about 3 feet long, were really magnificent. I should like to know if this is the first one that has flowered in the North. *James Moir, Links House, Montrose.* [We should think not. Eds.]

Habrothamnus elegans.—For the embellishment of conservatories or greenhouses this, I think, takes first rank, lasting, as it does, in full beauty nearly the whole of the winter, and affording more or less flower the entire year through. To induce it to do this, all that is necessary is to give it plenty of good soil to grow in, which, with judicious thinning and shortening back of the shoots, causes it to throw out plenty of others, and from the ends of all such the blossoms come and form long trusses, the weight of which arches the slender branches over in the most graceful manner, and produces a very striking and pleasing effect. Although Habrothamnus elegans may be regarded as a climber, it is more suitable for covering a large wall surface, or for forming a tall bush planted out in a bed, or for training up a pillar, for either of which purposes it is specially adapted, its natural habit rendering it suited for so growing where it can have a little support. A plant we have here filling 100 square feet of panel is and has been quite a sight for months past, the entire face being covered with bloom, as it always is at this season, and the cutting at it keeps up a constant succession. When planted, the narrow border was prepared by being well drained and then filled with rough peat and turfy loam in about equal proportions, in this the plant grows vigorously, but being a gross feeder, and the space for its roots restricted, we keep it well supplied with liquid manure. Not only is this Habrothamnus fine to grow in either of the ways mentioned, but it is equally serviceable for pot culture, as it may be restricted to almost any size by stopping the strong shoots and spurring any back that have flowered, before starting the plants after resting. H. Newelli, a kind of more recent introduction, is also very desirable, and there is a variegated variety of H. elegans, the leaves of which being marked with creamy white, show up in pleasing contrast with the bright rose of the flowers. Cuttings of any of these sorts root freely if taken off young and with a heel or portion of the bark of the old wood attached, as then they do not damp or rot off at the base. *J. S.*

Roses from Cuttings.—The chief danger which besets autumn-made Rose cuttings put into the open ground is found in the cold and too often wet condition of the soil in the spring, just at the moment when it is of the first importance there should be a genial warmth to assist in the process of rooting. If this is wanting just then roots fail to issue, and the cuttings, being exhausted of all their sap, soon die. On the other hand, the sudden excitement of heat in the spring is well calculated to produce the same result by driving the juices of the cuttings into premature growth ere the base of the cuttings are naturally prepared to emit roots. The result in this case is that the cuttings die also. I have found the most satisfactory results to follow from the putting of Rose cuttings into a soil-bed in a cool house where there is no fire-heat, but where the glass during the winter simply protects from cold winds, rains, and snow, but not from severe frost. This, however, does no mischief to well-ripened wood, even though, as has been the

case here, both plants trained to trellis and cuttings have been exposed to 20° of frost. It is evident that the wood of even the tenderest Roses under glass is better ripened, and is therefore hardier. It is also certain that protection from fierce winds and snow is of the first importance in the preserving of Roses through our winters. With respect to cuttings, it so happens that with the gradually increasing warmth there is a gradual bud development, whilst in the drier soil and shelter of the house the callusing process seems to be going on all through the winter. About March, with the increase of sun-heat, the rooting process begins, and goes on steadily, the most mature wood taking precedence, and in a few weeks it is found that almost every cutting has become a rooted plant. Soon after they may be transplanted into the open ground with advantage or be potted up. *A. D.*

**Boiler Trial at the Great Manchester Show.**—Pressure of occupation has prevented me hitherto from entering into this matter; one has also a wholesome dread of getting into hot water. There seems to be a peculiarly sensitive or touchy vested interest in boilers, for hardly can one advert to them in any way than hiss!—whizz!—and there is considerable danger of scalding; and thus the Birmingham and other trials, though conducted with as much care as the mud and water and limited time admitted of, were generally thought to be unsatisfactory. The same has been affirmed of other trials at Manchester. No one can peruse the thoughtful letters of "Ben" and others without seeing that the mere trial bristles with difficulties, while the judging will be hot work for the most skilful in August. "Ben's" ideas of having the pipes all of one make and of equal thickness is very important. The arrangement of the pipes with bends and T's, as in actual use, is also a valuable suggestion. However, assuming that the pipes are of the same quality, and arranged alike in each case, it matters less how they lie. "Ben's" suggestion of the standard of 50 feet of 4-inch pipe to every square foot of boiler exposed to the action of the fire, reads well, but would, I fear, prove difficult to apply in practice. What is meant by heating surface? The whole boiler, through all its fire-ways, I presume. Well, it often happens that those with the largest heating surface send forth the least heat. The degree of heat may have far more effect in sending forth hot water than its mere amount. Would not a water test be easier applied than an iron one? Given to each boiler the same amount of water to warm through an equal length of pipe, surely the boiler that could heat it the soonest with the least fuel would be the best, provided always it could also keep it warm for eight or ten hours at a stretch. It is not needful to go beyond this in testing what may be called the staying powers of boilers. A boiler that can do its work for, say, ten hours without whipping or spurring—that is, without stoking—suffices for all practical purposes in horticulture. The water test is easily applied; and that, with the coal or other fuel consumed, and the staying powers of the furnace and boiler, seem to be the most vital points. What does "Ben" mean by flue surface? Fire-ways of boiler, I presume, and not height of chimney or back flues. But either way, the point is one for the manufacturer more than for the juror. If the flued boilers save fuel, as is generally affirmed, they would be most likely to carry off the prize; but if they neither saved fuel nor sped the journey of the hot water, they would fail. So much water at a given temperature, in the shortest time, at a given place, with the least expenditure of fuel, and these results ensured in continuity, with moderate attention, are the main points that practical men desiderate in the best boilers. *D. T. Fish.*

**The Goshawk Peach.**—Kindly allow me to endorse all that Mr. Everson has said at p. 211, respecting this excellent Peach. It is of good constitution, a free grower and bearer, the fruit large and handsome, and of delicious flavour when well ripened. *H. W. Ward, Longford Castle, Salisbury.*

**Grevillea robusta.**—Considering the great beauty of this as an ornamental plant, the wonder is that it is not more grown for the embellishment of dinner-tables, or purposes of that kind, for which its habit and entire character render it specially suited, as in general appearance and beauty of foliage it is very Fern-like, its leaves being remarkable for the fineness of their divisions, and the elegant way they arch and droop over. The best way to get nice young plants well feathered down is to sow seed any time now in heat, and to get it to germinate freely and quickly it is a good plan to soak it for a night in warm water by standing a pan containing it on the hot pipes in a stove, which softens the hard shell and allows the germ to get through. Sharp sandy soil is the best to sow in, and this should be kept regularly moist by being covered with damp moss, or a piece of glass to prevent evaporation, as all seed come best when they have not to be watered, which often causes many to rot. To have the young plants short-jointed it is necessary to keep them up near the glass, where they can get a gentle moist heat, and if shifted on into 6-inch or 7-inch pots they will make handsome furnishing stuff by the autumn for use during winter, when they will be of great value for saving other plants of a more tender nature. *J. S.*

**Roses.**—Mr. Fish puts a fairly roseate aspect upon the condition of the Roses in his locality since the recent severe weather. Perhaps ere this he has had cause to amend his estimate of damage, but if he has not then is he and his neighbours more fortunate than some others. A well-known grower told me last week that he dreaded to go into his Rose quarters, they were so severely hurt; and since then another grower, who has several acres of old bottoms of the common China not exposed to the wind and grown to furnish cut flowers for market, has said that all his wood is killed to the ground line, and the prospect of a crop of flowers gone for this season. Probably many large growers who are heavy sufferers are preferring to say nothing about their losses, because it may lead customers to assume that orders could not be executed. It is no uncommon circumstance for special winters to prove injurious to special plants, as last winter was to Apple and Pear trees in this and other districts, and this winter has been to Roses. As in his remarks upon the "Decadence of the Rose" Mr. Fish seems to have been somewhat in a chaffing mood, I can hardly imagine he was serious in asserting that if we want a spray for a lady's dress or hair we must go to the woods or hedgerows to find it. Roses, as it happens, do not grow in sprays, unless by that designation is meant a drooping branch some 2 or 3 feet long; but surely no one, not even Mr. Morris, would regard that as femininely artistic. The ladies themselves are not of Mr. Fish's opinion, but give a very decided preference for half expanded flowers of Teas and Mosses, or of some of the sweetest of hybrid perpetuals. It is a mistake to assume that all Roses are big because exhibition blooms are. If we grow annually 100,000 really big show flowers, we grow fifty times as many that are smaller and even more beautiful. *A. D.*

**Grouping Plants for Effect.**—The remarks at p. 82 appear to me to go so fully to the kernel of the matter, and to be so pregnant of instruction to all who are concerned with flower shows, that I think the opportunity should not be lost of still further ventilating the subject. It would occupy too much space to traverse the whole scope of the subject minutely, while, upon the other hand, an abridged elucidation of the more important points may be none the less intelligible because they are brief. The primary object of these exhibitions was to educate and promote a more artistic system of grouping or arranging plants, and in this sense, says the writer, we have to deplore a comparative failure in the results. The writer then goes on to pay a well-deserved compliment to Mr. John Wills for the useful practical lessons he has given to the rising generation in the art of grouping, and finally ends by stating in effect that we are still little better than Mr. John Wills found us ten years ago. This is a melancholy picture, but a true one. But the writer does not end here. He goes on to delineate the present system of grouping as exemplified at flower shows; gives the local reporter a dig in the ribs, and, finally, ends by asking plant groupers to strive in the future to see how much they can do in producing a charming arrangement rather with few plants than with many, and to endeavour to obtain a maximum of beauty and excellence with a minimum of stiffness and formality—how far they can make use of inexpensive material instead of wasting costly plants, and so on. Now it would be impossible for any one more thoroughly to strip naked the weak points of this "so-called grouping for effect" than this writer has done. The real fact is, the prizes are awarded to the groups containing the most valuable plants, and artistic grouping has to go to the wall. And so long as this system of judging is allowed to pass unnoticed—so long as the mere intrinsic value of a plant is considered in preference to the form or habit of a less expensive though more elegant one—so long will plant groups and those who arrange them remain what they now are. Nay, I will go even further, and state without fear of contradiction from those who are capable of judging, that it is an absolute impossibility to produce artistic effect with the majority of plants that are employed generally in forming these groups. More than this, there is a kind of local conventionalism imported into the system at some flower shows which precludes the possibility of any innovation or improvement in the style of arrangement. To show that I am not writing from chimerical ideas, I may state that I was eye-witness to a case recently which proves what I say to the letter. There were three groups of plants set up for competition, the conditions, as stated in the schedule, being "quality and general effect," which the competitors had to comply with. As to the value of the plants in the 1st prize group no one could object, but to say that there was the semblance of effect in the arrangement would be to invert our present ideas of taste in the grouping of plants. The exhibitor was not only careful to produce a clearly-defined level surface, but he also took the precaution to have his plants (which were admirably cultivated) suited to the purpose. A Fern frond or anything else that transgressed by lifting its head above its neighbours was smoothed gently down to the desired position, and all this to create effect! It would be a grim satire to call this art in the arrangement of plants. Is the exhibitor who finds he can win in this way to blame? He adopts the recognised custom of the locality he resides in, and small blame to him for not altering his style of arrangement as long as he finds judges ready to award him a prize. *W. Hinds.*

**Frozen Potatos.**—I fear there are very many readers of this paper who will regret that the discovery of the "water cure" as applied to frozen Potatos comes too late. Had it but been known earlier that the immersion of frozen Potatos in cold water for a few days, or as another witness has said, a few hours, would take out the frost without harm being done, how many not only would but could have tried the experiment. I fear that there are degrees of frost as applied to Potatos, and that it is in these varying degrees Mr. Gordon found his success whilst others would have found failure. The most dangerous action of frost upon Potatos is that which is aided or propelled by the active atmosphere. Wherever during the recent severe weather the air could get to the tubers, however dry and hardened otherwise, the result was destruction, partially or entirely. Potatos so affected were, after the thaw, found to be utterly disorganised, the cells or tissue burst or rent asunder, and the imprisoned water in the tubers (about 70 per cent. of the whole bulk) liberated; so that from being a firm body it is transformed into a corrupt mass of pulp. All this disintegration is not the product of thaw, but of the frost, and what the frost has once done it is evident no amount of immersion can undo. The burst water-pipe is as much the result of the expansion produced by frost as is the burst tissue of the Potato tuber, and thaw in both cases simply makes the damage apparent. To expect that immersion in cold water could heal the damaged tuber is, I fear, as reasonable as it would be to suppose a similar immersion would mend the burst water-pipe. Mr. Gordon's Potatos being in pits were so far excluded from atmospheric action; but being to some extent damp, it is probable that the moisture about the tubers was more frozen than the flesh of the tuber, hence the result after immersion, which was thus no miracle. *A. O.*

## Notices of Books.

**The Potato and its Cultivation.** By A. W. Crews. (*Field* Office.)

Another book upon the Potato! How many more are there coming, and what useful purpose such essays as this one is to serve we ask almost despairingly. If all the matter that has been written about the Potato for the past two years in this journal alone were put into a book readers would be very much astonished at the amount of useful information it would contain, and how far it would overshadow as a valuable book of reference the somewhat thin and bald essay upon Potato culture that is before us. Perhaps if the author had been a reader of the *Gardeners' Chronicle* he might have entertained a diverse opinion from that expressed in the preface, where he intimates that "British culturalists, as a rule, only possess a knowledge of the outer rind of the matter"—a pleasant compliment certainly. There is also a charming bit of conceit in the remark, "He ventures to presume that faults found in similar works will not be found in his book," which reads very much like the old proverb of pot calling kettle black. A sensible writer would have left the critic to find out his merits, if he has any, without striving to exalt them by decrying those of others. Based in its construction upon an old book, it has what might be termed a Potato Genesis and Exodus, that is, chapters are devoted to its history botanically, and its introduction into Europe, for which information the writer is largely indebted to Sir J. D. Hooker and Dr. Lindley, all of which, however, has little bearing upon Potato culture of the present day.

Early in the book we have a list of kinds "considered to be the very best," which will make some of our Potato growers stare. It includes four Ashleafs proved at Chiswick to have been identical, and several others, such as Early Kemp, Early Shaw, Coldstream, Red Regent, Redskin Flourball, Handsworth, Paterson's Red Kidney, Hundredfold Fluke, &c.—kinds that had a certain reputation some ten or more years since, but which are now almost forgotten.

Valuable indeed is the author's recommendation of kinds, for under the heading of Hundredfold Fluke he says:—"Very productive, but on many lands waxy and worthless," and yet he adds, "Very handsome and a good cropper. It is grown extensively throughout the kingdom for market." No statement could be more incorrect or commendation more valueless. In commending several American kinds the author relies upon the veracious descriptions found in trade lists. The opinion of a *bonâ fide* grower is always valuable, but such information is poor stuff to embody in a two-shilling book A list of all the sorts shown at the International Potato Show of 1879, culled without acknowledgment from a contemporary, will perhaps lead the reader to wonder, as it did us, how the author reconciles his list of "very best" kinds with what is told here. Probably the list was an afterthought, inserted as a careful piece of packing and nothing more.

A chapter on "Sprouting" carries us over ground that has been pretty well trod in these and other pages and far more fully. There is nothing new here. Our author is dead against the practice of cutting tubers for seed purposes, and omits to tell us what we shall do with large tubers, that are too big for single sets, and would if planted whole result in an enormous waste of seed power. He gives two quotations from the evidence of others, but the writer of a Potato book should at least be able to give an opinion derived from practical experience. A chapter on "Soils" is largely made up of a familiar opinion on the subject given by Mr. Shirley Hibberd, the author's own observations being limited to Lancashire. Mr. Baines and other writers have long ago told readers of this paper all that is to be told about Potato culture in that part of the kingdom. The remarks about "Planting" are simple and commonplace. It would be difficult to find a garden labourer in the United Kingdom that does not know as much or more about this matter than is told in the book. A chapter upon "Manures" is largely occupied in contrasting the relative merits of covered and open yard manures, and with a table of results obtained from diverse manures and mixtures, given by a clergyman some years since, and in which a mixture of soot and salt occupies the highest place. The special Potato manures of the present day get no mention. A few lines deal in a somewhat offhand fashion with the important element in Potato culture of "earthing-up," and the reader is left pretty much in doubt whether, in the author's opinion, it is good to earth-up or not.

From this topic he glides off in the most erratic fashion to deal with the "Disease." After quoting Dr. M. C. Cooke and De Bary, the reader is treated with a quotation from the *Journal of Horticulture* of 1867, which the author evidently thinks important, and which embodies a profound belief on the part of the writer that electricity is the agent which produces the disease. It is not our friend, Mr. Fenn, who is thus quoted. In regard to this matter we have lived a few years since that opinion was written, and know well how worthless it is. Mr. Shirley Hibberd is again here largely laid under contribution, the quotation being based upon that writer's favourite text—"Sunshine." The author's conclusions under the head of "Disease," are to grow disease-resisting kinds, and to avoid planting in localities where there is more than an average rainfall. "Storing" serves as a theme for the introduction of a dissertation upon the value of lime for assisting to keep Potatos sound. With respect to this matter we may take it for granted that if Potatos are properly stored in a sound dry state they will keep sound and dry without the aid of lime, whilst that article will not under any conditions keep unsound Potatos from decaying. Some quotations are given to show that whilst certain Potatos stored with lime were all sound, those stored without it were all diseased. This reads very like the advice of the quack medicine mongers, who tell the public that only by taking their potions can it hope to live. Somehow or other the vast bulk of our Potatos are kept sound without lime, let the author say what he may.

A final chapter is devoted to the raising of new varieties; but here nothing more novel is told than an opinion so old as that of the late Mr. Knight, and some other writer not named, who, judging by his information, must have lived even before Knight's day. Not a word is there about cross-fertilisation; we are only instructed to adopt the haphazard method of collecting the seedballs which have fallen from the plants. Yet there is something original, and it is found where the reader is told that, no matter what the season may be, whenever the seedling tubers sprout or start growth, they should be planted at once. Such useful information gives some recompense for the cost of the book. To this is added something quite wonderful in the quotation from the *American Agriculturist* of thirty-one uses to which the Potato may be put; amongst which we learn that it will make excellent blacking, cure the scurvy, make coffee, and other curious things. We are singular enough to wish from the Potato only good food, whilst the utilisation of all these virtues may well be left to the ingenious devisers of wooden nutmegs. With singular inconsistency the author, after ostensibly writing a book in favour of the Potato, concludes with strongly recommending the Chinese Yam as a substitute for our favourite esculent. Rather late-in-the-day advice this, but it is in admirable keeping with what other is offered. It is but charitable to suppose that the author reads little of our garden literature, or is not aware that other books upon the Potato have preceded his.

—— *The Illustrated Book of Pigeons.* By Robert Fulton; edited by Lewis Wright.—Messrs. Cassell are issuing, in monthly parts, a new edition of this work with characteristic illustrations in colour. The introduction contains just such a vindication of the pursuit of pigeon fancying as florists are wont to make use of, and claims for the production of oddities and monstrosities the pursuit of "ideal beauty!" The scientific interest of these productions is very great indeed, but as to their beauty—that is indeed often ideal.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON.*
For the Week ending Wednesday, Feb. 23, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Feb. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 17 | 29.69 | −0.13 | 40.9 | 34.0 | 6.9 | 37.9 | − 0.8 | 36.2 | 93 | E. N.E. | 0.02 |
| 18 | 29.83 | +0.01 | 45.0 | 39.0 | 6.0 | 41.9 | + 3.1 | 39.4 | 91 | E.N.E.; N.N.E. | 0.00 |
| 19 | 29.91 | +0.09 | 41.5 | 36.8 | 4.7 | 38.1 | − 0.7 | 36.2 | 92 | N.E. | 0.01 |
| 20 | 29.99 | +0.17 | 38.0 | 34.5 | 3.5 | 36.6 | − 2.3 | 35.2 | 95 | N.E. | 0.26 |
| 21 | 30.07 | +0.26 | 35.0 | 30.3 | 4.7 | 32.6 | − 6.4 | 30.4 | 92 | N.E.; N. | 0.30 |
| 22 | 29.98 | +0.17 | 35.0 | 30.3 | 4.7 | 33.0 | − 6.1 | 31.5 | 94 | N. | 0.00 |
| 23 | 30.01 | +0.20 | 35.2 | 32.2 | 3.0 | 33.4 | − 5.8 | 31.6 | 93 | N. | 0.48 |
| Mean | 29.92 | +0.11 | 38.7 | 33.9 | 4.8 | 36.2 | − 2.7 | 34.3 | 93 | N.E. | 1.05 |

Feb. 17.—Rather dense fog till near noon, and again at night.
— 18.—Heavy, dull, overcast, quiet day.
— 19.—Overcast all day. Gloomy. Slight rain at night.
— 20.—Heavy, damp, dull morning. A cheerless day.
— 21.—Snow on ground to half an inch in depth; it was several inches in depth north of London.
— 22.—Dense wet fog till towards noon. Dull black sky at night.
— 23.—Dull; no fog. A little snow began to fall at 10 A.M., and melted as it fell till the evening, when it fell more thickly, and snow to the depth of 1½ inch was on the ground at midnight.

London: *Atmospheric Pressure.*—During the week ending February 19, in the neighbourhood of London, the reading of the barometer at the level of the sea increased from 30.07 inches on the morning of the 13th to 29.72 inches by 3 P.M. on the 6th; after this the reading increased, and at the end of the week was 30.11 inches. The mean reading at the level of the sea was 29.92 inches, being 0.36 inch higher than last week, and 0.01 inch below the average for the week.

*Temperature.*—The highest reading of the week was 45° on the 18th, the next highest being 44°.8 on the 16th. On the 14th the temperature never rose above 38°.7. The mean of the seven high day temperatures was 41°.6. The lowest reading in the week was 28°.6, on the 13th, the next lowest being 32°.3, on the 16th; on the 18th the lowest was 39°. The mean of the seven low night temperatures was 34°.5. The greatest range of temperature in one day was 12°.5, on the 16th, the next greatest being 10°.5, on the 13th; the least range was 3°.1, on the 14th. The mean of the seven daily ranges was 7°.1.

The mean daily temperatures were 34°.8 on the 13th, 37°.7 on the 14th and 15th, 38°.4 on the 16th, 37°.9 on the 17th, 41°.9 on the 18th, and 38°.1 on the 19th. On the 13th, 14th, 15th, 16th, 17th, and 19th the mean temperatures were respectively 4°.1, 1°.1, 1°, 0°.3, 0°.8, 0°.7, below their averages. On the 18th the mean temperature was 3°.1 above the average.

The mean temperature of the week was 38°.1, being 1°.5 lower than last week, and 0°.7 below the average of the corresponding week for sixty years.

The highest reading of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, was 83° on the 16th, the next in order being 66° on the 17th, 59°.2 on the 15th. The lowest readings were 44°.5, on the 14th, and 49° on the 19th. The mean of the seven daily readings was 58°.1.

*Rain.*—Rain fell on two days, the greatest amount being 0.30 inch on the 15th; the total amount in the week was 0°.5 inch.

England: *Temperature.*—During the week ending February 19 the highest temperatures recorded were 53°.8 at Birmingham, 53° at Truro, 52°.6 at Plymouth; at Sunderland the highest temperature was only 40°, at Bradford 42°.7, and at Hull and Leeds was 44°. The mean from all stations was 46°.9.

The lowest temperatures were 27° at Hull, 27°.5 at Norwich, 28° at Nottingham and Cambridge, 28°.5 at Leicester; at Truro and Liverpool the lowest was 34°. The mean from all stations was 29°.8.

The range of temperature during the week was greatest at Birmingham, 24°.2, the next in order being Leicester, 23°.5; Plymouth, 21°.9; and Bristol, 20°.8. The smallest range was at Sunderland, 8°; at Leeds, Bradford, Hull, and Liverpool the range did not exceed 12°. The mean from all stations was 17°.1.

The mean of the seven high day temperatures was highest at Truro, 50°.6; the next highest being 49°.5 at Plymouth. At no other station did the mean exceed 45°. It was least at Sunderland, 38°.7; Bradford, 39°.3; and Leeds, 41°. The mean from all stations was 42°.9.

The mean of the seven low night temperatures was least at Hull, 33°.1; the next in order being Bradford, 34°, Norwich, 34°.1, and Wrottesley, Leeds, Sunderland, 34°.4. The mean from all stations was 35°.4.

The mean daily range was greatest at Plymouth, 10°.8, the next in order being Bristol, 9°.7, Truro, 9°.2; the least mean daily ranges were 4°.3 at Sunderland, and 5°.2 at Liverpool, and 5°.3 at Bradford. The mean from all stations was 7°.5.

The mean temperature for the week was highest at Truro, 45°.6; the next in order being Plymouth, 43°.7; Birmingham, 39°.7; Bristol, 39°.6; Brighton, 39°.4: it was least at Sunderland, 36°.1, and at Bradford it was 36°.2. The mean from all stations was 38°.8.

*Rain.* — Some fell at all stations, the greatest amounts were—Leeds, 1.55 inch; Plymouth, 1.40 inch; Brighton, 1.34 inch; Truro, 1.27 inch. At Blackheath, Cambridge, Norwich, and Wrottesley the amount did not exceed 0.55 inch. The mean from all stations was 0.92 inch, and the average number of days on which rain fell was four. *Fog* prevailed on the 15th at Bradford, on the 16th, 17th, and 18th at Cambridge, and on the 16th, 17th, 18th, 19th at Wrottesley.

Scotland: *Temperature.*—During the week ending Saturday, February 19, the highest temperatures recorded were 43° at both Leith and Greenock, 42°.5 at Edinburgh, and 42° at Dundee; at Glasgow the highest temperature was only 38°. The general mean was 41°.2.

The lowest temperatures were 25° at both Dundee and Greenock, the lowest temperature at Aberdeen was 31°.1, and at Leith was 31°.2. The general mean was 27°.9.

The mean of the week was greatest at Leith, 37°.1, the next in order being Aberdeen, 36°.4. The general mean was 35°.4.

*Rain.*—The largest amount fell at Edinburgh, 1.66 inch; the next in order being Greenock, 1.54 inch; Aberdeen, 1.36 inch: the smallest was 0.48 inch, at Leith. The general mean was 1.17 inch.

JAMES GLAISHER, F.R.S.

## Answers to Correspondents.

Addresses: *S. B.* Mr. E. R. Cutler, Secretary Gardeners' Royal Benevolent Institution, 14, Tavistock Row, Covent Garden, W.C.—Mr. J. F. McElroy, Secretary United Horticultural Benefit and Provident Society, The Gardens, Moray Lodge, Camden Hill, Kensington.

Azaleas: *Jacques.* Pot them as soon as they start into growth; that is, after they have had a slight rest after blooming.

Double Tuberoses: *C. H.* The roots should be potted in small pots of rich light soil as soon as re-

ceived, and placed in heat, and when well advanced shifted into 6-inch pots for flowering. The plants should be kept in heat till they flower, and placed well up to the light. They should grow about 3 feet high, and bear on each stem from fifteen to twenty flowers. Others may be planted later for succession.

GARDENERS' ROYAL BENEVOLENT INSTITUTION. — Several communications on this subject are unavoidably crowded out of our present issue; but, with scarcely an exception, they are unanimous in support of the Institution.

EATING: *E. Holliday.* No. 1, undoubtedly.

NAMES OF PLANTS: *J. Robson.* We failed to recognise the Apple, and never undertake to name florists' flowers, with which Camellias are included. There are too many of them. — *Jacques.* Anemone apennina.—*D. P.* 1, Hypnum cupressiforme; 2, H. tamariscinum.—*J. M.* Narcissus Pseudo-Narcissus, var. minor.—*S. Taylor.* 6, Pteris umbrosa; 7, Veltheimia viridifolia, pale from blooming in winter. The others next week.—*J. G. N.* 1, Lachenalia tricolor; 2, Doodia caudata.—*J. G.* 1, Hymenophyllum tunbridgense, certainly; 2 is very imperfect, but appears to be H. Wilsoni; 3, Asplenium trichomanes multifidum; 4, Polypodium vulgare semilacerum. Neither of the two last are very common.—*W. D.* 1, Blechnum corcovadense; 2, Azalea indica, var., which of the white ones we cannot attempt to say; 3, Asplenium ebeneum; 4, Azalea amœna; 5, Pteris hastata macrophylla; 6, Adiantum formosum.—*B.* Apparently Odontoglossum odoratum, but possibly a small form of O. gloriosum: they run very near together.—*J. H.* Cyperus alternifolius variegatus.—*G. G.* Testudinaria elephantipes.

NERTERA: *Jacques.* It grows readily in a close frame, if started in moderate warmth, and requires to be kept rather moist. It grows well in peaty soil.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

H. THORNTON & CO., Fulham, S.W.—Flower, Vegetable, and Farm Seeds.
A. D. COWAN & CO., 114, Chambers Street, New York —Flower and Vegetable Seeds, &c.
WILLIAM CUTLER, Barwick Road, Leacroft, near Leeds—Vegetable and Flower Seeds, &c.
R. W. PROCTOR, Chesterfield—Agricultural, Flower, and Kitchen Garden Seeds.
DUTRY-COLSON, 12, Rue des Champs, Ghent—Horticultural Implements.
MAX DEEGEN, JUN., Köstritz, Germany — Dahlias, Gladioli, &c.
ELLWANGER & BARRY, Mount Hope Nurseries, Rochester, N.Y.—Select Roses.
CHARLES WILSON, Birmingham Road, Warwick — Kitchen Garden and Flower Seeds.

COMMUNICATIONS RECEIVED:—J. B. J.—G. M. (next week). —A. D.—J. Bayliss.—W. H.—J. M. J.—G. M.—A. D. M.—S. H.—A Young Gardener (next week).—Broughty Ferry.—H. W. W.—R. C.—J. D.—D. C. P.—H. J. E.—B. S. W.—R. O.—E. G. H.—T. S. W.—J. H.—E. W.

# Markets.

*COVENT GARDEN, February* 24.

There is no alteration to report; the market being still very dull. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 4 0– 8 0 |
| Grapes, per lb. | 3 0–10 0 | Pine-apples, per lb. | 1 0– 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Asparag., Fr., bndl. | 25 0– .. | — Cos, each | 0 6– 1 0 |
| — Sprue, per bund. | 1 6– 2 0 | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Parsley, per bunch | 0 4– .. |
| Celery, per bundle | 1 6– 2 0 | Radishes, per bun. | 0 2– 0 6 |
| Chilis, per 100 | 3 0– .. | Rhubarb, per bund. | 1 0– .. |
| Cucumbers, each | 1 6– 3 6 | Seakale, per basket | 2 6– .. |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| Garlic, per lb. | 1 0– .. | Spinach, per bushel | 4 0– .. |
| Herbs, per bunch | 0 2– 0 4 | Tomatos, per lb. | 0 9– 1 0 |
| Horse Radish, p. bun. | 4 0– .. | Turnips, new, bunch | 0 4– .. |

POTATOS:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 4*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Azalea, 12 sprays | 0 6– 1 0 | Pelargoniums, 12 spr. | 1 6– 2 0 |
| Bouvardias, per bun. | 1 0– 3 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Primula, double, per bunch | 1 0– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | — single, 12 sprs. | 0 6– 1 0 |
| Cyclamen, 12 blms. | 0 3– 0 6 | Roses (indoor), doz. | 3 0– 9 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | — yellow Fr., doz. | 2 0– 4 0 |
| Eucharis, per doz. | 4 0– 9 0 | — red French, doz. | 3 0– 4 0 |
| Euphorbia, 12 sprays | 2 0– 3 0 | — Christmas, 12 bl. | 0 9– 1 0 |
| Gardenias, 12 blms. | 15 0–30 0 | Snowdrops, 12 bun. | 2 0– 4 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Hyacinth, Roman, 12 sprays | 1 0– 2 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Tuberoses, per dozen | 4 0– 8 0 |
| — red, 12 blooms | 1 0– 3 0 | Tulips, 12 bunches | 12 0–18 0 |
| Lilac, Fr., per bunch | 7 0– 8 0 | Violets, 12 bunches | 1 6– 2 6 |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | — Neapolitan, Fr., per bunch | 3 6– 5 0 |
| Marguerites, 12 blms. | 0 4– 0 9 | — Czar, Fr., bunch | 2 0– 2 6 |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ficus elasticus, each | 1 6– 7 6 |
| Begonias, per doz. | 6 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cineraria, per doz. | 10 0–12 0 | Genista, per doz. | 12 0–18 0 |
| Cyclamen, per doz. | 12 0–24 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cyperus, per dozen | 6 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Dracæna terminalis | 30 0–60 0 | Myrtles, per doz. | 6 0–12 0 |
| — viridis, per doz. | 12 0–24 0 | Palms in var., each | 2 6–21 0 |
| Epiphyllum, per doz. | 18 0–30 0 | Primula, single, per dozen | 5 0– 6 0 |
| Erica hyemalis | 9 0–18 0 | Scillas, 12 pots | 9 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Snowdrops, 12 pots | 6 0– 9 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |

## SEEDS.

LONDON: *Feb.* 23. — The continued unfavourable weather naturally retards the demand for farm seeds, and it now appears certain that the present season must be a late one. With regard to late Clover seed fine qualities are in moderate supply; for inferior samples lower rates are accepted. Trefoil is in improved request. A fair business has been passing in Alsike and white. There is a good demand for Italian Ryegrass. In Sainfoin a further advance is shown. Both winter and spring Tares sell freely at full rates. For Canary seed the tendency of quotations is still downwards. *John Shaw & Sons, Seed Merchants,* 37, *Mark Lane, London, E.C.*

## CORN.

At Mark Lane on Monday English Wheat was sparingly offered, and drooping in value; foreign was in the same position. Fine malting Barley was in fair request and steady; grinding sold at late rates; and malt was dull on former terms. Oats ruled 6*d.* to 8*d.* dearer for common sorts, others unchanged. Maize fetched 3*d.* to 6*d.* more money. Beans and Peas changed hands at barely late rates; and flour was dull, with a weak tendency.—On Wednesday Wheat was firmly held on the spot, but the business transacted was small in all positions. Flour was not pressed for sale. Barley, Beans, and Peas moved off in retail quantities at late value. Oats were fully as dear as on Monday, but buyers took only sufficient for immediate requirements. Maize was very firm, and tended in sellers' favour.—Average prices of corn for the week ending February 19:—Wheat, 41*s.* 8*d.*; Barley, 32*s.* 1*d.*; Oats, 20*s.* 7*d.* For the corresponding period last year:—Wheat, 43*s.* 1*d.*; Barley, 35*s.* 11*d.*; Oats, 22*s.* 2*d.*

## CATTLE.

At Copenhagen Fields on Monday there was a larger supply of beasts than of late, owing to large consignments of foreign. Choice English being scarce were cleared off pretty quickly, but prices were not much higher on the average. Trade in sheep was dull for everything except the very choicest, and prices could not be quoted higher for them. Calves being very scarce were dear. Quotations:— Beasts, 4*s.* to 4*s.* 8*d.*, and 5*s.* to 5*s.* 6*d.*; calves, 5*s.* 4*d.* to 6*s.* 8*d.*; sheep, 5*s.* 4*d.* to 5*s.* 10*d.*, and 6*s.* 4*d.* to 7*s.* 2*d.*—Thursday's cattle trade was steady but quiet. Both beasts and sheep were in improved demand at fully Monday's rates. Calves were quiet but firm.

## HAY.

Tuesday's Whitechapel Market report states that supplies were short, owing to the bad weather for loading, but there was a fair demand at the following quotations:—Prime Clover, 100*s.* to 120*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 105*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 42*s.* per load.—On Thursday the supply of fodder was short. Fine sorts were held for Tuesday's full prices; other kinds were dull.—Cumberland Market quotations:—Superior meadow hay, 95*s.* to 105*s.*; inferior, 50*s.* to 80*s.*; superior Clover, 110*s.* to 120*s.*; inferior, 84*s.* to 95*s.*; and straw, 40*s.* to 45*s.* per load.

## COALS.

The following are the quotations current at market during the week:—Bower's West Hartley, 14*s.* 9*d.*; East Wylam, 17*s.* 6*d.*; Ravensworth West Hartley, 14*s.* 9*d.*; Walls End—Hetton, 18*s.*; Hetton Lyons, 16*s.* 6*d.*; Hawthorns, 16*s.* 9*d.*; Lambton, 17*s.* 6*d.*; Wear, 16*s.* 6*d.*; South Hetton, 18*s.*; Tunstall, 16*s.* 6*d.*; Original Hartlepool, 18*s.*; Caradoc, 18*s.*; Thornley, 17*s.*


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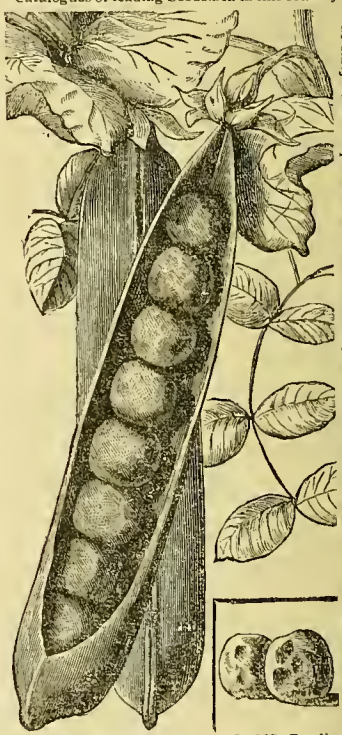

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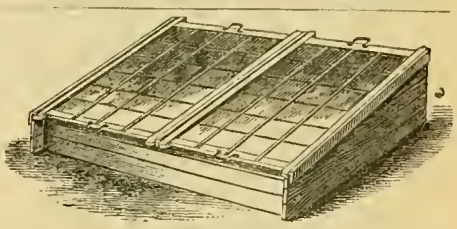

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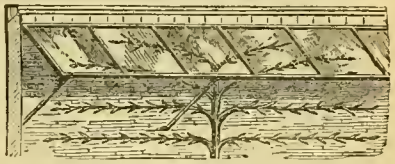

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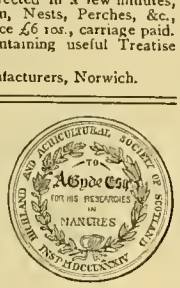


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"TO STROUD CHEMICAL MANURE COMPANY.—I am pleased to give you a most favourable report of your Potato Manure; it answered remarkably well here on light soil, we never had Potatos so free from disease before or so good. I planted in burnt soil and your manure, the result has been all I could wish for. I shall give you an order by-and-bye.

"The Earl of Shrewsbury's." "T. H. RABONE.

Price, £12 per ton, 14s. 6d. per cwt.
Carriage paid within One Hundred Miles of London.

Write for Pamphlet, sent Post-free. Address—

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GLASSHOUSES & HEATING.
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HIGHGATE ROAD, LONDON, N.W.
PRICES FREE

"ART WITH ECONOMY,"
Applied to Conservatories and Greenhouses.
With Illustrations, Prices, &c.
Part I., now ready. Post-free, twelve stamps.

CHEAP ART-SUMMERHOUSES.
Illustrations and Prices Gratis.

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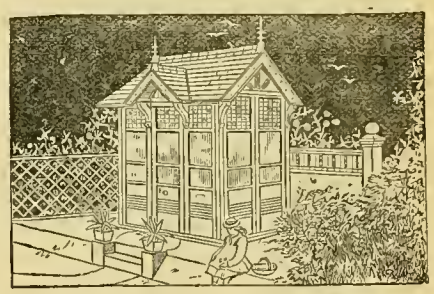
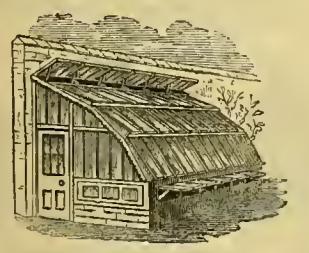
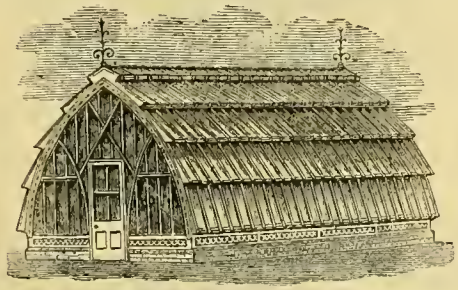
MANSION HOUSE BUILDINGS, LONDON, E.C.
WORKS: CHELMSFORD.



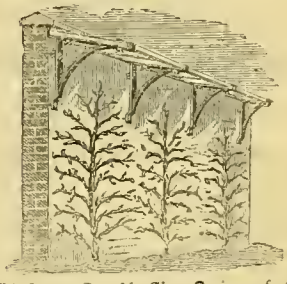
WRIGHT & HOLMES, PRACTICAL HORTICULTURAL BUILDERS and ENGINEERS,



Improved Cranston's, suitable for Peach-house, 9 feet wide.



Cranston's Patent, glazed without putty; glass fixed with brass screws.



W. & H.'s Patent Portable Glass Coping, 2 feet wide. Price, 3*s.* per foot run.

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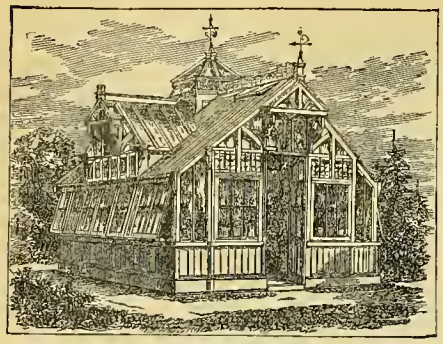

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HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS.
Conservatories and Greenhouses of every description from £4 10s. upwards.
Portable Melon Frames, 8 feet by 6 feet, £2 10s.
*See Illustrated SHEET, Two Stamps.*
*CATALOGUES, Sixpence. Estimates on application.*
NOTE.—The above structure is ready for immediate delivery, 20 feet by 14 feet, tenant's fixture or otherwise.

WORKS: ANCHOR STREET, CHELMSFORD.

N.B.—Patentees and Manufacturers of the Patent Portable Throttle Valve.

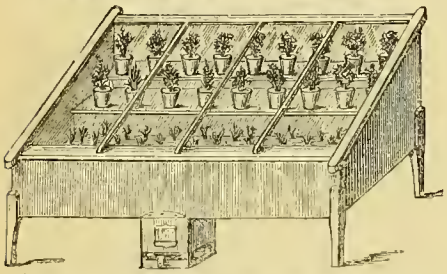
RIPPINGILLE'S PATENT

## PROPAGATING PLANT FRAME.

**Heated by Patent Stove, to Burn Petroleum and other Mineral Oils.**

*The Simplest and Best Invention ever introduced for*

**RAISING SEEDS, STRIKING CUTTINGS, &c.**



**The only Frame of the kind for Outdoor Use.**

The above Illustration represents Rippingille's Patent Outdoor Plant Frame, which is so constructed that it will not blow out during the roughest weather; it is made upon the most scientific principles, but is so simple that it is impossible to get out of order, and in economy is unequalled, the cost of burning being only FROM A FARTHING TO A HALFPENNY PER DAY.

The Stove will burn from thirty-six to forty hours without attention. The products of combustion do not enter the Frame at all, but at the same time all the heat is completely utilised. It is disconnected from the Frame for trimming the wick, lighting, replenishing with oil, &c. The top of Frame slides off either way, and is entirely removable; this is very convenient for Planting or removing Cuttings, Watering, Ventilating, &c. The heat attained is from 70° to 90° Fahrenheit, which is considered the best temperature for Forcing or Propagating purposes.

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We are prepared to deliver, within fifty miles, our New Style of

GREENHOUSES,

at the following exceptionally low prices:—

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| Size, 15 feet by 10 feet .. | £21 | 0 | 0 |
| ,, 20 feet by 10 feet .. | 27 | 0 | 0 |
| ,, 25 feet by 11 feet .. | 31 | 0 | 0 |

Lean-to, Tenant's Fixtures, require no Brickwork.

Brickwork be found for front and ends a reduction will be made in proportion.

Half-span and Quarter-span Houses at an increase of 10 per Cent. Front Stage and all Ventilating Movements included in these charges.

All descriptions of Hot-water Work, Boilers and Fittings, at exceptionally low prices.

*If desired, workmen sent to fix the above at moderate charges.*

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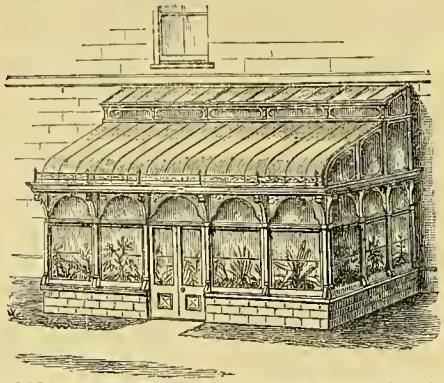
Special DESIGNS and ESTIMATES given for Ornamental CONSERVATORIES, without charge, and for all Horticultural Work of all kinds.



GARDEN BOXES and LIGHTS are generally kept in Stock, and WOODEN HOUSES suitable for Store-houses, Tool-houses, &c.

Illustrated Sheets sent, post-free, on application.

RICHARDSON'S PATENT

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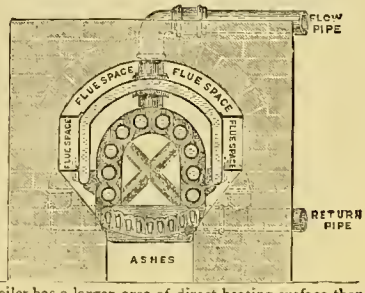
*For Heating Horticultural Buildings, Churches, Chapels, Schools, Mansions, &c.*




This Boiler has a larger area of direct heating surface than any other that is made.

**Sixty per Cent. less Fuel**

*is used than with a plain Saddle Boiler of equal power.*

Apply for particulars of Boilers and Horticultural Buildings to

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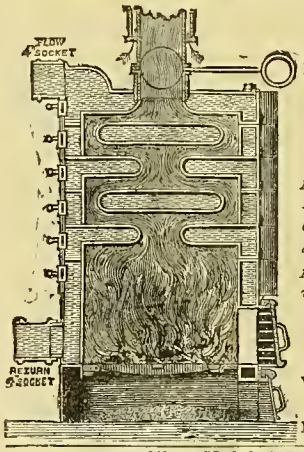
*Sole English Medallists at Philadelphia for the Best Hot-water Apparatus.*

## Wright's Patent "Endless-Flame Impact" Hot-water Boilers.




New Malleable Iron and Tubular Series.

*Descriptive Pamphlets. New Price LIST of 175 Boilers, Opinions of the Press, and 24 pages of Reports from those at work, on application.*

Over 400 at work.

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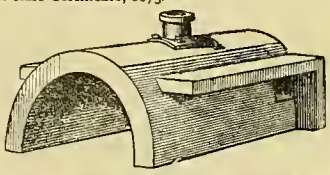
**Silver Medal, 1874.**

THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867; Highly Commended, 1873; and First-class Certificate, 1875.



"This boiler possesses the rare merit of sucking all the heat from the fire."—*Gardeners' Magazine*, p. 254.

"I have no doubt the Best Boiler, that will burn any kind of fuel, is the Terminal Saddle."—*Journal of Horticulture*, p. 327.

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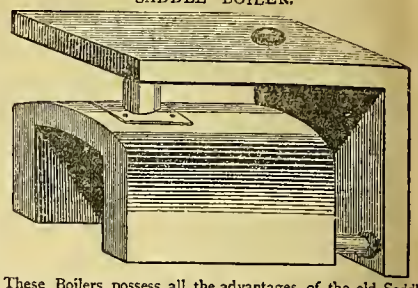
## JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. | | | To heat of 4-in. Pipe. | Price. | | |
|---|---|---|---|---|---|---|
| High. | Wide. | Long. | Feet. | £ | s. | d. |
| 20 in. | 18 in. | 18 in. | 300 | 7 | 0 | 0 |
| 20 ,, | 18 ,, | 24 ,, | 400 | 8 | 0 | 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 | 0 | 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 | 0 | 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 | 0 | 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 | 0 | 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 | 0 | 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 | 0 | 0 |

Larger sizes if required.

*From* Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

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CASTLE HILL FOUNDRY, NEWCASTLE, STAFFORDSHIRE.

## GREEN'S

PATENT

## WROUGHT-IRON HOT-WATER BOILERS,

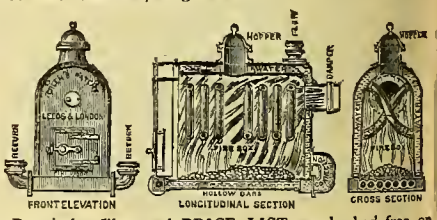
*With Tubes or Shelves, and Hollow or Ordinary Cast-iron Grate Bars.*

**SADDLE BOILERS,**

With WATERWAY BACKS and WELDED BOILERS, Specially adapted for Heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

*They are the neatest, cheapest, most effective and durable of any extant.*

The Tubular ones are remarkable for their great Heating Power, Slow Combustion, and the length of time the Fire will Burn without requiring attention.

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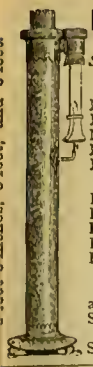
And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.



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| No Smoke | No Dust |
| No Smell | Ventilation and Purification |
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| No Danger | Fuel Cost less than other |
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The largest stock in the Kingdom. 4-inch pipes, 1s. 7d. per yard.

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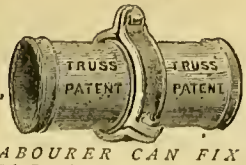


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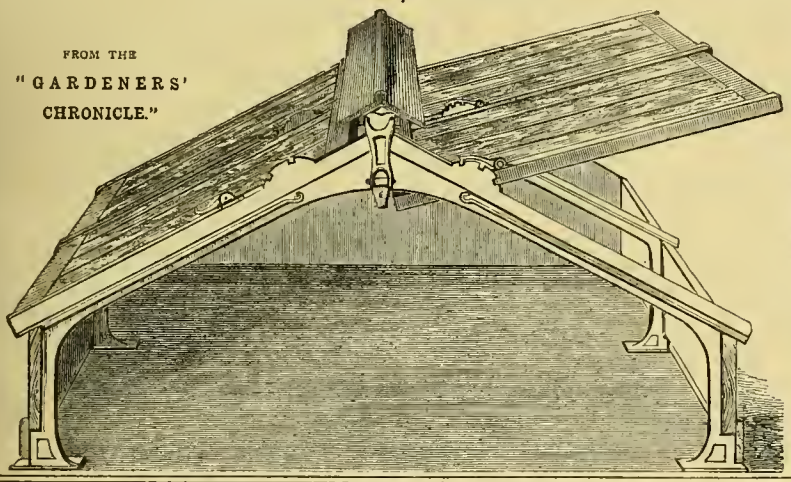

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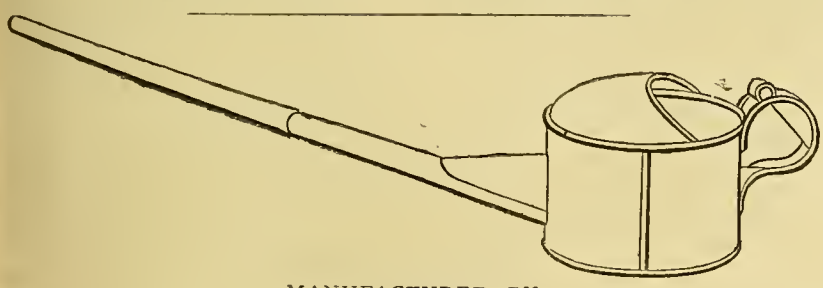

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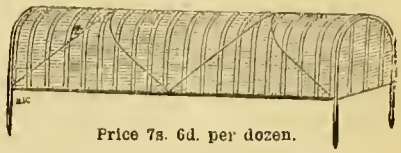

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Patronised by Her Most Gracious Majesty the Queen on many occasions, H.R.H. the Prince of Wales, the King of the Belgians, the late Emperor of the French, the Emperor of Russia, and most of the Nobility, Clergy, and Gentry of the United Kingdom.

**Upwards of 100,000 of these Machines have been Sold since they were first introduced in the year 1856,**

And Thousands of unsolicited Testimonials have been received testifying to their superiority over all others.

*They have been submitted to numerous practical tests in Public Competition, and in all cases have carried off every Prize that has been given.*

The following are the advantages over all others :—

1st. Simplicity of Construction—every part being easily accessible. 2d. They are worked with much greater ease than any other. 3d. They are the least liable to get out of order. 4th. They make little or no noise in working. 5th. They will cut either long or short Grass, wet or dry.

### Single-handed Lawn Mower.

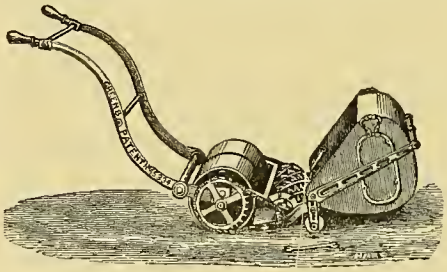
To cut 6 inches ... ... Price £1 15 0
Can be worked by a Lady.

To cut 8 inches ... ... ... 2 10 0
Can be worked by a Lady.

To cut 10 inches ... ... ... 3 10 0
Can be worked by a strong Youth.

To cut 12 inches ... ... ... 4 10 0
Can be worked by a Man.

To cut 14 inches ... ... ... 5 10 0
Can be worked by a Man.



### Double-handed Lawn Mower.

To cut 16 inches ... ... Price £6 10 0
This can be worked by One Man on an even lawn.

To cut 18 inches ... ... ... 7 10 0
By a Man and Boy.

To cut 20 inches ... ... ... 8 0 0
By a Man and Boy.

*To cut 22 inches. By Two Men ... 8 10 0

*To cut 24 inches. By Two Men ... 9 0 0
* If made stronger, suitable for Donkey, 30s. extra.

Prices of Donkey, Pony, and Horse Machines, including Patent Self or Side Delivery Box, with Cross-stay complete, suitable for attaching to Ordinary Chaise Traces or Gig Harness :—

**DONKEY and PONY MACHINES.**

| | |
|---|---|
| To cut 26 inches ... ... ... ... ... | £14 0 0 |
| To cut 28 inches ... ... ... ... ... | 16 0 0 |
| To cut 30 inches ... ... ... ... ... | 18 0 0 |
| Leather Boots for Donkey ... ... ... ... | 1 0 0 |
| Leather Boots for Pony ... ... ... ... | 1 4 0 |

**HORSE MACHINES.**

| | |
|---|---|
| To cut 30 inches ... ... ... ... ... | £22 0 0 |
| To cut 36 inches ... ... ... ... ... | 26 0 0 |
| To cut 42 inches ... ... ... ... ... | 30 0 0 |
| To cut 48 inches ... ... ... ... ... | 34 0 0 |
| Leather Boots for Horse ... ... ... ... | 1 9 0 |

The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse ; and as the Machines make little noise in working, the most spirited animal can be employed without fear of it running away, or in any way damaging the Machine.

**Delivered, Carriage Free, at all the principal Railway Stations and Shipping Ports in England, Scotland, and Ireland.**

*No Lawn Mower Manufacturer keeps so large a stock of Mowers as is to be found at our London Establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, of Hand, Pony, and Horse Power, and have their Orders executed the same day they are received.*

**The above Machines are Warranted to give entire Satisfaction, otherwise they may be returned AT ONCE, free of cost to the Purchaser.**

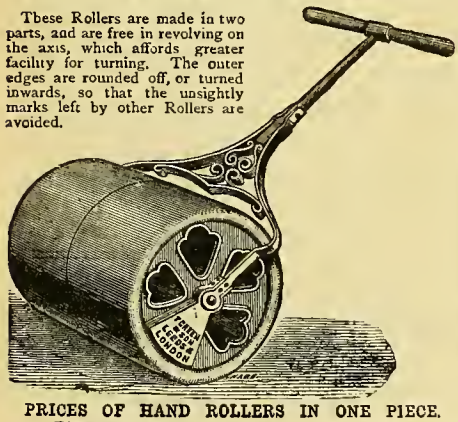
N.B.—Those who have Lawn Mowers which require repairing should send them to either our Leeds or London Establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

## GREEN'S PATENT ROLLERS

**For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.**

SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks left by other Rollers are avoided.



**PRICES OF HAND ROLLERS IN ONE PIECE.**

| Diam. Length | £ s. d. |
|---|---|
| 16 in. by 17 in. .. .. .. .. | 2 15 0 |
| 20 in. by 22 in. .. .. .. .. | 3 15 0 |
| 24 in. by 26 in. .. .. .. .. | 5 0 0 |

**PRICES OF ROLLERS IN TWO PARTS.**

| Diam. Length. | £ s. d. | Diam. Length. | £ s. d. |
|---|---|---|---|
| 16 in. by 17 in. .. | 2 15 0 | 24 in. by 26 in. .. | 5 0 0 |
| 20 in. by 22 in. .. | 4 0 0 | 30 in. by 32 in. .. | 9 0 0 |

**Prices Fitted with Shafts for Pony or Horse.**

| Diam. Length | £ s. d. | Diam. Length | £ s. d. |
|---|---|---|---|
| 30 in. by 32 in. .. | 13 10 3 | 30 in. by 48 in. .. | 17 0 0 |
| 30 in. by 36 in. .. | 14 0 0 | 30 in. by 60 in. .. | 19 10 0 |
| 30 in. by 42 in. .. | 15 10 0 | 30 in. by 72 in. .. | 22 0 0 |

Weight Boxes extra, and Special Quotations made for Rollers 3, 3½, and 4 feet diameter, fitted with Shafts for One or Two Horses.

*Delivered, Carriage Free, at the principal Railway Stations and Shipping Ports in England and Scotland.*

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

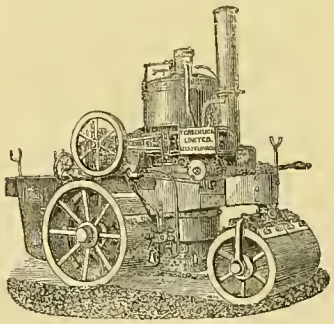
## GREEN'S PATENT STEAM ROAD ROLLERS

### AND TRACTION ENGINES COMBINED,

Which are made in sizes of 6, 10, 12½, 15, and 20 Tons weight, and both the Driving and Steering of them are under the easy control of ONE Man.

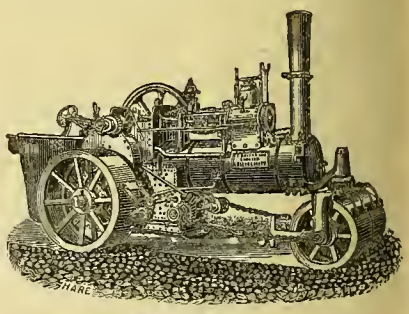
They are Suitable for Rolling Carriage Drives, Park Roads, Walks, Streets, Highways, and for General Road Making ; Rolling Lawns, Cricket Flats, Parks, &c. They can also be used as Stationary Engines for Stone Breaking, Wood Sawing, Pumping, Farm Purposes, and other various work.

*They are specially recommended to Noblemen, Gentlemen, Borough and Road Surveyors, Corporations, Local Boards, Highway Trustees, Contractors, Road Makers, and others.*



Weight Empty :—
6 TONS. 7 TONS.

Weight in Working Trim with Water and Fuel :—
7 TONS. 8 TONS.



Weight Empty :—
10 TONS. 12½ TONS. 15 TONS.

Weight in Working Trim with Water and Fuel :—
12½ TONS. 15 TONS. 18 TONS.

**Specifications with Prices and Testimonials, furnished on application to**

**THOMAS GREEN & SON (Limited), Smithfield Ironworks, Leeds ; and 54 and 55, Blackfriars Road, London.**

ILLUSTRATED PRICE LISTS FREE.


Editorial Communications should be addressed to "The Editors ;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden in the said County —SATURDAY, February 26, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—MESSRS. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 375.—Vol. XV. { New Series. } SATURDAY, MARCH 5, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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*NOTICE.—The Double-page Plate of DAFFODILS, Companion Plate to the POET'S NARCISSUS, published on October 16, 1880, will shortly be issued.*


**Now Ready, in cloth, 16s.,**

*THE GARDENERS' CHRONICLE,*

Volume XIV., JULY to DECEMBER, 1880.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific, at 1 P.M.; GENERAL MEETING for the Election of Fellows, &c., at 3 P.M., on TUESDAY NEXT, March 8.

N.B.—An Exhibition of Choice Flowers and Fruits will be held in connection with the Meetings of the Fruit and Floral Committees in the Conservatory.

Band of the Royal Horse Guards from 3 o'Clock P.M. Admission, 1s.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

ARRANGEMENTS for 1881.

EXHIBITIONS of SPRING FLOWERS, WEDNESDAYS, March 30, April 27.

SUMMER EXHIBITIONS, WEDNESDAYS, May 25, July 6.

EVENING FÊTE and SPECIAL EXHIBITION, WEDNESDAY, June 22.

Tickets and Schedule of Prizes now ready.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of Manchester.

SPRING FLOWER SHOW, in the Town Hall, Manchester, on TUESDAY, the 15th inst. Open from 12 at Noon till 5 P.M. Non-subscribers, 1s. Mr. J. Kendrick Pyne will play the Organ at 2 o'Clock.

BRUCE FINDLAY, Curator and Secretary, Royal Botanic Gardens, Manchester.

LIVERPOOL HORTICULTURAL ASSOCIATION.

The THIRD GRAND SUMMER EXHIBITION of PLANTS, FLOWERS, FRUIT, and VEGETABLES, will be held on SATURDAY, JULY 30, and BANK-HOLIDAY, August 1. Schedules ready shortly.

The SECOND EXHIBITION of CHRYSANTHEMUMS and FRUIT will be held on or about November 23, when liberal Prizes will be offered. Particulars on application to

EDWARD BRIDGE, Secretary, Whitebrooke Cottage, Huyton, near Liverpool.

PETUNIAS (Hender's Strain).—This strain is brought to its present perfection by careful selection for twenty-five years past. 2s. per packet.

HENDER AND SONS, Nursery, Plymouth.

GERANIUMS, strong Autumn-struck plants, at 8s. per 100; and TELEGRAPH CUCUMBER PLANTS, strong, 1s. each. Package free for cash with order to G. ROUSE, AND SONS, Florists, &c., The Green, Twickenham.

TERRA-COTTA WINDOW BOXES. (See illustration in last week's *Gardeners' Chronicle*, p. 276.) Prices on application.

JOHN MATTHEWS, Royal Pottery, Weston-super-Mare.

**To the Country Trade.**

WHITE SPANISH and STRASBURG ONION. VEITCH'S PERFECTION and FIRST EARLY PEAS.

JAMES CARTER, DUNNETT AND BEALE are prepared to quote Special Prices to their Country Friends of the above, on application.

237 and 238, High Holborn, London, W.C.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

**Richardia hastata (the Yellow Calla).**

HOOPER AND CO. are now offering this exquisitely beautiful Plant at 18s. per dozen, 2s. each.

Covent Garden, London, W.C.

**Special.—Seed Potatos.—Special.**

WOOD AND INGRAM have to offer fine samples of the following varieties—Price list post-free on application:—Climax, Early Rose, Hammersmith Kidney, Myatt's Prolific, Rector of Woodstock, Snowflake, Schoolmaster, The Queen, Covent Garden Perfection, Beauty of Hebron, Diplock's Early, Porter's Excelsior, and Suttons' Magnum Bonum.

The Nurseries, Huntingdon.

**Roses, Strong Dwarf and Half-Standard.**

PAUL AND SON, The "Old" Nurseries, Cheshunt, can still supply good Plants as above. They regret all Standards are exhausted for this spring's sale.

BUYERS wishing to avail themselves of a CHEAP OFFER of various TREES and SHRUBS should refer to large Advertisement appearing in this Paper on the 8th of last month, or see T. L. MAYOS' reduced LIST.

WANTED, strong Standard Cider and other APPLE TREES; also ASH, 3 to 4 feet.

Highfield Nursery, Hereford.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS are requested to communicate with W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WISE AND RIDES are prepared to RECEIVE CONSIGNMENTS of choice CUT FLOWERS, FRUITS, CUCUMBERS, &c., in quantity.

3, Tavistock Court, Covent Garden, W.C.

WANTED, BOUGAINVILLEA GLABRA, two large plants. Send size and price to ROBERT GREEN, Floral Establishment, Crawford Street, W.

**To Farmers and Growers.**

CONSIGNMENTS of CABBAGE, SAVOY, BRUSSELS SPROUTS, BROCCOLI SPROUTS, TURNIP-TOPS, and VEGETABLES in general, wanted for Sale on Commission.

T. BROSNAN, Covent Garden Market, W.C.

**Manetti Stocks.**

WANTED, a quantity of the above, for Cash. Samples (carriage paid) and price to ROBERT MACK AND SON, North of England Rose Nurseries, Catterick and Scorton, Yorkshire.

WANTED, a few Portugal LAURELS, with foliage, uninjured by frost.

J. R. PEARSON, Chilwell Nurseries, Notts.

WANTED, 100 strong clumps of OSMUNDA REGALIS, 200 strong AMPELOPSIS VEITCHII, 200 CLEMATIS JACKMANNI, 50 Standard VICTORIA PLUMS, or less quantities, for cash.

CARTER PAGE AND CO., 53, London Wall, London, E.C.

WANTED, PLUM STOCKS.—State kind, quantity, and price to

J. G. HILL (late John Scott), The Royal Nurseries, Merriott, Crewkerne.

WANTED, strong, well-rooted, 2-yr. ASPARAGUS PLANTS. Send particulars, as to price and number to offer, to

A. Z. S., *Gardeners' Chronicle* Office, W.C.

WANTED, ASPARAGUS PLANTS, 1-yr. and 2-yr. old, healthy and vigorous. Send fair samples by post, stating quantity and lowest price per 1000, to F. & A. DICKSON & SONS, The Upton Nurseries, Chester.

**A Constant Supply of the Best Vegetables is Ensured by purchasing.**

SUTTONS' COMPLETE COLLECTIONS of CHOICE VEGETABLE SEEDS, specially arranged for various size gardens.

**For a Large Garden.**

SUTTONS' £5 5s. and £3 3s. COLLECTIONS of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England or Scotland, also to any Irish Port.

**For a Moderate-Size Garden.**

SUTTONS' £2 2s. and £1 11s. 6d. COLLECTIONS of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England.

**For the "Amateur's" Garden.**

SUTTONS' £1 1s. COLLECTION of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England.

**For the "Villa" Garden.**

SUTTONS' 12s. 6d. COLLECTION of CHOICE VEGETABLE SEEDS.

SUTTON AND SONS, The QUEEN'S SEEDSMEN, Reading.

**Eltham Nurseries.**

THE BUSINESS will be carried on by Mrs. ELIZABETH TODMAN, Executrix.

LILIUM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz.; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

SINGLE DAHLIAS. — All the leading varieties and best colours. Low prices to the Trade.

HOOPER AND CO., Covent Garden, London, W.C.

LARCH, transplanted, half a million, excellent Trees, 1½ to 2, 2 to 3, and 2 to 3½ feet, as good as can be produced, now being sent out at very moderate prices. Write for samples and particulars to

W. JACKSON AND CO., Nurseries, Bedale, Yorks.

PALMS.—Seedling Palms in stores, per 100:—Chamærops Fortunei, 8s.; Phœnix reclinata (true), 12s.; Seaforthia elegans, 21s. Strong well-rooted plants, in thumbs, of Latania borbonica, Corypha australis, Phœnix reclinata, at 30s. per 100; or would EXCHANGE for large Palms.

WM. ICETON, Nurseryman, Barnes, S.W.

BIRCH and ALDER.

BIRCH, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.

ALDER, 2 to 3 feet and 3 to 4 feet.

Lowest Prices to Trade or otherwise on application to

J. CHEAL AND SONS, Lowfield Nurseries, Crawley.

FIR SEED, Native Highland, Scotch.—We can still supply a limited quantity of the above, and will be glad to quote price on application.

WM. WISEMAN AND SON, Nurserymen, Elgin, N.B.

QUICK, cheap, 100,000, about 2 to 4 feet, 18s. to 20s. per 1000; smaller size, from 10s. to 15s. per 1000.

W. GROVE, St. Owens Nursery, Hereford.

JAMES MITCHELL AND SONS have to offer DWARF ROSES on MANETTI, strong, healthy plants. Prices on application.

Pilt Down Nurseries, near Uckfield, Sussex.

ROSES, Maréchal Niel, fine strong plants, 35s. per 100.

SCHARMER AND MÜLLER, Pinneberg, near Hamburgh, Germany.

**Seeds.**

CHARLES TURNER'S Descriptive Price LIST for the present season is now ready, and may be had on application.

The Royal Nurseries, Slough.

**Special Offer of Onion Seed, &c. (New and Nett).**

JAMES FARRAR AND CO. are prepared to make low quotations for above upon application, and also of Vegetable Marrow (long white-ribbed var.).

Seed Warehouse, 36, Primrose Street, Bishopsgate, E.C.

**To the Trade.**

FOR SALE, a few Bushels of WILLIAM I., STANDARD, and SHAH PEAS. Also a few Tons of MAGNUM BONUM and SCHOOLMASTER POTATOS.

For particulars apply to

F. AND C. MYATT, Offenham, Evesham.

**Why give more than 9s. per Cwt. for**

MAGNUM BONUM POTATOS, when a splendid sample, true, can be obtained at that price? Bags gratis; terms cash.

The EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Seed Potatos.**

SCHOOLMASTER.—This celebrated Potato, grown from Seed supplied direct from Messrs. Webb & Co., to be had at 10s. per bushel of 80 lb. Apply to

Mr. POYSER, Stapenhill, Burton-on-Trent.

## SALES BY AUCTION.

### Monday Next.

IMPORTED and ESTABLISHED ORCHIDS, LILIES, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, a large importation of rare and valuable ORCHIDS in splendid condition, including fine masses of MASDEVALLIA TOVARENSIS and MACULATA, ODONTOGLOSSUM ROEZLII, O. ROSSII MAJUS, CATTLEYA DOWIANIA, C. MOSSIÆ (varieties), C. CITRINA, LÆLIA ALBIDA, CHYSIS AUREA, MAXILLARIA GRANDIFLORA, and others; about 200 lots of choice ESTABLISHED ORCHIDS, comprising some very fine varieties of ODONTOGLOSSUM ALEXANDRÆ, O. VEXILLARIUM, DENDROBIUM WARDIANUM, and many others; an assortment of hardy English-grown LILIES and ROOTS, CALICHORTI and other Californian BULBS, CARNATIONS, PICOTEES, &c.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

---

SALE THIS DAY, at HALF-PAST TWELVE O'CLOCK.

**Importations of Vanda cœrulea and V. Cathcarti,** also DENDROBIUM FREEMANII, D. NOBILE, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, March 5, at half-past 12 o'Clock precisely, without reserve, a fine importation of East Indian ORCHIDS, consisting, among others, of Vanda cœrulea, V. Cathcarti, Cœlogyne barbata, Dendrobium nobile, &c.

May be viewed the morning of Sale, and Catalogues had.

---

**5000 Lilium auratum, just received from Japan.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 7, at half-past 12 o'Clock precisely, an importation of 5000 bulbs of LILIUM AURATUM, just received from Japan; also rare English-grown LILIES, including Lilium Brownii, L. Pardalinum, L. giganteum, and others; several cases of LILIUM SPECIES, in different varieties, just received from Japan; a consignment of 1000 Double Italian TUBEROSES from America; some fine clumps of Japanese IRIS; several thousand fine bulbs of TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, and GLADIOLI, from New Jersey; twenty-four cases of BELLADONA LILIES, four cases of ARAUCARIA EXCELSA, &c.

May be viewed morning of Sale, and Catalogues had.

---

**First-class Standard and Dwarf Roses.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 9, at half-past 12 o'Clock precisely, 500 first-class Standard, Half-Standard, and Dwarf ROSES, all good named sorts; ORNAMENTAL FLOWERING SHRUBS, choice CARNATIONS, PICOTEES, PINKS, WALLFLOWERS, and a great variety of Hardy HERBACEOUS BORDER PLANTS, choice LILIUMS, GLADIOLI, TIGRIDIAS, and other BULBS for present planting, &c.

On view morning of Sale, and Catalogues had.

---

**Odontoglossum Œrstedi, Rchb. f.**

Discovered some years ago by the late Mr. Endres, and figured in the *Gardeners' Chronicle*, June 30, 1877. It is a very beautiful species; the flowers are 1 inch across or more, and pure white, with a yellow crest on the lip. It will be seen by the imported pieces that as many as six and eight flowers have been produced on one bulb. The importation is in splendid condition, and a quantity of the specimens are very many bulbed. Also a fine importation of MAXILLARIA CALLICHROMA, Rchb. f., a beautiful new species growing on very high trees in a temperature of from 50° to 60°; flowers are large and very sweet-scented, white sepals, and petals dark yellow tipped, centre purple striped, lip white, with yellow base. A fine importation of MORMODES OCANÆ. Professor Reichenbach calls this "A grand Mormodes, of unexpected beauty." A large quantity of the beautiful MORMODES PARDINUM, CHYSIS AUREA, ODONTOGLOSSUM NEBULOSUM, 150 growing plants of O. ALEXANDRÆ, extra fine plants of O. VEXILLARIUM, ONCIDIUM MACRANTHUM HASTIFERUM, STANHOPEA WARDIANA; a magnificent lot of CATTLEYA CITRINA, round-bulbed species, and other ORCHIDS.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 10, at half-past 12 o'Clock precisely, a fine importation of the above-mentioned ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

---

**Important Sale.**—(Sale No. 5816.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, March 11, at half-past 12 o'Clock precisely, 500 ORCHIDS in bloom or bud, consisting of Odontoglossums, Dendrobiums, Oncidiums, Cattleyas, &c., some magnificent exhibition plants; Lælia harpophylla, &c.

On view the day prior and morning of Sale, and Catalogues had.

---

**The renowned Collection of Orchids of JOHN DAY, Esq., of TOTTENHAM.**

MR. J. C. STEVENS has received instructions from J. Day, Esq., to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without the slightest reserve, during the ensuing spring months, his entire COLLECTION of ORCHIDS. This Collection, which is one of the finest in the country, contains well-grown specimens of almost every species and variety worth growing. The following are the days of Sale:—

| | |
|---|---|
| THURSDAY, March 31 | THURSDAY, May 5 |
| FRIDAY, April 1 | |
| | MONDAY, May 23 |
| TUESDAY, April 12 | TUESDAY, May 24 |
| WEDNESDAY, April 13 | |
| | THURSDAY, June 9 |
| WEDNESDAY, May 4 | FRIDAY, June 10 |

Further particulars will appear prior to each Sale, and Catalogues will be ready about ten days before. The plants will be on view on the morning of each Sale, but cannot be viewed on the premises without a special order from Mr. J. C. STEVENS. To avoid any risk to the plants, they will be brought to King Street on the afternoon prior to each Sale, and when necessary the rooms will be heated.

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**Second Sale.—Hundleby, near Spilsby.**

Sale of valuable NURSERY STOCK, now growing at the Holly Nursery.

MR. R. MACKINDER, instructed by Messrs. Cole Brothers (who are dissolving partnership), will offer by PUBLIC AUCTION, on the Holly Nursery Grounds, Hundleby, on TUESDAY, March 8, the remaining portion of the valuable stock of FOREST, PARK, and HEDGEROW TREES, HOLLIES, SHRUBS, &c., viz.:—

25,000 ASH, 2 to 4 feet.
8,000 BEECH, 2 to 6 feet.
250,000 LARCH, 1 to 3½ feet.
1,000 AUSTRIACA PINE, 1½ to 3 feet.
100,000 SPRUCE, 1 to 2 feet.
10,000 LIMES, 2 to 10 feet.
4,000 HORSE CHESTNUT, 2 to 10 feet.
1,000 SPANISH CHESTNUT, 2 to 4 feet.
10,000 CHERRY, PLUM, and CRAB STOCKS, MANILLAS, strong transplanted.
500,000 QUICK, 1-yr., 2-yr., 3-yr., transplanted.
5,000 PRIVET, 2 to 3 feet.
5,000 OAKS, 1 to 2 feet.
2,000 HOLLIES, green and variegated, 1 to 6 feet.
5,000 PARK or HEDGEROW TREES (Oak, Elm, Ash, Spanish and Horse Chestnut, Sycamore, Birch, Beech, Poplar, Limes), 6 to 10 feet.
1,000 RHODODENDRONS, 1 to 2 feet.
4,000 YEWS, 2 to 4 feet.
1,000 COMMON LAURELS, 1 to 2 feet.

Sale to commence at 11 o'Clock.

The Nursery is situated within half a mile of the Spilsby Station on the East Lincolnshire Line, G.N.R.

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**Valuable Nurseries in the West of England for Sale.**

TO BE SOLD, by Private Contract, with Immediate Possession, the Goodwill and Stock of a NURSERY BUSINESS, established upwards of forty years, well situated and well watered, within three minutes' walk of a most important Market Town in the West of England. The property is held for the residue of a term of years, and comprises about 7½ Acres of Land, Dwelling-house, two large Glasshouses, Propagating-house, and Potting Sheds; also an extensive and varied stock of healthy Shrubs, Fruit and Forest Trees. The above is thorough *bonâ fide*, and there being a good business connection the property offers a first-class investment.

The fullest information and particulars can be obtained by letter, addressed B., 89, Bolsover Street, Great Portland Street, London, W.C.

---

FOR DISPOSAL, on the South Coast, a NURSERY, SEED, and FLORIST BUSINESS, comprising 2 Acres of Land, Two Vineries, Cucumber, Propagating, and Two Span-roofed Greenhouses, Show House, and Seed Shop, Pits, Frames, Potting Sheds, &c. Rent only £25 per annum. Goodwill, Stock, Greenhouses, and all Erections.

Price and particulars on application to
FLORIST, 26, Alexandra Street, St. Leonards-on-Sea.

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**To Florists.**

TO BE SOLD, a FLORIST and SEED BUSINESS, and also the Lease, Twenty-four years unexpired; in consequence of the decease of the proprietor. Further particulars, address to
Mrs. HANINGTON, 2, Holloway Road, N.

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SUNNINGDALE NURSERY, Direction of, see *Gardeners' Chronicle*, February 26, 1881.

---

**Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.**

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 98, Gracechurch Street, E.C.

---

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.

CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

---

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

---

FILBERTS and COB NUTS.—Fine Fruiting Bushes, 4 to 5 feet high, 3 feet through, 6s. per dozen, 40s. per 100, for cash.

J. G. HILL (late John Scott), The Royal Nurseries, Merriott, Crewkerne.

---

QUICKS, strong, clean, and well-rooted, 3 feet, 17s. per 1000; LAURELS, bushy, 1½ to 2 feet, 80s. per 1000; PEAR STOCKS, fine, 30s. per 1000.

W. JACKSON, Blakedown, near Kidderminster.

---

**Rare Things.**

ACER GINNALII.—A very handsome and distinct Maple, leaves glowing crimson in autumn: 3s. 6d. each.

HAMAMELIS ARBOREA.—Nice flowering specimens of this rare and curious winter flowering tree, 5s. each.

DAPHNE BLAGUAYANA.—Hardy as a British Heath, nice flowering plants, 3s. 6d. each.

POPULUS ALBA BOLLEANA.—Habit of the Lombardy, silvery leaves, 5s. each.

VITIS STRIATA.—Sub-evergreen climbing plant, with the clinging habit of Ampelopsis Veitchii, 2s. 6d. each.

YUCCA RUPICOLA.—A very distinct and perfectly hardy Yucca, 3s. 6d. each.

For other Novelties see our new supplemental LIST, just issued.
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

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**To Orchid Growers.**

ORCHID SPHAGNUM.—The Advertiser is prepared to supply the above, of superior quality, picked, and ready for use, as supplied to many of the leading Orchid growers. An Orchid grower of eminence says of it:—"The Sphagnum is the very best I have seen, and superior to any we can now get from England or Scotland for growing Orchids. I think it cheap at £7 10s. per ton. I am pleased to hear you think of pushing the sale of such an excellent article, and I shall have great pleasure in recommending it to my friends, or any one interested, who asks my opinion privately. Hoping you will have a good demand, I am, &c." (Address on application.) Many other references can be given. Price per ton, in bags, £6 10s.; sample bag, 7s. 6d.

J. B. YOUNG, Landscape Gardener, Bridge of Allan.

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**Special Offer.**

FREDK. GEE begs to offer, for cash, the undermentioned superior Bedfordshire grown SEEDS—POTATOS, CABBAGE, and other PLANTS, ROOTS, &c. Although the late severe weather has made sad havoc amongst various Plants, &c.—in many instances half of them being killed—F. GEE has a large quantity of fine Plants left, and will supply them at the following reasonable prices, for early orders accompanied with cash.

All the Standard varieties of CABBAGE, grown from his far-famed stocks, at 3s. per 1000 (of 1200); Red Picklers, fine, at 5s. per 1000. [7s. 6d. per 1000.

LETTUCE Plants, Hardy Green and others (scarce), 1s. per 100,

SAVOY, Large Drumhead, and finest BRUSSELS SPROUTS, at 3s. per 1000.

PRICKLY COMFREY, true Caucasian, crown sets, 2s. 6d. per 100, 20s. per 1000.

**POTATOS.**

Fine samples, grown on new, light, and heavy land; can be highly recommended to those who require a change of seed:—

| | Per Peck of 14 lb. | Per Bush. of 56 lb. | Per Cwt. | Per Ton. |
|---|---|---|---|---|
| | s. d. | s. d. | s. d. | £ s. |
| Early Ashleaf Improved, fine stock .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Early Myatt's Prolific, splendid sample .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Early and Late Rose, splendid sample, great croppers .. .. .. .. .. | 1 0 | 3 0 | 5 6 | 5 0 |
| New Burbank Seedling, and Washington, fine kidneys, great croppers; stock now limited .. .. .. .. .. .. | 2 0 | 7 0 | 12 0 | 11 0 |
| Beauty of Hebron (true), splendid cropper, fine quality; stock now left very limited .. | 2 0 | 7 0 | 12 0 | 11 0 |
| Golden Shaw (true), early; scarce .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Climax and Peerless, very productive, and good quality .. .. .. .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Snowflake, splendid quality, scarce, fine sample .. .. .. .. .. .. | 1 6 | 5 6 | 10 0 | 9 0 |
| Rector of Woodstock, fine stock, much recommended .. .. .. .. .. .. | 2 0 | 7 0 | 13 0 | 12 0 |
| Model, fine, much recommended .. .. | 1 6 | 5 0 | 9 6 | 9 0 |
| Schoolmaster (true), extra fine, quality not to be surpassed .. .. .. .. | 2 6 | 9 0 | 16 0 | 15 0 |
| Paterson's Victoria (true): finest white Regents | 1 6 | 5 0 | 9 0 | 8 0 |
| Magnum Bonum (Sutton's true).—An extra selected stock of this valuable variety, splendid seed size, clean sample. Undoubtedly the best disease-resister and heaviest cropper in cultivation .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Scotch Champion (true), very fine. An extraordinarily productive and wonderful disease-resisting variety, of fine quality .. | 1 3 | 4 0 | 7 0 | 6 0 |

Bags to hold 2 or 3 bushels charged 6d. each; other packages lowest prices. Special prices to very large buyers.

Many other kinds can be supplied cheap and good.

Cheap Early SPRING FLOWERING ROOTS, such as DAISIES, WALLFLOWERS, PYRETHRUMS, CARNATIONS, PICOTEES, &c. See CATALOGUE.

HERB ROOTS, SAGE and THYME, very fine plants; also RHUBARB for planting; and ASPARAGUS PLANTS. See General CATALOGUE of all kinds of superior Bedfordshire-grown Seeds, Plants, and Roots, on application to

FREDK. GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

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VINES.—Good Planting Canes. Price on application.

PARKER AND SONS, St. Michael's Hill Nursery, Bristol.

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HENRY GODFREY, NURSERYMAN, Stourbridge, has to offer DRACÆNAS, of the following sorts, in well-grown Plants, at 18s. per dozen:—Terminalis, Ferrea, Cooperii, and Regina. Also a few others at 2s. each, namely, Splendens, Majesticum, Shephardii, Guilfordii, &c.

---

**To the Trade.—Clearance of Building Land.**

ASPARAGUS PLANTS, 1-yr., 4-yr.; also 9-yr., splendid Forcing Stuff.

RHUBARB.—Early Linnæus, Stott's Monarch, Johnston's St. Martin's, and Ruby (a splendid colour throughout).

FREEMAN AND FREEMAN, Norwich.

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YEWS, English, 3 feet; CUPRESSUS LAWSONIANA, 3 feet; LIGUSTRUM OVALIFOLIUM, 2 feet and 3 feet; BEECH, 3 feet; SPRUCE, 2 to 3 feet; and Dwarf ROSES. A large quantity to offer from ground which must be cleared this season.

GEORGE SWAILES, The Nurseries, Beverley, Yorkshire.

---

**Extra Strong Vines.**

FRANCIS & ARTHUR DICKSON & SONS offer as above, splendid well ripened, short-jointed Canes, both Fruiting and Planting sizes, raised without bottom-heat, and thoroughly clean and healthy. Priced LIST, including all the best varieties, on application.

The "UPTON" Nurseries—Chester.

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**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

---

SPANISH CHESTNUT, HAZEL, ASH, LARCH, SCOTCH, BIRCH, ALDER, WILLOW, and THORN QUICK, all stout, well rooted, transplanted. A large quantity to be sold.

Mr. GEO. CHORLEY, Coaster's Nursery, Midhurst, Sussex.

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ORCHIDS.—The largest stock in Europe. Thousands of these beautiful Plants to select from, at 10s. 6d., 15s., and 21s. each, at

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

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**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.

Knap Hill Nursery, Woking, Surrey.

---

BLOOMING RHODODENDRONS.—Fine healthy plants of the best varieties, covered with Bloom-buds, 3 to 5 feet high. An inspection solicited. CATALOGUE free on application.

H. LANE AND SON, The Nurseries, Berkhamsted, Herts.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock :—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1870.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

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APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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KING NOBLE or EARLY GOLDEN SHAW; the best early Potato of its class, being as early as the true old Ashleaf, and as fine a flavour, but produces four to six times the quantity. Dwarf and compact habit. First-class for early work. Per peck, 4s.; per bushel, 14s. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

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SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

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LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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WHITE ELEPHANT.—A choice new American Potato, of very great promise, raised from the same seed-ball as the Beauty of Hebron, which it resembles in many respects, but more productive; in fact, we may claim that the White Elephant not only possesses the unexcelled qualities of the Beauty of Hebron, but also the wonderful productiveness of the old California of twenty years ago. Price 1s. 3d. per pound, 7 lb. 7s. 100 other choice kinds in stock.
DANIELS BROS., Seed Farmers, Norwich.

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FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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JOHNSTON'S DOWNSHIRES.—We can now supply this fine variety, 3s. 6d. per peck, or 10s. 6d. per bushel. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment Norwich.

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**Gold Medal Begonias.**

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 1s. and 2s. 6d. each. All first quality. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

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GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

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RASPBERRY CANES and STRAWBERRY PLANTS.
For Sale, in large or small quantities, the undermentioned very best varieties :—

| RASPBERRIES. | STRAWBERRIES. |
|---|---|
| Carter's Prolific. | President. |
| Northumberland Fillbasket. | Sir Joseph Paxton. |
| Red Antwerp. | Aigburth. |
| Semper Fidelis. | Elton Pine. |
| Fastolf. | Eleanor. |

Apply to JOSIAH H. BATH, Manor Farm, North Cray, Kent

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# WILLIAMS' NEW PRIMULAS FOR 1881.

*POST-FREE.*

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA ALBA "MAGNIFICA."**
(Raised by Messrs. J. & J. HAYES, Edmonton; purchased by B. S. WILLIAMS.)

The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.

**Per Packet, 5s.**

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA "CHISWICK RED."**
**Per Packet, 5s.**

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA "RUBRO VIOLACEA."**
**Per Packet, 5s.**

For Opinions of the Press and Testimonials see *B. S. W.'s Illustrated Seed Catalogue for* 1881, Post-free.

## NEW and CHOICE FLOWER SEEDS.

| | Per packet—s. | d. |
|---|---|---|
| **Ageratum,** Duchess of Connaught, bright lavender-mauve | 1 | 6 |
| **Abutilon,** finest mixed | 1 | 6 |
| **Balsam,** Williams' Superb Strain .. 2s. 6d. and | 1 | 6 |
| **Begonia,** New Bedding variety, finest mixed, 2s. 6d. and | 1 | 0 |
| **Begonia,** Splendid Mixed Hybrids | 1 | 6 |
| **Calceolaria,** Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. & | 1 | 6 |
| **Carnation,** finest mixed | 1 | 6 |
| **Celosia pyramidalis plumosa** | 1 | 0 |
| **Cineraria,** Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and | 1 | 6 |
| **Cockscomb,** Williams' Prize (New) | 2 | 6 |
| **Cyclamen persicum,** Brilliant (New) 5s., 3s. 6d., and | 2 | 6 |
| **Cyclamen persicum giganteum** 5s., 3s. 6d. and | 2 | 6 |
| **Cyclamen persicum giganteum rubrum,** 5s., 3s. 6d. and | 2 | 6 |
| **Cyclamen persicum,** Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and | 1 | 0 |
| **Dahlia,** Single, Yellow, Scarlet, or Mixed | 1 | 0 |
| **Mignonette,** New Hybrid Spiral | 1 | 0 |
| **Mimulus,** Finest Mixed | 1 | 0 |
| **Musk,** Williams' New Giant | 1 | 6 |
| **Pentstemon,** Extra Choice Mixed | 1 | 0 |
| **Picotee,** finest mixed | 1 | 6 |
| **Polyanthus,** Wiggins' Prize Strain | 1 | 0 |
| **Primula sinensis fimbriata coccinea** (New), 5s., 3s. 6d., and | 2 | 6 |
| **Primula sinensis fimbriata,** Williams' Superb Strain, Red, White, or Mixed, 5s., 3s. 6d., 2s. 6d. and | 1 | 6 |
| **Primula sinensis fimbriata rubra magnifica** | 3 | 6 |
| **Primula sinensis fimbriata,** Queen of the Whites | 3 | 6 |
| **Pyrethrum aureum selaginoides** (New) | 1 | 6 |
| **Stock,** East Lothian Collection, three varieties | 2 | 6 |

## NEW and CHOICE VEGETABLE SEEDS

| | Per packet—s. | d. |
|---|---|---|
| **Williams' Alexandra Broccoli** | 1 | 6 |
| **Williams' Improved Dwarf Brussels Sprouts** | 1 | 0 |
| **Williams' Matchless Red Celery** | 1 | 0 |
| **Williams' Matchless White Celery** | 1 | 0 |
| **Williams' Osmaston Manor Cucumber** | 1 | 6 |
| **Williams' Telegraph Cucumber** | 1 | 6 |
| **Williams' Gloria Mundi Endive** | 1 | 0 |
| **Williams' Victoria Cos Lettuce** | 1 | 0 |
| **Williams' Laura's Beauty Melon** | 1 | 6 |
| **Williams' Magnum Bonum Onion** | 1 | 6 |

*POST-FREE.*

**B. S. WILLIAMS,**
Seed Merchant and Nurseryman,
**VICTORIA AND PARADISE NURSERIES,**
UPPER HOLLOWAY, LONDON, N.

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TO THE TRADE
400,000 FIR, 2-yr., 1-yr., native Scotch.
500,000 FIR, 2-yr., 2-yr., ditto.
500,000 LARCH, 2-yr., 1-yr.
Price (now less than quoted in our Trade List) on application. The ground on which the 2-yr., 1-yr., Scotch Fir stands being required for building purposes, they will be offered cheap.
MORRISON BROTHERS, Aberdeen.

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PEAR STOCKS, 40s. per 1000. Standard, Pyramid, Maiden, and Trained FRUIT TREES. PURPLE BEECH, 6 to 12 feet. Price per dozen or 100 on application.
ACER NEGUNDO VARIEGATA, 1 to 4 feet, 30s. to 60s. per 100.
PLUM, Madame Victoria, small for training, 30s. per 100.
WILLIAM FLETCHER, Ottershaw Nursery, Chertsey, Surrey.

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**To the Trade.**

ONION SEED, White or Brown Port Onion Seed, new and of excellent quality, at special low price. Apply to
G. AND W. YATES, Seed Merchants, Manchester.—Established 1826.

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**To the Trade.**

GLOIRE DE DIJON ROSES.—By the 100 or 1000. Fine plants on the Seedling Brier. Price on application.
MORRISON BROTHERS, Aberdeen.

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FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c. Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

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**Cabbage Plants.**

CABBAGE PLANTS.—Extra strong autumn-sown Early Rainham, Enfield Market, Nonpareil, Battersea, Oxheart, Sugarloaf, and true Robinson's Champion Drumhead, at 3s. per 1000. Red Pickling.
Brown Cos, Hardy Green Cos, and Tom Thumb LETTUCE, at 4s. per 1000. Cash or reference from unknown correspondents.
W. VIRGO, Wonersh Nurseries, near Guildford, Surrey.

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**To the Trade.**

ACER NEGUNDO.—Stocks, fine, 3 to 4 feet, 4s. per 100; 4 to 5 feet, 6s. per 100, or 40s. per 1000; 7 to 8 feet, straight, 8s. per 100, 60s. per 1000.
THORN QUICK, transplanted, fine, 2½ to 3 feet, 20s. per 1000.
W. C. SLOCOCK, Goldsworth "Old" Nursery, Woking.

---

SEED POTATOS and PEAS.—A quantity of Magnum Bonum POTATOS, warranted true; also a few bags of Prizetaker PEAS. Both the above grown by the undersigned. Particulars on application.
RICHARD ROBBINS, The Hollies, Kenilworth.

---

MAGNUM BONUM POTATOS, delivered carriage free to any station in England, or port in Ireland and Scotland, £7 10s. per ton, cash.
LAPSTONE KIDNEY POTATOS, at £6 per ton. } Free on rails, Hexham Station.
RED-SKINNED KIDNEY ditto, at £6 per ton. } Free on rails, Hexham Station.
SCOTCH FIR, 1-yr. Seedling.
PINUS AUSTRIACA, 2-yr. ditto.
NORWAY SPRUCE, 2-yr. ditto.
ASH, 2-yr. ditto. } Price on application.
W. FELL AND CO., Wentworth Nurseries, Hexham.

---

FLOWER SEEDS in PENNY PACKETS.—One hundred of the most showy, popular, and beautiful varieties, including finest double ASTER and Ten-week STOCK, Scarlet LINUM, MIGNONETTE, NEMOPHILA, SWEET PEAS, CONVOLVULUS, Dwarf NASTURTIUMS, CLARKIA, COLLINSIA, CALLIOPSIS, &c., post-free, 8s. 50 packets, including as above, post-free, 4s. 2d.; 25 ditto, 2s. 2d.
Each packet contains sufficient seed for making two or three nice patches. Excellent for distribution amongst cottagers or children. All the varieties are easy of cultivation.
DANIELS BROS., The Queen's Seedsmen, Norwich.

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SEED POTATOS.
GRAMPIANS, Robertson's true stock, 20 tons, at £6 10s. per ton.
CHAMPIONS, true Scotch, 25 tons, at £3 15s. per ton.
PRINCE ARTHUR KIDNEY, 15 cwt., at 11s. p. cwt.
RIVERS' ROYAL ASHLEAF KIDNEY, 5 tons, at £6 10s. per ton.
And other leading sorts. Prices on application.
THOMAS IMRIE AND SONS, Nurserymen and Seedsmen, Ayr, N.B.

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LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.
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LARCH, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 3½ feet.
SCOTCH.
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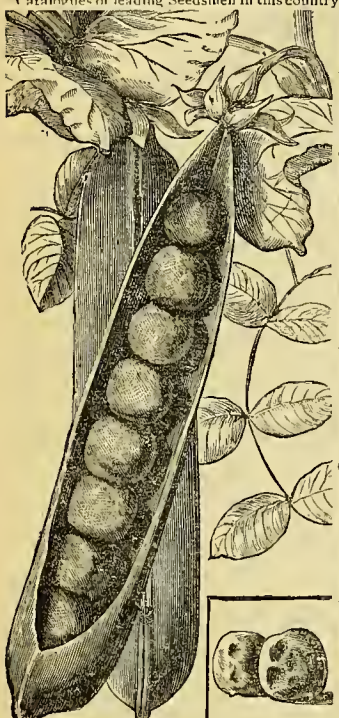

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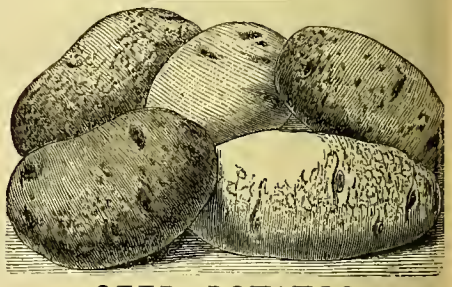

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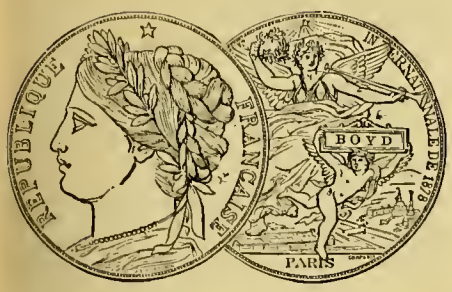


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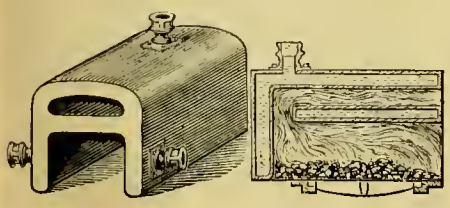

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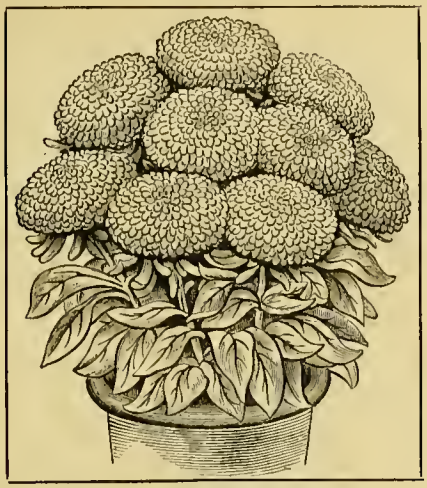

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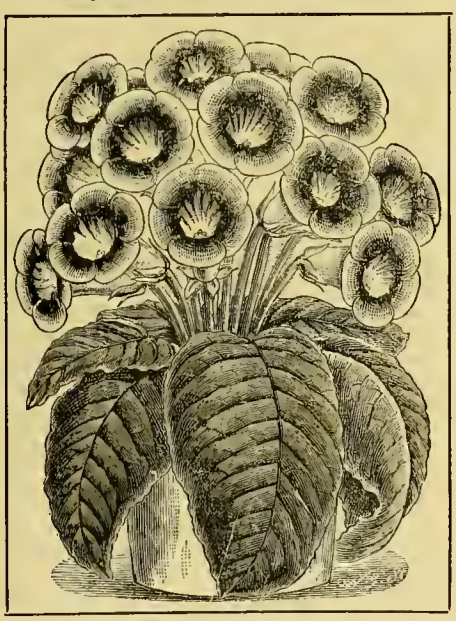

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THE
Gardeners' Chronicle.
SATURDAY, MARCH 5, 1881.

## FLOWER LORE: MARCH.

During the present month the busy activity of Nature is every day more apparent, and even the cold winds, after the wet of February, further the process of evolution in the swelling buds and springing blades, exerting a wholesome severity in so far as they check their premature growth, which otherwise might be impaired by the yet unsettled season. In addition, moreover, to the flowers of the preceding month, many others now cheer the eye, ever reminding us that spring is nigh at hand. One of the most delightful of these is the Daffodil—

> "Which comes before the swallow dares, and takes
> The winds of March with beauty."

This was the favourite flower of our ancestors, and of all English poets from the time of Shakespeare to the present day. It is known under the various names of Narcissus, Daffadowndilly, and Jonquil. In Cornwall it is called the Lent Lily, and in some places it is nicknamed Crowbell. It was also formerly termed the Chalice-flower, from the nectary or cup being shaped like the chalice used at the communion-table. Referring to its different names, that of Narcissus is derived from its being supposed to be the same as the plant mentioned by the Greeks and Romans. Ovid represents it as having been named after a youth who pined away because he fell in love with his own image reflected in a pool of water—an instance, as Dr. Prior has pointed out, of a legend written to suit a name, for we know how Proserpine was gathering Narcissi long before that youth was born. The word Daffodil, according to Skinner, is a corruption of Asphodelus; but it is probably nothing more than the old English name "Affodile," "that which cometh early." The term Daffadowndilly is also regarded by Dr. Prior as a corrupted form of "Saffron Lily;" while the name Jonquil comes to us through the French, from "juncifolius," or rush-leaf. A well-known couplet associates this plant with Lady Day:—

> "Then comes the Daffodil beside
> Our Ladie's smock at our Lady-tide."

Like the Snowdrop, it is considered unlucky to bring indoors the first Daffodil of the year, an illustration of which superstition we quote from the *Western Times*:—"My friend had been out for a walk in a meadow near the Teign; along the banks the Daffodils were very abundant, one of which he picked, and on arriving home he placed it on the table. Soon after a servant came into the room and saw the flower, when she at once exclaimed, 'Who brought in this Daffodil? We shall have no luck this year.'"

Another of the most beautiful of our March flowers is the Germander Speedwell, with its unrivalled blue colour. It is popularly called "Cat's-eye," and also "Eye-bright," the latter name being used by Elliott—

> "Blue Eye-bright! loveliest flower of all that grow
> In flower-loved England."

Another of its nicknames is "Blue Bird's-eye," and formerly, too, the term "Forget-me-not" was applied to it—a name, however, which has since passed to a Myosotis. It derived its common appellation "Speedwell" from its corolla falling off and flying away as soon as it is gathered, "Speedwell" having been a general form of valediction in days gone by, and equivalent to our "farewell." Many virtues have been attached to this plant, and hence it has been much used in folk-medicine. Gerard recommends it to be taken in "good broth of a hen" as a cure for cancer, and the Emperor Charles V. is reported to have taken it as a remedy for gout. We may note here that the family of plants of which the Germander Speedwell is a species were much esteemed by old medical writers, and Boerhaave mentions having cured no less than a hundred different disorders with the Veronica orientalis.

Occasionally may be seen the graceful Wood Anemone in flower, which has been popularly called the "Wind-flower," because the slightest breeze will set its drooping bells in motion. Pliny tells us that it is termed the "Wind-flower" because it never opens unless the wind is blowing. According to an old legend, it is said to have sprung from the tears of Venus when she wept over the body of Adonis. Much doubt, however, exists as to whether our Anemone is the same as the classical one, which Dr. Prior thinks was probably a Cistus or Rock Rose. In ancient times the Anemone had a great reputation for its medical properties; and Pliny tells us that the magicians ordered every person to gather the first they saw in the year, repeating at the same time, "I gather thee for a remedy against disease." It was then carefully preserved in scarlet cloth, and in the event of the gatherer being ill was tied round his neck or arm, as this act was supposed to drive away the malady.

The Star of Bethlehem, so called from its white stellate flowers, resembling the pictures of the star that pointed out the birth of Christ, is supposed by Linnæus and others to be the "dove's dung" of Scripture. In many parts of the East its roots are cooked and eaten, and hence in a time of scarcity it would be in demand. It is known by the French as "Eleven o'Clock Lady," from its opening its petals at that hour, and closing them at five.

The Saxifrage is a numerous group of plants, some species of which blossom as early as the present month. The old English name of "Breakstone" was applied to them from their being supposed to crack the crevices of the rock in which the fibres of their roots penetrate. The ancient Romans, it would appear, had their rock-breaking plant called Saxifraga, or "Sassafras." The power of cleaving rocks, or cleaving hard substances, enters very largely into their traditions. We must not omit to speak of the Saxifraga umbrosa, one of the most popular species, and which bears various nicknames, such as "London Pride" and "None so Pretty." In some places it is called "Prattling Parnell" and "Nancy Pretty," names which, it has been suggested, may allude to some popular tale, song or farce that was in vogue in the last century. Parkinson says of it, in 1629, "Some of our English gentlewomen have called it Prince's Feather, which, although it be but a bye-name, may well serve for the plant to distinguish it." In Ireland it is termed St. Patrick's Cabbage. Various medicinal properties have been supposed to belong to this order of plants. The Lady's-smock is considered by some a corruption of Our Lady's-smock, so-called from its first flowering about Lady-tide. Others explain the name from the resemblance of its white flowers to little smocks hung out to dry. Shakespeare, in his *Love's Labours Lost*, v. 4, alludes to this flower in the Song of Spring:—

> "When Lady-smocks all silver-white
> Do paint the meadows with delight."

One of its popular nicknames is "Cuckoo-flower," because, as Gerard says, "it flowers in April and May, when the cuckoo doth begin to sing her pleasant notes without stammering." As this plant is in its full beauty about May time it has generally held a prominent place in the May Day garlands of our peasantry, to which Walton thus refers in his *Angler*—"See here a boy gathering Lilies and Lady-smocks, and there a girl cropping Culverkeys and Cowslips, all to make garlands." It is also known as "Meadow-cress," being frequently eaten in the spring by country people.

The Marsh Marigold is another plant which now begins to bloom. Many popular names have been assigned to it, such as "Mare-blobs," "Brave Bassinets," &c., most of which refer to the shape of its flower, which resembles a cup. It has been much in request in folk-medicine. Thus its leaves were smoked through a reed by the ancient Greeks as a cure for asthma. Its blossoms when boiled in alum are said to give a good dye to paper; and, formerly, its leaves in this country were smoked by country people, who termed it their "British herb tobacco."

Again, the Dandelion, which has been called "the Sunflower of Spring," enlivens the pastures of the earlier year with its bright, handsome yellow flowers. Much uncertainty exists as to the origin of its name, which is generally considered a corruption of the French *dent de lion* (lion's tooth), although the reason is not apparent, for the leaves cannot be said to resemble the lion's teeth, as some would suggest; others consider the French words have been corrupted to "dandy-lion" from the idea of the bold and flaunting aspect of the flower; while in the opinion of some it is so called from the yellowness of its flowers, which is compared to that of the heraldic lion, whose teeth are of gold. At any rate, the subject is still a source of discussion among antiquarians. One of its popular names is "Blow Ball," because in many places children have a game of trying their luck by blowing the pappus off it. It has also been nicknamed "Priest's Crown," from its supposed likeness to the shorn heads of the Roman Catholic clergy, after the pappus has fallen from it. Linnæus has given this flower a place in the Flower Clock from the regularity with which its blossoms open and close.

The Fritillary, that elegant little plant which belongs to the Lily tribe, and adorns our meadows in the early springtime, has been so named from the Latin *fritillaria* on account of its petals being checkered like a chessboard. From the supposed resemblance also of the spots on its petals to the feathers of the Guinea-fowl it has been called "Turkey-hen, or Guinea-hen flower." Gerard names it the "Chequered Daffodil," and Parkinson tells us that it was first-named "Narcissus Caparonius," in honour of Noel Capron, an apothecary at Orleans, who discovered this plant, and was soon afterwards murdered in the Massacre of St. Bartholomew. We learn from Gerard that it was introduced into this country in the reign of Queen Elizabeth.

A favourite flower which towards the close of the present month begins to make its appearance in our fields is the golden Cowslip: the derivation of the name is uncertain. Mr. Oswald Cockayne, in his *Leechdoms* (ii. 378), would derive it from *cu*, cow, and *slyppa*, slop. One of the popular names in days gone by for this plant was "Palsy-wort," from its being esteemed a good remedy for palsy and pains in the joints: hence it was termed by medical writers Herbæ Paralysis. The French peasant still calls it "Fleur de Coucou," from its blooming about the same time as the cuckoo commences to sing. Another of its nicknames is "Herb Peter," from its resemblance to St. Peter's badge, a bunch of keys. Many curious items of folk-lore are associated with this flower. Thus, it has been asserted by some ornithologists that nightingales have a peculiar predilection for it, and are only found where it grows. This notion, however, is now generally acknowledged to be nothing more than a piece of superstition. The corollas of the Cowslip are often gathered to make a kind of wine which is thought to promote sleep. Thus Pope observes:—

> "For want of rest,
> Lettuce and Cowslip wine: *probatum est.*"

The flowers of the Cowslip, too, were formerly generally mixed with tea to give it a flavour; and its leaves are often eaten in salad—a practice which, we are told, has fallen into disuse, since salad plants are produced with such ease in our kitchen gardens. A pretty sport practised by children consists in making "Cowslip balls," which, when formed by uniting the clusters of these fragrant blossoms together, they catch and throw at each other.

## New Garden Plants.

Paradisanthus Moseni, *n. sp.**

When naming a collection of Orchids gathered and well dried by Dr. Mosen (quite a pleasure and quick work, the specimens having been collected with intelligence and skill) I was much perplexed by a Paradisanthus. Professor T. Fries, who supplied me with the set, sent me four well preserved racemes. I do not grumble about the materials at hand. I had also Dr. Mosen's note about the colour. Bulbs, indeed, and leaves, were not sent in this case. After having passed the plant three times under a very critical examination, I proposed a new species. I could, however, not get the better of a certain feeling, that I had been rather venturesome in so doing. But now I have before me a splendid living mass with fresh leaves, three bright flower-stalks. Once more Mr. Sander thought of me. Ah! Mr. Sander gets quite English; for him there exists no winter, and I suppose that next to the pleasure of seeing his Orchids alive he likes to test their endurance. Well, this experiment had a remarkable success. The plants arrived in the middle of January, notwithstanding the lightest protection, without appearing to be damaged. I know well that the effects of frost often only appear after several weeks, yet I suppose that the splendid state of flowers and buds is a warrant of good health. Now seeing these living plants, nobody could doubt one instant that the two species are remarkably distinct. To begin with the organs of vegetation, they are far stronger altogether. The oblong compressed bulbs are 2 inches long. The roots are much thicker, exceeding a dove's quill. The shoots are now sessile, as they appear to be always in Paradisanthus bahiensis, now flagellar. The two best developed leaves reach 0.11 : 0.04 m. The peduncle is much longer, green, not purple. The sepals are not white, with purple stripes, but green, with a few brown bars. The lip is white, with mauve stripes in the basilar hollow. The anterior part of the column is purple under the stigmatic hollow. A fine character might be derived from the lip, which has two angles underneath in our species, one only in old Paradisanthus bahiensis, and from the box, whose limb is retuse in our species, emarginate, two-horned in the old one. I have already given the measurement of two leaves. These leaves are oblong, linear-lanceolate in the old species. The bulbs of the old species are much smaller. The column is not so much bent in the new species. When writing my description I relied much on the blade at the base of the cavity under the column: I now learn that this blade is subject to many variations. *H. G. Rchb. f.*

## RHODODENDRONS.

Perhaps you may find room for a few more words about Rhododendrons before their season is fully upon us. During the past year I have taken every opportunity that offered to inspect and to study them, and a few remarks, critical and explanatory, may not be unacceptable to some of your readers, who have not inspected for themselves.

During the above period no species perhaps has more excited my admiration than R. Veitchianum, which ought to flourish freely wherever Indian Azaleas are grown. The finest plants I have seen are at Messrs. Veitch's. They flowered magnificently last year, and Mr. Minns, the foreman in charge,

* *Paradisanthus Moseni*, Rchb. f., n. sp.—Foliis oblongis acutis; racemo elongato; labello inferne bis obtusangulo, bene longiori, angustiori; limbo pyxidis antico retuso; lacinia labelli antica magis porrecta; columna subrecta. Brasilia. *H. G. Rchb. f.*

showed me them again the other day, bursting into bloom in company with Azaleas, red and white. No lover of Rhododendrons should omit a visit, if possible. Other nurserymen, however, have plants (I have seen them at Messrs. Henderson's, Mr. Parker's at Tooting, and elsewhere), and your issue of last week describes a grand specimen of one of the varieties at York. Wherever they are to be seen I can only repeat my advice, to go and inspect them.

Nothing can exceed the purity, the elegance, and the grandeur of the best specimen flowers. One variety has the edges crisped (and this I think is the more beautiful); the other, R. Veitchianum lævigatum, is smooth, but both are magnificent, and bloom when quite small plants. The flowers are three or four times as large as those of an Azalea, pure white, scented, graceful, and delicate beyond expression. It is no wonder that Messrs. Veitch obtained the highest honours when they re-exhibited this beautiful species; for, strange to say, although exhibited so far back as 1857, it had dropped out of British admiration, and was almost re-imported from the Continent.

The species comes from Moulmein. It is figured in the *Botanical Magazine*, t. 4992, and is there described as bearing flowers, "full five inches across." Its nearest ally is said to be R. formosum, and in this I fully acquiesce. I have moreover proved that the two will interbreed. On the Continent they graft on R. calophyllum, a strong vigorous species, which itself, however, yields to none in beauty and fragrance.

R. Veitchianum comes from Moulmein, and coming from so far south I have great hopes that it may prove a link between the Himalayan Rhododendrons and those from the Malayan Archipelago, if, indeed, the two are ever to be united. I am speaking now horticulturally, and not botanically, and with all respect for the views of Mr. C. B. Clarke; but I trust that gardeners will not yet despair of raising hybrids between the two races, although the difficulty seems very great.

R. Veitchianum is, and must remain, a greenhouse species. Allow me to add a few words about a hardier and most lovely Rhododendron. R. Fortunei, as I saw it growing in the open air at River Hill, Mr. Roger's place, ought to be the ancestor of a splendid race of hardy plants, scented, floriferous, and coloured. Mr. Luscombe has, or had, the same excellent type, scarcely inferior (the *Botanical Magazine* says superior) to R. Aucklandii. The variety at Kew, on the other hand, is vastly inferior, and indeed contemptible. Such is an illustration of the puzzles connected with Rhododendron judging. R. Aucklandii presents the same diversity of type (see remark in Hooker's *Rhododendrons*); so does R. Dalhousiæ, R. Thomsoni, and, indeed, nearly every species.

It is impossible to mention R. Fortunei without adding a few words on R. Aucklandii, which I seem this year to have proved to be absolutely hardy against winter frosts. The two species are very nearly allied, although the latter comes from Sikkim and the former from a remote part of China; but, then, we know next to nothing of the country lying between. Mr. Boscawen grows magnificent trusses of R. Aucklandii in the open air, of which the *Gardeners' Chronicle* (see number of May 18, 1878) says "It is difficult to find an adjective sufficiently expressive of the majestic loveliness of the flower;" and Mr. Otto Forster has kindly sent me a photograph of a plant which in his winter garden at Augsburg bore 122 trusses of bloom. Unfortunately there is no illustration that I know of which does justice to the splendour of the flower. As the *Gardeners' Chronicle*, cited above, remarks, even Sir J. Hooker's plate falls very far short of the reality.

*J. H. Mangles, Valewood, Haslemere.*

*(To be continued.)*

## NEW INVENTIONS.

Fletcher's Patent Metal Substitute for Putty.—Many good, bad and indifferent inventions have been introduced within the last few years to obviate the use of putty in glazing, but it has been left to Mr. F. W. Fletcher, of the firm of Fletcher, Lowndes & Co., to introduce a system which we are inclined to consider at once as one of the neatest and most perfect. The great objection to other systems has hitherto been that they have not been able to thoroughly get over the difficulty attending the use of unevenly rolled glass, the metal grips being too tight and rigid in some cases—a fertile source of broken panes; others, again, being too loose or having no grip at all, of which the results are noisy vibration when the wind blows at all strong, as well as a loss of heat. Mr. Fletcher's invention, on the contrary, embraces all the advantages of a metal glazing bar, and undoubtedly obviates the imperfection we have pointed out. It is not claimed that the metal bar is a new invention, but rather a method of applying metal for fixing sheets of glass to any ordinary sash bars, as shown in figs. 53 and 54; fig. 53 being an iron bar, and fig. 54 a zinc one. Fig. 54 shows an ingenious method of fixing a top and bottom "putty substitute," together forming the neatest and most serviceable glazing bar for ordinary horticultural purposes that we have yet seen. The principal feature of the invention is the form of the metal, and its relative position with the surface of the glass, the strips of metal readily following any inequalities in the surface, and so forming a perfect

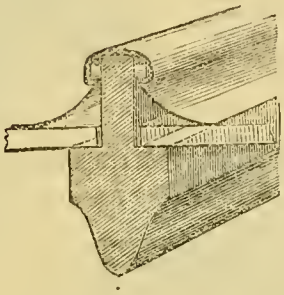

Fig 53.—Iron sash bar.

contact between glass and bar from end to end; or, in other words, holding the glass evenly and firmly throughout. Another feature of prime importance is that should any moisture from condensation or otherwise become frozen between the metal and glass, the expansion of the water in freezing will lift the metal rather than break the glass; so that when the frost goes the metal will resume its ordinary position.

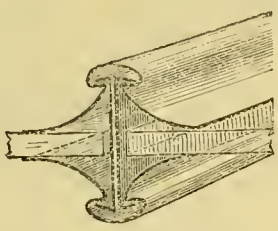

Fig. 54.—Zinc sash bar.

We understand that the cost of labour and material where this system of glazing is followed is about 10 per cent. less than ordinary glazing with putty.

## THE KEW ARBORETUM.

### The Maples.—VII.

Acer Pseudo-Platanus, *L.*; Loudon, *Encycloped. of Trees and Shrubs*, pp. 86, 110, 111; Koch, *Dendrologie*, theil i., p. 526; Syme, *English Botany*, p. 230, tab. 320.

Great Maple, Sycamore, Plane of Scotland. Central Europe and Western Asia. A forest tree of the first rank, producing valuable timber; it is also one of the most useful of ornamental deciduous trees. A large number of sports and seedling forms have received names, and the following are some which are to be found in our English parks and gardens, and in the great tree nurseries either at home or abroad. Several of these are not in the Kew arboretum, neither have I seen them elsewhere; I have, however, from the most trustworthy sources obtained all the information I could respecting them. For convenience of reference the series of varieties is arranged in alphabetical order.

*Var.* aucubæfolium.

An accidental seedling form discovered by Messrs. Little & Ballantyne some years ago in their Carlisle nurseries, and not yet sent out. The largest specimen is one about 6 feet high: the leaves are beautifully mottled, like those of an Aucuba.

*Var.* erythrocarpum, *Revue Horticole*, 1864, p. 171; A. Pseudo-Platanus fructu-rubro, Hort.

The fruits of this variety are much more deeply coloured than those of the type, and from the abundance in which they are produced create a fine effect in autumn. This form originated in the nursery of M. Ferrand at Cognac about thirty-two years ago.

*Var.* euchlorum.

A stronger grower than the type, with larger, less toothed leaves, of a darker green. M. Leon Simon informs me that this variety originated in Spaeth's nursery at Berlin.

*Var.* flavo-marginatum, Loud. *Encyclop. of Trees and Shrubs*, p. 86; A. P.-P. corstorphinensis, Hort.; A. P.-P. lutescens, Hort.; A. P.-P. foliis aureis, Hort.; A. P.-P. foliis lutescentibus, Hort.: the Corstorphine Plane.

"The original tree stands near an old pigeon-house in the grounds of Sir Thomas Dick Lauder, Bart., in the parish of Corstorphine, near Edinburgh. Seeds of this variety, sown, have produced plants with the character of the parent to a certain extent." The variety Worleyi, which I have not yet seen, is described as having foliage more intensely yellow than that of the old Corstorphine Plane; lutescens novum (also not in Kew Arboretum) is, judging from the descriptions I have been able to see, identical with this.

*Var.* fol. albo-variegatis.

In this form—the oldest and best known of the variegated Sycamores—the leaves are splashed and marked with white.

*Var.* fol. luteo-variegatis.

This is often called var. aureo-variegatum, and differs from the last in its variegation being more or less yellow, instead of white.

*Var.* hybridum.

There are no plants of this form in the Kew Arboretum. To M. J. Van Volxem I am indebted for the information that it has more slender twigs, and leaves smaller in size and of a darker hue than those of the type.

*Var.* Leopoldi, *Illustration Horticole*, xi., tab. 411.

About twenty years ago the parent plant from which all the stock of this variety was originally procured was discovered in a seed-bed in the nursery of M. Vervaene, at Ledeberg-les-Gand, by whom it was sold to Van Geert. In 1865 Mr. Bull exhibited and obtained a First-class Certificate for a plant of this at one of the meetings of the Royal Horticultural Society. The young leaves are prettily marked with purplish and flesh colour on a green ground. It is named in honour of the late King of the Belgians.

*Var.* lobatum.

The more deeply-cut lobes of the leaves of this form distinguish it at once from the common Sycamore.

*Var.* longifolium, Loudon, *Encyclop. of Trees and Shrubs*, p. 86; A. longifolium, Hort., Booth.

"Leaves more deeply cut and the petioles much longer than in the species. Altogether a tree of very remarkable aspect."

*Var.* opulifolium.

The plant of this name in Loudon's *Encyclopædia of Trees and Shrubs*, p. 86, belongs to a species quite distinct from A. Pseudo-Platanus, and will be mentioned in due time. The present form is not at Kew, but it is grown by M. Lavallée, and is included in his *Arboretum Segrezianum*.

*Var.* ovale: Acer ovale, Hort.

This is another form of which there are no examples at Kew. M. J. Van Volxem writes that it is a by no means striking variety of A. Pseudo-Platanus, with the leaves less distinctly lobed than usual.

*Var.* palmatifidum: A. laciniatum, Hort.; A. fol. dissectis, Hort.

Leaves a little more cut than those of the type, but the plant altogether possessing no very marked characteristics.

*Var.* PUBESCENS, Endlicher, *Catalogus Horti Academici Vindobonensis*, p. 372 (name only).

Of this variety I know nothing, and I do not remember having met with the name elsewhere than in the book above quoted.

*Var.* PURPUREUM, *Loud.*; A. P. var. rubrum, Hort.; A. nigrum, Hort.; A. atropurpureum, Hort.; A. P. var. foliis purpureis, Hort.

"Leaves of a fine purple underneath. This variety was found in a bed of seedlings in Saunder's Nursery, Jersey, about 1828. . . . The tree has a very singular effect when the leaves are slightly ruffled with the wind, alternately appearing clothed in purple and in pale green. In spring, when the leaves first expand, the purple bloom is less obvious than when they become matured, at which time it is very distinct." Loudon, *Encyclop. of Trees and Shrubs*, p. 86.

*Var.* PURPUREO-VARIEGATUM.

A sub-variety of the last-named, which originated in the nursery of Van Volxem at Perck; it has large stripes of rose-coloured or white variegation on a purplish ground. In the *Revue Horticole*, 1877, p. 334, Mons. Carrière describes a form which is apparently identical with this, under the name of A. Pseudo-Platanus variegatum; it originated as a branch sport from the common purple-leaved tree in the Bois de Boulogne Nurseries at Longchamps in 1874.

*Var.* PYRAMIDALE.

In answer to my queries respecting the origin and peculiarities of this, Messrs. Rodger, McClelland & Co., Newry, write:—"The variety originated in a row of trees close to our gate. It is so conspicuously distinct in outline from all the others in the row, and from all others we know, that we thought it quite worth propagating and receiving a distinctive name. The characteristic of the type is to become round-headed at quite an early age; whereas this tree is quite a pyramid, not in the sense that Betula pyramidalis and Acacia pyramidalis (which are columnar) are, but a true pyramid."

*Var.* RAFINESQUIANUM: Acer Rafinesquianum, Hort.

I can find this name only in nursery lists. Loudon does not mention it, neither do Koch nor Lauche, and I have not yet been able to ascertain its history or origin. Judging from specimens in the Kew Arboretum, which, however, are too young to flower, it—as far as colour of wood and outline of leaf go—agrees perfectly with A. Pseudo-Platanus; from the type, however, it seems to differ somewhat in the more distinct glaucousness of the under surface of its leaves. I have not seen flowers or fruits.

*Var.* SEROTINUM, Endlicher, *Catalogus Horti Academici Vindobonensis*, p. 372 (name only).

I know of no published description of this variety. Messrs. Haage & Schmidt, of Erfurt, in whose catalogue I saw the name, inform me that their stock was obtained from the Botanic Garden at Vienna, but that Dr. Kerner, the present Director, could not throw any light on the origin of the variety.

*Var.* TRICOLOR.

A rather poor variety, not worth growing except in large collections. Not so desirable as the old var. fol. albo-variegatum.

*Var.* TRILOBATUM: A. hybridum trilobatum, Hort.

Koch supposes that this may be a hybrid between A. Pseudo-Platanus and A. macrophyllum. It has rather large 3-lobed leaves, the sub-equal rather deep lobes being again somewhat split up into distant coarsely-toothed divisions.

*Var.* UMBRACULIFERUM.

I cannot learn that this, which is not in the Kew Arboretum, possesses anything uncommon except its name.

*Var.* VITIFOLIUM: A. vitifolium, Opiz., *Flora*, xii., 549.

A form with large, heart-shaped, distinctly 5-partite leaves.

*Var.* WEBBIANUM.

This finely variegated and distinct variety was raised from seed some fifteen years ago in the Isleworth nursery of Messrs. C. Lee & Son. It has from 3—5-lobed leaves which rather differ in outline from those of the common Sycamore, and agree more with the longifolium above-mentioned. The variegation, too, is distinct from that of any of the other forms which I have had an opportunity of examining; it is not yet sent out. *Geo. Nicholson.*

## ECHIUM ALBICANS.*

Of the truly splendid genus Echium this perhaps is the most beautiful, though at present little known in this country. It is a dwarf-growing perennial species, of tufted habit, the surface clothed with hoary, appressed, bristly hairs. The leaves form a dense tuft, each leaf linear-lanceolate, tapering at the base, those on the stem sessile. The flowering-stems are 6—18 inches high, and bear branching racemes, which lengthen as they grow, and become recurved at the ends. Each flower has a calyx of five linear segments, surrounding a funnel-shaped corolla nearly an inch in length, at first of a rosy colour, afterwards becoming violet.

It is a native of the mountains of Granada, and the Sierra Nevada, at a height of 2000 to 5000 feet, and is described as the most beautiful of all the Spanish kinds. There are excellent figures of it in the works of Webb and Boissier cited in the foot-note. Our illustration (fig. 55) was taken from a plant growing in the Imperial Garden of Beloe, near Vienna.

* *Echium albicans*, Lagasca, ex Willkomm et Lange, Prod. Flor. Hispan., vol. ii. (1870). 485; Webb, It. Otia Hispan. i. 18, t. 12; Boissier, Voy. en Espagne, t. 125.

# Foreign Correspondence.

Hyères, the City of Palms: *Hyères, Jan.* 21.—The municipal elections just concluded here have placed in office the party pledged to push forward public works with the utmost energy. Last year this town obtained permission to raise a loan of £60,000, which sum was to be spent for the most part on embellishments. Now embellishment in this locality means the creation of broad and lengthy boulevards, and no boulevard is considered worthy of esteem unless it is planted with a double row of trees. Nor will ordinary trees do. Hyères is ever mindful of its renown as a winter resort—of the marvellous climate which all impartial students of climatology have recognised as especially its own, and it is the unanimous wish of the inhabitants that in planting new trees on the new thoroughfares these trees should in themselves suffice to demonstrate the climatic virtues on which the town rests its claim to renown and all its hopes of wealth. The full value of exotic vegetation, as an advertising medium for a winter health resort, has not been thoroughly realised before. A picture of a public square with Palm trees waving their plume-like crests over the roofs of the houses gives a more graphic conception of a warm climate than endless tables of meteorological statistics, particularly when these latter have to be converted from degrees Centigrade into degrees Reaumur or Fahrenheit. Of course scientists might debate over such matters, and it would be easy to prove that Palm trees flourish in many a place where the climate would prove fatal to most invalids; but with the general public something striking—something that at a glance produces an indelible impression—is the most valuable recommendation. Hence the Eucalyptus, the Palm, the Orange, the Aloe and the Prickly Pear are the most effective means of convincing the public that at Hyères they will escape the trials of a northern winter. So thoroughly is the force of this method of argument now understood that henceforth this town will no longer be known as Hyères; but on the fulfilment of certain legal formalities it will be officially re-christened "Hyères-les-Palmiers."

This distinctive and most attractive appellation it will certainly well deserve, for of all the towns on the French coasts of the Mediterranean none possess so many nor such magnificent Palm trees. From time immemorial Palms have been grown at Hyères, and there is a record still extant of the admiration these trees excited when Henry IV. visited the town in 1564. At present, however, the most ancient Palm is not more than sixty years old. Those of the Place des Palmiers were planted in 1835, and are remarkable principally for the great height they have attained. They make also a very striking sketch, which has served many a time, and to an excellent purpose, as an advertisement of the town, or, rather, of its climate. This may be thought by some enthusiasts a somewhat irreverent view to take of the subject, but writing under the influence of local thought and local aspirations, it is impossible to conceal from oneself that this is really the most important side of the question. It is much to be feared that if there were no prospect of attracting foreigners to winter in this town the natives would very generally agree with Dr. Johnson, that the finest flower of the garden was the Cauliflower, and, devoting themselves solely to growing early vegetables for the northern markets, would scarcely plant anything more ornamental on their thoroughfares than an occasional kerbstone.

As it is, however, the Place des Palmiers was found so great a success, so admirable a decoy duck for the Northerner who longed to revel under a southern sun, that some years later it was determined to plant an entire avenue of Palms. These are much finer specimens, and have now grown to such a height that strollers can loiter under the shade of their branches. In all there are sixty Palms in this avenue, and so loud and long have been the praises that this unique avenue of Palms has elicited that there is considerable danger of seeing this form of ornamentation overdone.

Altogether distinct from the new boulevards which the municipality is about to create, two magnificent boulevards have just been completed by a rich proprietor who owns the best part of the west end of the town. These new boulevards cut through the market gardens that slope gently down from the town through the plain to the railway station, which is situated more than a mile away in the valley of Hyères. On the causeway, on each side of these boulevards, no less than 300 Date Palms have been planted. The effect when these trees have had time to grow will be magnificent. From the station the traveller, as he alights from the train, will be able to gaze up an avenue about a mile in length, 65 feet broad, vaulted over by the arched branches of the monumental Palms. Half way up this avenue there is a large fountain, also surrounded by Palms, and here another but shorter boulevard running at angles is likewise planted with the same tree. Most commendable precautions have been taken to prevent the speculative builder marring the splendour of this scene. Of course the land on either side of these new boulevards is to be disposed in building plots; but no one will be allowed to purchase the same unless he undertakes to build at a distance of 18 feet from the thoroughfare, and of 18 feet from the neighbouring plots. Nor are these plots to be divided by ugly walls; nothing but fences will be tolerated in this country, where they are so easily grown. The new boulevards of Palms will therefore conduct us through a series of gardens dotted here and there with fancy villas, embedded in trees and flowers, and standing at a respectful distance from the road and from each other. In deference to the English, who for the most part inhabit the west end of the town, the boulevard uniting this quarter with the railway station is called the Boulevard Victoria; the other and shorter boulevard is known as the Boulevard Beauregard, and both have been opened to the public for the first time this season.

Thus we have at Hyères the ancient Place des Palmiers, with its seven Palms, the Avenues des Palmiers with sixty fully developed Palms, the two new boulevards with 300 newly-planted Palms, which for the most part are not more than five or six years old. Then in the garden of almost every villa there are one, two, or three Palms; the lawn tennis ground is overlooked by a terrace of Palms, where the spectators sit and watch the game. A part of the main street of Hyères is planted with alternate Palms and Oleander trees, which have now reached a respectable height; while most of the oldest and finest Palms grow at random in the plains, lifting their feathered crests high above farm and cottage, and imparting a truly Oriental aspect to the scenery. Well does this town, therefore, deserve to be called the city of Palms—Hyères-les-Palmiers.

But this is not all: there are the new boulevards which the municipality is building with the proceeds of the loan already mentioned. These are also, we are assured, to be planted with Palm trees, and what is more, it is even proposed to put a double row of Palms on each side of the roadway. This latter innovation would be more particularly effective; but the question arises in the face of this promised plethora of Palms, whether after all we are not menaced with too much of a good thing. There is a limit to our capacity of admiration even for Palms. Also these straight rows of Palms, growing stiffly at regular intervals, one from the other, like so many soldiers rivetted to the ground in battle array, do not correspond with our preconceived notions of oriental scenery. As an occasional feature it is at once original

and beautiful; but if applied to every boulevard would look artificial, and would not be in keeping with the great variety of resources which are the special advantages of this country and climate. Undoubtedly of all the trees the Palm is, in most respects, the best tree to use for this purpose, but it does not follow that it is the only tree that should be planted in the streets. Most persons consider that, as a matter of appearance, it is the handsomest; then it does not interfere with the dryness of the thoroughfare, and only gives a sort of half shade, advantages of the utmost importance when dealing with the invalids who frequent these winter resorts. For them the promenade must be dry and warm. For the native who is toiling at the threshold of his workshop through the hot dry summer months, the deep shade and the moisture of the giant Oriental Plane trees is far preferable, and these are the trees that line the road through the Bon Puits, the work-a-day district of Hyères.

For the new boulevards, and to give a variety to the Palm, the Eucalyptus naturally suggests itself. Some years ago Eucalyptus trees were planted on all sides, but these were found inconvenient when growing in a road. The enormous size they so rapidly acquire keeps the light out of the upper portion of the surrounding houses, while their roots undermine the foundations. For these reasons it has been necessary to cut down some remarkably fine Eucalyptus globulus, though they were scarcely twenty years old. The false Pepper tree, Schinus Molle, would mingle well with several of the eighty or ninety varieties of Australian Acacias that grow so well at Hyères. As compared to the Palm or Eucalyptus, these trees are small, but the foliage, the clusters of red berries in the one, the yellow flowers in the other, would afford great relief to the eye. Then, though rather slow of growth, the Magnolia grandiflora, and the Exmouth variety of the same species, distinguished by the iron-rust appearance of the back of its magnificent green leaf, would be a rich ornament to any road or public lounge. The Pinus canariensis and one or two other forms of fine semi-tropical Pine trees might be planted, and some persons have even urged the creation of an avenue of Umbrella Pines, Pinus pinea. These are certainly magnificent trees, giving forth the most balsamic odours, and growing in the country round about to such huge dimensions that one single tree will often suffice to shelter, during a storm a whole flock of sheep. But it is precisely this quality that renders these trees unsuited for a road or boulevard. The strongest sun cannot penetrate the thick shade given by an Umbrella Pine, and every invalid is ordered to keep in the sun during the winter months. The Umbrella Pine is better suited to roads that are at some distance from the town, where they might be planted at long intervals with Eucalyptus between.

What is really wanted to render this town thoroughly worthy of its new name are plantations of Palm trees in irregular clusters, forming groups on sites a little elevated, and visible at considerable distances. This would give a more picturesque and oriental aspect to the scenery than a multiplicity of boulevards that divide the country into geometrical figures, that were very useful in Paris when it was a question of bringing artillery to bear against a revolutionary population, but which are out of place in a rural health resort. One or two boulevards of this description are a great improvement, but too many are injurious, particularly when, for their construction, it is necessary to cut through and destroy such valuable horticultural establishments as the Jardin Huber. Nevertheless, it is satisfactory to note how widely diffused the love of arboriculture has become; how the municipal authorities debate for hours what trees are best suited to the ornamentation of thoroughfares, and how one of the most ancient health resorts of the Riviera claims as its highest title of popularity that it is *par excellence* the land of Palms. *Adolphe Smith.*

Fig. 55.—Echium albicans. (see p. 300.

## Orchid Notes.

Orchid Flowers for Market.—It is only in recent years that Orchid flowers in anything more than small quantities found their way to Covent Garden, and notwithstanding the elegant forms, combined with delicacy of colour and agreeable perfume which many of them possess, to say nothing of their enduring properties, the taste of the flower-buying public is so conservative that Orchids were long in being held in much estimation by more than a limited number of those who purchase choice flowers. Even yet in the winter season a Rose, Gardenia, Eucharis, or a spray of Stephanotis, is by many preferred to a handsome Orchid bloom. Nevertheless, like anything else possessing real merit, these chastely elegant flowers are gradually making their way to the head of the position, and a bouquet that in addition to the old established favourites, such as Camellias, Rosebuds, Tuberoses, Lily of the Valley, Stephanotis, Bouvardias, Eucharis, and Violets, contains a few blooms of Odontoglossum crispum (Alexandræ), cirrhosum, or Pescatorei, Phalænopsis, Cœlogyne, Dendrobium, or the like, is now more prized and commands a higher price. Any one who is in the habit of seeing the leading flower-shops in the West-end, or in the "grand row," cannot fail to notice the extent and beauty of the Orchids now used; but the kinds that find favour are remarkably few in number, as compared with the immense variety of species in cultivation, white or light-coloured flowers, or those that possess distinct and well defined colours, being alone cared for. Phalænopsis amabilis, grandiflora, and Schilleriana; Dendrobium nobile, Wardianum, crassinode, Devonianum and formosum; Cœlogyne cristata, and such Odontoglossums as Pescatorei, cirrhosum and crispum, almost exhaust the whole that stand in the first rank, particularly the last-named—O. crispum—in any of its many forms, when either all but white or spotted.

Amongst those who grow flowers expressly for market, Messrs. Wright, of Lee, in Kent, have made Orchids of the above description an especial feature. They have now some three or four houses filled with cool Odontoglossums, principally of the kinds above-named, and a few other species that grow under like treatment. There are here plants of various sizes, from such as are only getting fairly established up to large specimens. One house is almost filled with plants that have attained a size and condition it would be difficult to match, and which produce a correspond-

ing quantity of flowers; and, notwithstanding their being almost daily cut for sale, they present a beautiful appearance at this season, when the hundreds of strong arched racemes are in all stages of development. As might be supposed from the number of plants grown, and the proverbial sportive disposition of O. crispum, there is a great variety amongst them, many being of exceptional merit in size of flower as also in their markings. To the lovers of cool Orchids they are a more than usually interesting sight, and the interest attached to the collection is not likely to grow less, for we understand that Messrs. Wright refuse to entertain any offers for the plants, keeping them for the sake of the flowers alone. In other houses are a large number of Phalænopsis amabilis, grandiflora, and Schilleriana, all grown for their flowers; many of them are hung up close to the glass, or in other ways elevated near the roof, and are in exceptionally good condition, with strong leathery leaves, free from appearance of disease, and producing a quantity of flowers. Another small house is nearly filled with Cœlogyne cristata—large masses of this elegant white winter flower. These, like the plants already named, are in good healthy condition, and have been clothed with a sheet of bloom, now getting over. Dendrobium nobile is also grown in considerable quantity, mostly in the shape of big specimens that produce several hundreds of flowers each, and although this species cannot boast of being new or having the novelty or rarity about it that many Orchids of less merit can lay claim to, yet it is one of the flowers which not only take in the market, but will hold its own after many with little beyond rarity to recommend them pass into the shade. Of the beautiful white Cypripedium niveum there are likewise considerable numbers; the purity of colour of this most distinct kind, together with the length of time its flowers—in common with most of the Cypripediums—will last when cut, will no doubt make it highly prized for using in this way. *T. B.*

### Dendrobium nobile: Orchids in Flower.

I have several plants of Dendrobium nobile under my charge, one of which, in a 14-inch pot, has 390 blooms upon it, and one growth has forty flowers on it. The following Orchids are also in flower at the present time:—

| | |
|---|---|
| Ada aurantiaca | Masdevallia Veitchiana |
| Cattleya Mossiæ | Maxillaria grandiflora |
| ,, Trianæ | Mesospinidium sanguineum |
| Cœlogyne cristata | ,, vulcanicum |
| Cypripedium insigne | Odontoglossum Alexandræ |
| ,, ,, Maulei | ,, cirrhosum |
| ,, Boxallii | ,, gloriosum |
| ,, villosum | ,, Hallii |
| Dendrobium Freemani | ,, maculatum Donianum |
| ,, chrysotoxum | ,, Pescatorei |
| ,, chrysanthum | ,, hystrix |
| ,, crepidatum | ,, Rossii majus |
| ,, nobile pendulum | ,, Dawsonianum |
| ,, primulinum giganteum | Oncidium Cavendishianum |
| ,, Wardianum | ,, macranthum |
| ,, superbiens | ,, reflexum |
| Lælia cinnabarina | ,, sphacelatum |
| Lycaste Skinneri | Phajus Wallichii |
| Masdevallia amabilis | Phalænopsis amabilis |
| ,, Harryana | ,, grandiflora |
| ,, ignea | ,, Schilleriana |
| ,, Lindeni | |

*James Bayliss, The Gardens, Belvedere House, Mullingar, Co. Westmeath.*

### Seedling Dendrobiums.

I send herewith a couple of flowers for your examination. The lesser one is a flower of Dendrobium Ainsworthii ×, taken from a plant now blooming with us which has 120 flowers upon it, a sight at once very pretty and effective; the other bloom I have taken from one of a number of seedling Dendrobiums which I have raised. I have flowered four others besides this one, and all partake of the same characteristics. I have also compared them with D. Ainsworthii roseum × and D. splendidissimum ×, a hybrid raised by Messrs. Veitch, and I consider the one sent finer than anything I have seen in the way of D. Ainsworthii ×. The seedling has been open nearly six weeks, so that the colour on the sepals and petals is not so dark as it has been. The labellum, however, does not appear to have lost colour at all since it opened. The flowers, as you will notice, are of fine form and substance, and as several have bloomed on bulbs only 4 inches high, I have every reason to believe it will be a free grower and bloomer, and in every respect will be as accommodating as D. nobile—that is, it may be flowered at Christmas, or be kept back to May and June. It is sweetly scented, as was to be expected, its parents being D. nobile, the female, and D. heterocarpum, the male plant. Both plants were fine varieties of their respective species, and the plants appear to have a strong and free-growing constitution, even as D. nobile has when in health and vigour. The seed was sown in June, 1875, and the tiny seedlings were first seen in February, 1876, and now in the early months of 1881 several of the plants are in flower. I am so far well pleased with them, and hope this season to get bulbs 12 or 14 inches long, so that we soon may see them in a more perfect state. *W. Swan, Fallowfield.* [The seedling is a very great advance on D. Ainsworthii, the flowers being larger, the petals conspicuously undulated, and the lip larger and more prominent, not recurved at the tip. The colours are almost identical. Eds.]

### Orchids in Flower at Brentham Park.

A correspondent obligingly sends us the following list of Orchids now in bloom in Mr. Smith's collection at Brentham Park, Stirling:—

| | |
|---|---|
| Angræcum citratum | Masdevallia ignea rubescens |
| ,, sesquipedale | ,, Shuttleworthii |
| Arpophyllum giganteum | ,, polysticta |
| Barkeria Lindleyana | ,, Wagnerii |
| Brasavola glauca | Mesospinidium vulcanicum |
| Calanthe vestita nivalis | Miltonia cuneata |
| Cattleya amethystoglossa | ,, Warscewiczii |
| ,, Trianæ | Odontoglossum Alexandræ |
| ,, ,, Atlanta | ,, bictoniense superbum |
| ,, ,, vestita | ,, cirrhosum |
| ,, Warscewiczii alba | ,, cordatum |
| Chysis Limminghei | ,, cristatum |
| Cœlogyne cristata | ,, Chestertoni |
| ,, Lemoniana | ,, Donianum |
| ,, oculata maxima | ,, gloriosum |
| Colax jugosus | ,, Hallii |
| Cymbidium eburneum | ,, Jenningsianum |
| ,, Lowianum | ,, maculatum |
| Cypripedium Lowii | ,, membranaceum |
| ,, insigne Maulei | ,, niveum majus |
| Dendrobium Ainsworthii × | ,, Pescatorei |
| ,, bigibbum | ,, Roezlii |
| ,, crassinode | ,, Rossii majus |
| ,, ,, Barkerianum | ,, ,, ,, roseum |
| ,, Farmeri aurea | ,, sp. |
| ,, fimbriatum oculatum | ,, triumphans |
| ,, Dominii | ,, Uro-Skinneri |
| ,, Findleyanum | ,, Londesboroughianum |
| ,, hedyosmum | Oncidium bicallosum |
| ,, heterocarpum | ,, Cavendishianum |
| ,, japonicum | ,, cucullatum |
| ,, lasioglossum | ,, macranthum |
| ,, nobile | ,, serratum |
| ,, Pierardi | ,, sp. |
| ,, Wardianum | Phalænopsis grandiflora |
| Dendrochilum glumaceum | ,, Schilleriana |
| Epidendrum paniculatum | Saccolabium violaceum |
| ,, rhizophorum | Sophronites grandiflora |
| Ionopsis paniculatus | Vanda suavis (Veitch's var.) |
| Lælia harpophylla | ,, tricolor |
| Lycaste Skinneri | ,, ,, insignis |
| ,, ,, alba | ,, ,, (Dalkeith var.) |
| Masdevallia ignea | ,, lamellata Boxalli |

### Masdevallia ignea.

In Mr. B. S. Williams' Orchid-houses, which are very gay with flowers just now, we noticed the other day, amongst a number of other "strong pieces," a fine healthy mass of M. ignea, over 2 feet across, and with upwards of 100 blooms, which will shortly be fully developed.

## Florists' Flowers.

Auriculas. — No time should now be lost in getting the blooming plants surface-dressed. Carefully remove about an inch of the surface soil in the pots, taking care not to injure the active rootlets growing from the neck of the plants. Any offsets that are ready for removal should now be taken off and be put into small pots, using very light sandy soil. The fresh compost should be pressed on rather firmly with the fingers. Still admit plenty of air to the frames, but be careful to cover up with mats if there is any danger of frost. Young seedlings are now appearing freely in the seed pots. The seeds were sown in August last year. A dozen or twenty are pricked out in a 3-inch pot; the plants are very small indeed, and must be very carefully handled. Alpines on rockwork, or in borders, must also be looked over. Remove decaying leaves and weeds, and if the plants are loose press them in firmly with the fingers.

### Carnations and Picotees.

If there is any greenfly on these or similar subjects now is a good time to destroy them by fumigating with tobacco-smoke. During the continuance of mild weather see that none of the plants are too dry, but it is very undesirable that the roots should be at all wet as yet. Air the frames freely, removing the lights altogether in fine weather; but it is not desirable to expose the plants to rain. If the compost has not yet been prepared for potting see to it at once, as the plants must be placed in their blooming-pots during the next month. Plants in beds out-of-doors must also be attended to. The surface of the ground should be stirred with a pointed stick or a small hand-fork. This is merely to make a fresh surface, and to expose the soil more freely to the influence of the weather. Any plants that are loose may be made firm by pressing about the roots with the fingers.

### Dahlias.

The general collection of roots should now be placed in a house where they can have a little heat. Our plan is to look over the tubers, removing any decayed portions. They are then placed in boxes of fine soil, but the crown of the tubers should be left above the surface of the soil. The temperature of the house should not be more than 50° to 55° at night to start with; the tubers will not start well in a high temperature. It is a good plan to place the boxes into a vinery or Peach-house at the time of starting them; the low temperature gradually increased just suits the Dahlia roots.

### Gladioli.

The soil ought now to be in good condition for planting out the first lot of corms. I used to pot some early in the season, and plant them out in March when they had started. This is a very good plan, but it involves more trouble than most people care to take, and it is not absolutely necessary. The small corms of last season's seedlings should all be planted now if the weather continues favourable. They require the whole of the season to develope into strong flowering examples. Corms not larger than marrow Peas will give good spikes 4 or 5 feet long by August. The ground where it is intended to plant the main collection should be again forked over in dry weather.

### Hollyhocks.

Attend to taking off cuttings from the old stools, and treat them as previously directed. The old stools will now begin to push strong growths; remove all but one as soon as they are strong enough for cuttings. Seeds may now be sown in pots or boxes. They will vegetate freely in a hotbed, and the plants, if carefully pricked out and well treated, will flower late in the autumn.

### Pansies in Pots.

The earliest of these will now be showing for bloom. The plants should be potted into their flowering-pots to keep up a succession of bloom until those out-of-doors come in. The largest plants will fill an 8-inch pot; weaker growing varieties may be potted in 6 and 7-inch pots. The Pansy likes a rich compost, and cow-manure in preference to any other; but the manure must be rotten and well dried before using it. The compost should be porous, as the fine hair-like roots of the Pansy will not work freely in a stiff compost. Fumigate the frames now, even if there are no insect pests to be seen in them. If the plants have been wintered in frames they may now be planted out in the open ground.

### Pinks.

The varieties of the forcing section should be placed in forcing-houses; at intervals of two or three weeks they should be started, slowly at first, and the night temperature after the plants have made some growth should not exceed 60°. If the show varieties have been wintered in pots they may now be planted out in the prepared beds; good strong plants may be 9 inches apart.

### Polyanthuses and Hardy Primulas.

We have now removed a very small portion of the surface soil from the pots containing these plants, and replaced with the same compost used for the Auriculas. The trusses are now showing on most of the plants, and I find the sparrows are already at work eating the buds out of them. Admit air freely, as the plants are very apt to become drawn. They must, like the Auriculas, be covered with mats on frosty nights.

### Ranunculi.

The tubers may be planted out any time after the middle of this month; but the soil must be dry before doing it. A good plan is to use the siftings of peat soil which is used in potting. Mix this fine sandy peat with an equal portion of good loam, and if there is not enough sand in the compost naturally some should be added to it. Spread 3 inches of this over the beds, and plant the tubers 1½ inch below the surface. They may be planted 5 or 6 inches asunder.

### Roses.

We can now take stock of the collection, and note the results of the severe frost. In the severe frost of

1879-80 the established plants suffered severely, and the newly planted ones not at all. This season the new stock has suffered very severely, while a large quarter of established hybrid perpetuals have not been injured. An experience like this throws us out very considerably in our calculations, and must very materially limit the extent of the culture of standard Roses. All our dwarfs are well covered over the roots with partially decayed stable-manure, and however severe the frost it seldom injures the crown of the plants. Pruning may be commenced at an early date; the hardy summer flowering varieties still to be found in some gardens should be pruned first, such as the French and Provence Roses. Then there are the hybrid China and hybrid Bourbon. Those last named are very useful Roses, and give a great quantity of bloom. The strong vigorous growths which some of them make should not be cut back too much, but may be left 18 inches or 2 feet long. The hybrid perpetual varieties should be pruned last. After pruning the manure should be forked into the ground, leaving a neat surface; no rake should be applied to it after digging. *J. Douglas, Loxford, Ilford, E.*

# Garden Operations.

## *KITCHEN GARDEN.*

The nature of the weather, and the consequent condition of the ground, have prevented the directions which were given in our preceding Calendar respecting seed-sowing from being carried out. The first favourable opportunity that presents itself for this purpose should therefore be taken; but under no circumstances should this be attempted—even though the sowing of such seeds should have to be deferred till the end of this or the middle of next month—before the ground is in a thoroughly workable state. Make fresh plantations of Rhubarb by dividing the roots and planting the divisions with the buds a couple of inches under the surface in rich deeply trenched ground—the soil being rather light than otherwise—in rows 3½ feet apart, and 3 feet in the row. Where new plantations of Asparagus are contemplated the ground should be got ready for planting the roots next month; it should be deeply trenched, and a liberal supply of well-rotted manure incorporated with the soil as the trenching proceeds; should there be a uniform depth of soil, 3 feet at the least, and if it be of a sandy alluvial nature, and impregnated with saline matters, it will in every respect, providing the drainage is good, be suitable for the growth of Asparagus. A good breadth of curled Parsley should now be sown, also Early London Cauliflower, Snow's Superb Winter White Broccoli, Cottager's and Scotch Kales, and Brussels Sprouts—a small sowing of each—may now be made in a warm border. Make another sowing of Peas every fortnight for the next three or four months, of Laxton's Supreme, Dickson's Favourite; where required the "twin sisters" Telegraph and Telephone, and Ne Plus Ultra Peas should also be sown; also Broad Beans and Spinach in sufficient quantity to meet the demand for, and maintain a good supply of the same at the proper time. All old Cabbage stumps, &c., should be removed forthwith, and the ground manured and dug for Potatos, of which a small planting of the early kinds, including Lee's Hammersmith Kidney, may be made next week in rows 2½ feet apart and 1 foot in the row, between which Cauliflower plants will be planted next month. It will be advisable to defer planting the main garden crop of Potatos a couple of weeks longer with a view to their escaping late frosts in the event of there being any. In consequence of the havoc caused among the Brassica tribe by the severe frosts greens are, and will be for another month or six weeks, very scarce; therefore, young plants of Cabbages and Cauliflowers must be nursed and pushed on with all possible dispatch. The Dutch hoe must now be brought into use to keep down weeds and to stir the surface of the soil between rising crops. This procedure will accelerate their growth.

Forcing Department.—French Beans, where grown in early vineries and Peach-houses (which unfortunately is the rule rather than the exception) will require extra attention in the application of water both to the roots and overhead, otherwise red-spider will be sure to attack the plants. In the event of their getting badly infested with spider the plants should be removed to a colder house or pit. Sufficient batches of seed should be planted at frequent intervals to maintain a good supply. Top-dress succession crops when about 3 inches above the rim of the pots, and nip the points out of the shoots to cause them to branch. Another batch of Seakale crowns should be covered with pots and spent leaves, and see that the supply of Asparagus is equal to the demand for the same. Young plants of Cauliflower and Brussels Sprouts should be pricked out in a frame with a gentle bottom-heat as soon as large enough to handle, preparatory to being planted in the open subsequently. Sow Moore's Cream Vegetable Marrow and Stockbridge Ridge Cucumber seed, and when large enough pot off singly in large 60's and 48's, the latter size for the Marrows; also a small sowing of the following varieties of Celery should be made, viz., Seely's Leviathan White, Turner's Incomparable White, Sandringham Dwarf White and Wright's Giant White, and Cole's Red Defiance, Major Clarke's Red, and Sulham Prize Pink—all good varieties; but were I only about to grow two kinds, I should select Turner's Incomparable White and Cole's Red Defiance. *H. W. Ward, Longford Castle.*

## *FLOWER GARDEN.*

There seems to be an idea afloat that as regards flower gardening it is possible to have a constant succession of gaiety by the use of hardy plants alone, together with the desirable condition of lessened labour. I do not dispute that it is possible to have a gay garden most of the year by the use of such plants, but it must be at the expenditure of much labour if they are at all times to present a neat appearance—such as should characterise all dressed gardens. There must be staking, tying, picking off bad flowers, &c., so that in the long run I very much doubt whether the labour would not equal that which is requisite for spring and summer bedding. No one who has experienced the immense labour of getting up a stock of tender bedding plants, and has been called upon to plant the same, just at a period when other and more important work has been pressing in other departments, will, I am sure, regret the advent of a reform that shall relieve them from such troubles, but the reform, I think, lies in the direction of reducing the number of beds or borders that are to be planted, and at the same time using as large an assortment as possible of hardy plants that associate well with the usual run of summer bedders. Personally I have for some time been working in this direction, and from general observation I find many others on the same track. The improvement, if compared with the gaudiness of bedded out gardens that held sway but a very few years ago, must be apparent to every one. Then Pelargoniums, Calceolarias, Lobelias, Petunias and Verbenas monopolised the entire garden; now, in addition to those, we use numerous hardy surfacing plants, such as Sedums, Saxifrages, and Veronicas; also graceful foliage plants and shrubs, such as the Australian Dracænas, Yuccas, Acacias, Grevilleas, and Retinosporas, and there is yet room for further development in this direction. But whatever form or style the planting is intended to bear this season, it is necessary to decide the matter at once, in order that the necessary plants may be prepared for the purpose, and where there is no spring bedding many of the plants, such as Pansies, Violas, Sedums, &c., might with advantage be planted immediately the shrubs, &c., that have been used for winter effect are removed. The propagation of the more tender plants, as noted in former Calendars, should now be in full swing, and all kinds of subtropical seeds not yet sown should now be got in, the earliest sown batch being potted off before there is any danger of their getting stunted, or of being injured by division through the roots having got matted together. It will shortly be time to sow Asters, Stocks, Zinnias, Helichrysums, and such-like annuals; and we have found the greatest success in raising these, combined with the least trouble, to be obtained by sowing them in light soil on south borders, and placing frames over them. In this way also all our Golden Feather Pyrethrum, Wallflowers, Sweet Williams, Snapdragons, Indian Pinks, French and African Marigolds, and Sweet Sultan, are raised, and most of them, if sown thinly, need not be pricked out, but when large enough may safely be transplanted to their permanent positions.

The effects of the weather are now more manifest than when the Calendar of February 5 was written. Many of the Laurustinus are killed to the ground, and so are a few of the Euonymus and common Laurels; these we shall cut over at once, and complete all other shrub pruning as early as circumstances admit of. The planting of shrubs and rearranging and thinning-out of shrubberies can yet be done, but if there is much of such work to be got over it would be wise to defer it to another season rather than it should interfere with the due advancement of other necessary work. Frequently roll walks, sweep and roll lawns, and if needs be give the latter a good dressing of soot, which is an excellent turf manure. Lawn grass seeds should be sown this month, the preparation for which consists of good drainage, and a well-pulverised surface raked finely over, the seeds to be then sown, the ground again raked over, and afterwards well rolled down. *W. Wildsmith, Heckfield, Hants.*

## *FRUIT HOUSES.*

Peaches and Nectarines.—Although we have very little improvement in the weather, Peaches are looking promising but come on slowly, owing to the absence of sun. The temperature already given for the different houses will be quite high enough for the present. Disbud and thin fruit daily, leaving the strongest and best placed. Nip out the points of any strong shoots that are taking the lead, and heel down the young shoots. Syringe the trees well all over, to check red-spider, which is sure to make its appearance after the use of so much fire-heat. Do not let them get dry at the roots, and when they are watered give them a thorough soaking; inattention on this point is often the cause of fruit falling off. If we get bright sunny weather, which we may reasonably expect ere long, give more air early, and gradually increase it, reducing down to the usual night air in a similar way. Allow the temperature to run up to 80° or 85° at closing time, with plenty of moisture, which will tend to make up for time lost during the dull wintry weather. The second house fruit should now be well set and about the size of horse beans. If not already done give them a good watering with water at 85°. Disbud and thin according to directions given for the early house. Should the greenfly make its appearance fumigate at once, and continue to do so until it is thoroughly eradicated. The third house should now be in bloom. Fertilise on bright days, and give the same treatment as to earlier houses when at the same stage. Where there are more than four houses a fourth may now be started at once. The later houses, if not already done, should be cleaned and trained as soon as possible. The sooner they are finished now the better, for even in the latest houses the buds will soon be swelling; they are then very apt to get rubbed off in training. *J. Wallis, Keele Gardens.*

### Melons.

The state of the atmosphere during the past fortnight has been, generally speaking, of that description which necessitates closed ventilators. Under these circumstances the progress of young plants will not be very rapid, nor indeed is it either desirable or beneficial to force growth at the expense of a sturdy habit, which can only be established under careful and skilful treatment. A free admission of genial air is the most important element that can be employed towards promoting vigour in young plants, and when the state of the air prohibits air-giving the plants stimulated by bottom-heat naturally become attenuated and weakly. Especially is this the case in houses that are badly ventilated and unfavourably situated. In our case we have to give air from the north side in a house that with proper working arrangements—that is to say, with the system of ventilation and the hot-water pipes properly adjusted—could not in other respects be better. It would be necessary, therefore, in such a case as this to keep a moderately dry atmosphere upon dull days and admit air through a strip of tiffany or scrim canvas as long as the external atmosphere remains raw and cold. Plants that are merely planted out or that are fresh potted require extra care until their roots lay hold of the new soil and establish themselves in it. A high moist atmosphere at such stages has a certain tendency to debilitate, as will be obvious by the character of the growth and the bleached green colour of the leaves. Upon the other hand, if the plants are kept going steadily in a mean temperature of 70° and syringing discontinued except upon bright days until the roots thoroughly permeate the fresh soil, they will then respond vigorously to a higher temperature and increased atmospheric moisture. *W. Hinds.*

### Cucumbers.

Plants that have been attended to with ordinary skill, and according to instructions given in former Calendars will now have recuperated themselves, and will be progressing satisfactorily. It is a common practice—though a reprehensible one—to patch up blanks in Cucumber-houses by planting young plants among old ones, and thereby keeping up a constant succession of fruits by planting at short intervals. The practice is not commendable, because a thorough cleansing cannot be effected nor insect pests eradicated; and as these are known to spread so rapidly over a whole house, I think for this reason, if for no other, it is a bad system to go to work by halves. When it is considered that a couple of plants in good health will cover a whole side of a house in a few weeks there does not appear to be much necessity for patching. As a rule, we do not give Cucumbers enough trellis-room. I would, therefore, advise that strong vigorous plants only be retained, and if these are given plenty of room and the strong shoots pinched regularly the trellis will soon be furnished with fruiting shoots. It will be well for the present to crop moderately, and to remove all male flowers and superabundant fruits. Maintain a night temperature of 70°, and a day temperature of from 80° to 85°, with abundance of moisture and free ventilation on bright days. Push forward young plants under similar conditions, but if they are far from the glass and are likely to become drawn, the treatment recommended for Melons in the shape of withholding moisture will have a beneficial effect in restoring them to a more vigorous state. *W. Hinds, Canford.*

APPOINTMENTS FOR THE ENSUING WEEK.

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|---|---|---|
| MONDAY, | Mar. 7 | Sale of Lilium auratum Bulbs, at Stevens Rooms. Sale of Orchids and Lily Bulbs, at the Auction Mart, by Protheroe & Morris. |
| TUESDAY, | Mar. 8 | Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. |
| WEDNESDAY, | Mar. 9 | Sale of Imported Orchids, at Stevens' Rooms. |
| THURSDAY, | Mar. 10 | Sale of Imported Orchids, at Stevens' Rooms. |
| FRIDAY, | Mar. 11 | Sale of Flowering Orchids, at Stevens' Rooms. |
| SATURDAY, | Mar. 12 | Sale of Hardy Plants and Bulbs, at Stevens' Rooms. |

A CASE of very considerable importance has been lately tried before the Court of Session in Edinburgh, but up to the time of our issue the verdict has not been given. The point which the Court is asked to determine is, whether or not certain noxious gases, alleged to be generated by the Shotts Iron Company in the course of their operations, are injurious to the trees on a certain neighbouring estate. This would seem to be a case where little difference of opinion could be expected, were the matter properly investigated by a small committee of experts familiar with the effects of noxious vapours on plants and conversant with the local circumstances. A forester, a gardener, a chemist, and a vegetable physiologist, one would imagine, would readily come to an agreement on such a case if it were properly put before them, and if they made themselves personally familiar with the circumstances of the case on the spot. Nay, any experienced gardener or forester should be able to give a trustworthy opinion on such a subject. But what do we see?—a bevy of the most accomplished chemists, a contingent of botanists and gardeners on the one side, and an equal array on the other. As if Great Britain could not furnish authoritative opinion on such a matter, the venerable Dr. STOCKHART has been summoned from Dresden to give evidence in the case. And so we see the sorry spectacle of a host of honourable men and experts on the one side pitted against an equal (or for aught we know a greater) number of honourable men and experts on the other. In such a case the result, whatever it be, can hardly fail to be prejudicial, if not to the interests of horticultural science, at least to that of its professors.

The effects of noxious gases of the kind indicated are only too well known to gardeners, farmers, and foresters. Rare indeed must be the cases where reasonable doubt can exist where the effects are seen and the efficacy or otherwise of the alleged causes easily tested. Injuries are done to vegetation, not only by gases—impure atmosphere, that is—but by drought or by excessive humidity, unhealthy conditions of soils, frost, sun-burn, lightning, insects, and fungi, to say nothing of what we, n our ignorance, call constitutional weakness; and although it is not always easy, in the absence of complete or definite information, to assign the particular cause of injury in a particular case, yet, as a rule, where all the circumstances are known, there is little difficulty in coming to a correct conclusion.

We can, of course, make no comment on the facts of the present case until it is concluded, and all the evidence on the one side and on the other is before us. But meanwhile we may extract from the reports in the *Scotsman* certain particulars which may be of interest to our readers:—

"The pursuer is the Lord PRESIDENT of the Court, and he asks for declarator against the Shotts Iron Company, that their calcining ironstones, &c., on the lands of Penicuik, adjacent or near to his lands at Glencorse, House of Muir, and Belwood, whereby noxious gases or vapours have been generated and discharged, are a nuisance to him, and injurious to his plantations. He also asks interdict against the calcining operations being carried on within a radius of 2 miles of his lands.

The Lord PRESIDENT, who was examined in support of his own case by the Dean of Faculty, said he took a special interest in the woods and plantations, and they had been replanted under his personal superintendence. When his Lordship took possession he cut down the greater part of what had been left and planted anew. The plantations had generally thriven until recently, so much so that he had been frequently complimented on the state of his wood. The first appearance of injury was in the spring of 1877, or immediately after the calcining in the spring of that year; and the injury had gone on increasing until now, and increasing very rapidly. The injury presented a very peculiar appearance, as of scorching. Great gaps appeared to be burned out. There was a general decline of the healthy appearance, of the trees all over the estate. Before the calcining the trees were regularly thinned. After these operations commenced he had the greatest scruple of allowing anything to be done to the woods, which stood now much in the same way as when the calcining had begun.

"In support of the plaintiff's case, Dr. DITTMAR said he had conducted a series of analyses of water and air with the view of testing the average amount of sulphuric acid present in the air round about the seats of the calcining operations over comparatively long periods. He had also tested, in the greenhouse at Glencorse, the action of sulphuric acid on a number of plants, and he had analysed certain samples of the defenders' ironstone in order to discover its percentage composition as regarded sulphur. On the first point he had discovered, as the result of a series of experiments made while the bing was burning, an average of 4.7, or 5 units of sulphur in a million volumes of atmosphere. On October 13, before the burning was in operation, two analyses showed absolutely no sulphuric acid at all. From January 1 to February 1, an analysis of rain-water collected close to the greenhouse showed 110 parts of sulphuric acid in the million of water; on January 31, 1880, analyses of rain-water got from a Larch tree near to the same place showed 89 parts of sulphuric acid in the million of water. On December 1, 1880, rain-water taken at the same place showed 23.8 parts of sulphuric acid in the million of water. These results gave a fair idea of the amount of sulphuric acid impurity in the air, but the results of particular analyses must vary according to the distance from the burning, both in air and water analyses; and, in the rain-water analyses, the results would vary according to the character of the rain—a drizzling rain absorbing more than a heavy shower; while, in the air analyses, the results would vary also according to the strength and direction of the wind currents. When the sulphur was freed in the calcining, the sulphurous acid predominated over the sulphuric acid; but, after exposure to the air, the sulphurous would gradually be converted entirely into sulphuric acid. The result of the experiments with sulphuric acid on the greenhouse plants showed that the Coniferæ suffered most. So far as he could judge, the appearance of these plants was the same as that of the trees in the pursuer's plantation, said to have been injured through the calcining operations. He had found that the defenders' ironstone contained a large proportion of sulphur.

"Professor DEWAR, Cambridge, gave evidence in the same line. The transformation of the sulphurous into sulphuric acid, he added, would take place more rapidly in moist than in dry weather, and, as the leaves of the trees and plants would be wet at the same time, the action of the sulphuric acid upon them would be more decided in a moist than in a dry atmosphere, so that, in his opinion, the injury from the calcining would be greater in the winter than in the summer months. He confirmed the results at which Dr. DITTMAR had arrived.

"Dr. ANGUS SMITH, inspector of factory works, said he had had great experience in regard to the effects of noxious vapours upon vegetation, and he had examined the plantations of Glencorse. From the general appearance of the plants, he came to the conclusion, without hesitation, that the injury to the trees was the result of the calcining of the ironstone and of the burning of so much coal. The plants exhibited features of injury which were characteristic of this kind of destruction as distinguished from that brought about by natural decay.

"Dr. MACNAB, Professor of Botany, Dublin, stated, as the result of botanical examination of the pursuer's plants, conducted in part microscopically, he had found soot deposits on the leaves, which were the result of the calcining operations, and which brought about their deterioration.

"Mr. WORTHINGTON SMITH, Fellow of the Linnean Society, said he had conducted microscopic examinations of the decayed leaves in order to see if the decay was the work of fungi. He had, however, discovered little or no traces of fungi, and the injury was not due to anything of that kind.

"Dr. M'KENDRICK, Professor of Physiology in Glasgow University, said he had been told that the decay of the trees in the pursuer's plantation had been ascribed to fungi, and he directed his attention, in the microscopic observation which he had conducted, to the examination of that theory. His observations had been made on specimens which he had taken from several trees, healthy and unhealthy, which he had had dug up for the purpose. He had found slight traces of mycelium, but he had concluded, as the result of his observations, that its presence was merely accidental. It was not at all a parasitical fungus. He thought the calcining operations accounted for the condition of the pursuer's plantations. His examination of the bark had revealed a few greenish cells and filaments, apparently of mycelium, or some fungus, and on the bark taken from the side next the calcining bing quantities of minute black particles and regular in form, which, from the chemical tests he applied to them, he concluded to be particles of solid carbon or soot. In cross-examination, he said that mycelium was innocuous if it did not penetrate the substance of the trees."

For the defendants the following evidence was tendered:—

"Mr. WILLIAM JOHNSTONE, manager to DICKSON & SON, nurserymen, Edinburgh, gave evidence to the effect that in 1877 the Glencorse woods were in an unhealthy condition, and some of them dead, these having all the appearance of having died from causes which had been in operation for years. The soil was cold, retentive clay, and full of water, and these conditions were quite sufficient to account for the disease of the trees. Comparing the condition of the trees now with what they were in 1877, Mr. JOHNSTONE had reached the conclusion that they were making fair progress. He did not find the unhealthy condition to diminish or increase according to the distance from the calcining bings. The brownish appearance of some of the trees which were in exposed positions was due to the extreme frost and high winds. A Yew hedge which was much exposed to the fumes from the bing was perfectly healthy.

"Dr. ODLING, Professor of Chemistry, Oxford, gave the result of analyses which he had made of samples of the ironstone of the defenders. The average proportion of sulphur in the coal burned in London was from $1\frac{1}{2}$ to $1\frac{3}{4}$ per cent. As he knew that a proportion of 1 per cent. had been obtained in some analyses of the defenders' ironstone, he was quite willing to adopt that proportion. The calcined ore contained a larger proportional amount of sulphur than the uncalcined ore to the extent of about $\frac{1}{4}$ per cent., which was given off in the burning into the air, although the calcined ore contained to that extent a less total amount of sulphur than the unburned ore. The sulphurous acid given off at the bing could not exceed the proportion of 1 in 2000 volumes of air, and practically, as part of it was taken up by the ammonia given off in the smoke, it could not be more than 2 in 3000 or 4000, or perhaps in 5000. He also gave the results of analyses he had made of air at Glencorse, taken at different points of distance from the bings. At a few feet from the bings the proportion of sulphurous acid in the air was 1 in about 20,000 volumes. At 150 yards in the direct line of the smoke it was 1 part in 1,400,000, or rather more than 1 in 1,500,000. At 400 yards, still in the line of the smoke, they could detect nothing, or distinctly less than 1 in 2,000,000. The gradual disappearance of the sulphurous acid would be due partially to diffusion in the air and partially to its being neutralised as it was given off in the red-hot stage of the burning by the ammonia, which was given off previously in the smoke stage and simultaneously. The sulphur would thus be present in the air mainly as a sulphate, and as a sulphate it would be beneficial and not injurious to vegetation. From his experiments there would cease to be any free sulphurous acid at a distance of 100 yards from these bings. It was now an accepted fact with chemists that plants killed by sulphurous or sulphuric acid would show in their tissues sulphates considerably in excess of those to be found in plants not subject to the influence of these acids. He had made a series of analyses, based on this fact, of the ash of twigs and of leaves taken from plants from the Glencorse plantations, both apparently healthy and dead. He had not found such an excess of sulphates as showed that the plants had been affected by sulphuric or sulphurous acid, and the amount of sulphates found in the dead plants was about the same as that found in the apparently healthy ones. These analyses gave no evidence whatever that the dead trees had been injured by the sulphurous acid, and his opinion was that they had not been so injured. He had found no appreciable difference in the quantity of sulphates found in the samples taken at different points on the estate. In cross-examination, he said he had himself no positive experience as to what proportion of sulphurous acid would be injurious to vegetation. Authorities differed on that question, but it had been said that one part in 70,000 was injurious. Sulphuric acid was a much more powerful corrosive, and he was not prepared to say that the same proportion would be necessary. He should not be disposed to agree that one part in 200,000 or 300,000 would injure vegetation. If the sulphuric acid in the air was sufficient to smell it was sufficient to be noxious. It was when the leaf was living that the acid

was most accessible. Five parts in the million of sulphuric acid might do injury, if there were continued action of the acid.

"Dr. Augustus Voelcker, F.R.S., who had worked along with Professor Odling in the conduct of the analyses and observations spoken to by him, corroborated the evidence of the previous witness. He had come to the conclusion, he said, that the vapours of the bings had not attacked the trees in the slightest degree, but that there were other causes accounting for their gradual decay. The trees most exposed to the action of the vapours had not shown any mark of the injurious action of sulphur fumes, while the tree immediately behind might be decaying. The soil also was heavy and retentive, and the trees perished from below upwards. To find sulphuric acid in the ash of leaves was as crucial a test of sulphur poisoning as to find arsenic in the stomach of a man poisoned with arsenic. He had not ound sulphur poisoning in these plants.

"In reply to his Lordship, he said that five parts of free sulphuric acid in a million of air was hardly consistent with healthy vegetation.

"Dr. Augustus Dupré, F.R.S., Professor of Chemistry, Westminster Hospital, and consulting chemist, Home Office, gave corroborative chemical evidence. The total hourly production of sulphurous acid at the two bings at the defendants' calcining works was 1276.1 cubic feet. The total amount of sulphurous acid set free in London from the coal burned there, in the months of November, December, and January, was 2752 cubic feet per hour. The total coal burned in London over those months was 3,000,000 tons, and that coal had an average sulphur composition of 1 per cent., and set free a total of sulphurous acid in the three months of 60,000 tons. The production of sulphurous acid from the London coal was thus, taking the amount per mile radius, six times as much in London as it was within a mile of these two bings. In cross-examination he said that the amount of free sulphurous acid would vary according to the condition of the bing and within certain limits which he could not define. He had ascertained, standing in a position where the fumes of the bing were strongest, that there was one volume of sulphurous acid in 20,000 of air. At a distance of 400 yards he had failed to detect the presence of the acid, and it must certainly have been less than one part in 2,000,000. One volume in 100,000 would be a fair limit within which there would be an injurious effect.

"Dr. Stockhardt, Privy Councillor to the King of Saxony and Professor of Chemistry, University of Leipzig, confirmed the evidence of Dr. Odling. He had, he said, been engaged for over thirty-six years studying the effects of acid vapours on forests, and, by order of the King of Saxony, had experimented on the effects of sulphuric acid on trees. In the case of damage to trees by sulphur fumes, analyses always showed an increase of sulphuric acid in the damaged leaves and twigs, and the greater the injury the greater the amount of sulphuric acid found on analysis. Examination of the rain-water and of the air of the neighbourhood was scientifically interesting, but was only an indirect test. The trees nearest the fumes suffered most. He had found many of the trees on the Glencorse estate diseased, but none that showed any direct indication of having been injured by sulphurous acid. In cross-examination he said he had examined plants injured by acid that had been kept under shades for a whole year, and had found that they contained the same quantities of sulphuric acid as they had shortly after the injury. It was difficult to say what proportion of acid was noxious to vegetation. One in 10,000 might be injurious, but not visibly until after several months. It was not a correct statement of his opinion to say that one volume in 10,000 was fatal to young trees.

"Dr. Traill, Professor of Botany, Aberdeen University, said that, from his observations and examination of the Glencorse woods, he could see no reason for believing that the trees had been injured by sulphur smoke. He had, besides, found natural causes to account for the decay he saw, and these were a clayey, wet, and waterlogged soil, overcrowding of trees, and root fungi, which he had found both on and in the roots.

"Like evidence was given by Dr. M. C. Cooke.

"Dr. Wallace, analytical chemist, Glasgow, gave the analysis of the sulphur composition of the ironstone burned in the Lugar and Dalry districts, Ayrshire; and the factor for the Earl of Eglinton stated that no injury was done to the policies of Blair Castle by that calcining, which was carried on within 200 or 300 yards of the policies.

"Dr. Aitken, chemist of the Highland Society, said he had visited Glencorse twenty times since February, 1878, at all seasons of the year, and had formed the decided opinion that the plants had not been damaged by the sulphurous fumes. The trees, which, although exposed to the fumes from the defendants' bings, had plenty of light and air, were generally healthy. He had analysed the soil under a tree within 50 yards of the bings, and had found a fifth per cent. of sulphuric acid; and that was the general result of several analyses. He did not think that proportion could affect the health of the plants. He had observed that the injury to the trees began at the roots, which was the reverse of what would have happened with sulphur poisoning.

"Dr. Maclagan, Professor of Medical Jurisprudence, Edinburgh University, also expressed the opinion that the calcining did not explain the decay of the pur-

Fig. 56.—The Avenue des Palmiers, at Hyères. (see p. 300.)

suer's trees. In the first place, the great proportion of the young trees were decayed in their lower branches, and had not the appearance he should have expected of having been blighted at the delicate tips and at the end of the branches. Then there were decayed trees alongside others that appeared perfectly healthy, and if the decay had been caused by atmospheric defect, he hardly saw how one should be injured and not the rest. He thought it very likely that the injury was at the roots.

"Dr. T. R. Fraser, Professor of Materia Medica, Edinburgh University, gave corroborative evidence.

"In the further evidence which was led for the defenders, it was stated that a case of calcining damage of plantations near Durham was the result, not of sulphuric acid, but of a large proportion of hydrochloric acid."

We believe that evidence was also given by Messrs. Barron, Dunn, McCorquodale, and other practical men, which is not reported. When the decision is made known we shall probably revert to the subject.

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—— Sir Joseph Hooker.—We are requested to state that Sir Joseph Hooker will be away from Kew during the months of March and April. We believe that Sir Joseph and Lady Hooker propose to accompany Dr. and Mrs. Asa Gray in a tour in Italy.

—— Azalea Mrs. Gerard Leigh.—Of the several fine varieties of the amœna type which Mr. B. S. Williams has introduced into gardens during the last year or two, this is decidedly one of the best. It was sent out last year, and a good specimen now in flower at Holloway amply warrants a high opinion being formed of its merits. The flowers, which are of good shape, and measure about 1½ inch in diameter, are a very bright rose in colour, with cinnamon spots on the upper segments. It grows, flowers, and forces equally as freely as A. amœna.

—— The Cultivation of Waste Lands.—We are informed that a company entitled "The Associated Agriculturists of Great Britain, Limited," has been registered, with a capital of £1,000,000, to improve and cultivate such lands as are now unoccupied in England and Scotland, and to assist such tenants and farmers, now occupying farms, who may have suffered from the bad seasons of the last three years.

—— Imantophyllum miniatum var. Martha Reimert.—Mr. B. S. Williams several times exhibited last season a fine plant under the above name, which he had obtained on the Continent as a seedling, and which is now flowering again in his nursery at Holloway. When first shown many good plantsmen were of opinion that the difference between this variety and a good type of I. miniatum was such only as might result from some particular method of cultivation; but now that we have seen the plant again we have no doubt whatever as to its being distinct from I. miniatum, and also from its variety, I. miniatum splendens; than which it is altogether a stronger grower, has broader leaves, and throws up a broader flower-stem, and consequently a much larger umbel of flowers, which are of good form and are very bright in colour.

—— The Glasgow and West of Scotland Horticultural Society have fixed their autumn shows to be all held in the Glasgow City Hall.

—— The Floral Committee.—The following circular has been issued, with the tenor of which all concerned must heartily concur, and we trust they will act up to its spirit, and not as heretofore allow the rule to be more honoured in the breach than in the observance:—

"I have noticed that certain plants—the particular merits of which may not be always apparent at first sight—are not infrequently exhibited at South Kensington and brought before the Floral Committee, the members of which consequently feel some difficulty in judging of their merits, for want of fuller information about them than can be obtained by mere inspection at the table.

"It has occurred to me that it might be an assistance to both exhibitor and the committee, if you would communicate to me in writing, a day or two before the exhibition, such details of any particular plants as you may desire to be specially brought to the notice of the Floral Committee. I should be most happy, in my capacity as 'Demonstrator,' to describe such particulars to the members as you might furnish me with.

"By adopting this plan I think the committee would be better able to judge of the merits of any such plants.

"I also wish to say that if you should happen to meet with any herb, shrub, or tree which exhibits remarkable growths, diseases, sports, &c., or, in fact, anything whatever that may strike you as peculiar, I shall be extremely obliged if you would kindly forward the same, addressed to me as 'Secretary of the Scientific Committee, care of Mr. J. D. Dick,' with the addition of any notes or observations which you may think fit to make.

"I shall have great pleasure in bringing the same before the notice of the Scientific Committee. *George Henslow.*"

—— Illustrated Seed Packets.—On some of the railway bookstalls may now be seen exposed for sale penny packets of seeds, with coloured illustrations of the flowers sufficient for general purposes of identification, and considering the low price at which they are sold not open to adverse criticism. The idea is an excellent one—so good, in fact, that few would grudge a second penny for a better illustration, provided the seeds sold therewith were of good quality. The indication of the native country and the family to which the plant belongs would be useful additions to the cultural directions given. Messrs. Howcroft & Watkins, seedsmen, of Tavistock Row, Covent Garden, have the credit of initiating this novelty.

—— The Diseases of Plants.—The second portion of Dr. Frank's work, *Die Krankheiten der Pflanzen*, has just been published. It contains the continuation of the section devoted to the attacks of parasitic fungi, and chapters devoted to the injuries inflicted by insects (galls), &c. The whole is illustrated by a large number of woodcuts.

—— Primroses.—Amongst hardy plants that, so far, are none the worse for the hard weather are garden Primroses. Fortunately of diminutive form, nestling almost into the earth, and well covered with the snow, these have come through the ordeal intact, and are now—in spite of still cold days, with often frosty nights—looking fresh and green, and showing their beautiful blooms in many colours, earliest amongst the early flowers of spring. Doubtless resulting from some intercrossing with the early blooming strains of fancy Polyanthus, these garden Primroses are a long way earlier than are their congeners of the woods and hedgerows; but very many of these garden hybrids show their Primrose nature first and their Polyanthus character afterwards, thus giving a flowering season of more than usual length. Although so closely allied there is yet seen here a diversity of periods in blooming that may well attract the attention of the plant physiologist. The true Polyanthus developes its flower-stalk from the end of March and through April; the Primrose, having not one but a multiplicity of shorter flower-stems, begins to exhibit these as early as the middle of February, and even all through the winter, if the season be open and the plants strong. The true Polyanthus seldom does this; indeed, the hybrid class—those that are both Primrose and Polyanthus—are always earlier than the true Primrose, which sends up its flowers from the centre of robust crowns, whilst the hybrid plant seems to send up its earlier Primrose flowers from almost anywhere. How varied the colours, and how beautiful these are, any fine strain will show. A score of diverse hues, from the purest white to the deepest purple or crimson, and many diverse markings, are all found. Lifted now, or earlier, and put into pots, a few dozens will add infinite beauty and variety to the not too abundant bloom of the greenhouse during March.

—— Senecio Ghiesbreghtii.—This fine arboreous species is now flowering very freely in the large vinery at Chiswick; some of the dense corymbs of rich yellow flowers are more than a foot across. It is now a little over twenty years ago that it was figured in Regel's *Gartenflora*, t. 296, under the above name, but fifty years ago Lessing described it in the *Linnæa*, v., p. 162, as Senecio grandifolius. Subsequently Steetz described and figured what is no doubt the same species in Seemann's *Botany of the Voyage of H.M.S. Herald*, p. 162, t. 31, calling it Senecio arborescens. There are copious specimens in Kew Herbarium from Cordova, and Orizaba in Mexico, from the Volcan de Irazu in Costa Rica, and from Boquete Veraguas, thus ranging through about 10° of latitude and 15° of longitude. In its native country it sometimes attains a height of 15 feet, and presents a very stately appearance; and for some time past it has been a very striking object at Chiswick.

—— The Daffodils.—In answer to several correspondents, we have to announce that the coloured plate of "Daffodils"—the companion plate to the "Poet's Narcissus," published on October 16, 1880—will shortly be ready.

—— Presentation of a Testimonial to a Judge.—The Brixton Hill, Streatham, and Clapham Horticultural Society, through its Secretary, have recently paid a very graceful compliment to Mr. Thos. Todman (now gardener to J. Connell, Esq., Bushy House, Tooting), in the form of a neatly framed and beautifully illuminated testimonial to mark their unanimous appreciation of services rendered by him in the capacity of judge at their exhibitions from the commencement of the Society in 1859, in which they express their admiration of the able, impartial, and painstaking manner with which the duties of that office have been performed over a period of twenty-one years. Mr. Todman has long been known as a most successful exhibitor, and skilful gardener, and an eminent hybridiser of florists' flowers, more particularly amongst Azaleas, Pelargoniums, Fuchsias, Verbenas, and Primulas, and we hope both the Society and himself may have as pleasant and prosperous a term of years to come as those they have already passed through.

—— A Complimentary Dinner.—The Scottish Horticultural Association has resolved to entertain Mr. Malcolm Dunn, gardener to his Grace the Duke of Buccleuch, K.G., Dalkeith Park, at a complimentary dinner, in recognition of his valuable services to the Association as its first President. Mr. Dunn retires after four years' good service in this office, and is succeeded by Mr. John Downie, of Pinkhill Nursery. The dinner will take place in the "Windsor Hotel," 100, Princes Street, Edinburgh, on Wednesday, the 9th inst., Mr. John Downie in the chair.

—— Cornish Notes.—*The Cornishman* states that the outdoor Potato crop in the Scilly Isles has again been damaged by frost. The Broccoli crop in West Cornwall has also been further damaged by frost within the last few days. The planting of early Potatos is being generally carried on in the neighbourhood of Penzance, while the sheltered spots on Mousehole Cliff show the Potatos peeping out of the ground.

—— The Vines of Soudan.—We are glad to see that M. Alphonse Lavallée has pointed out the extreme improbability of these tuberous stemmed Vines, of which seeds have lately been introduced into France, ever taking their place in French vineyards as a substitute for the ordinary Vines The electric telegraph has not altogether absorbed space still less climatal phenomena.

—— The Weather.—General remarks on the weather during the week ending February 28, issued by the Meteorological Office, London:—The weather has been rather cloudy generally, with some showers of snow, sleet, or hail. At our south-western stations, however, the sky was much clearer than of late. The temperature was much below the mean in all districts, the deficit being as much as 8° or 9° over the central, southern, and south-western parts of England, and from 5° to 7° in all other districts. The thermometer was generally lowest on the 28th, when it fell to 19° at Markree and to 21° at Churchstoke and Glenalmond. At some stations, however, the lowest readings occurred on the 26th, when a minimum of 20° was recorded at Manchester. The maxima were below 50° at all stations except Foynes and Londonderry. The rainfall was slightly more than the mean in "Scotland, E.," and "England, N.E.," but less in all other places. Bright sunshine was much more prevalent than for some weeks past, especially in the south-west. The percentages varied from 53° in "England, S.W.," to 13° in "England, E." Depressions observed:—During the first few days some shallow depressions were shown off our E. and S.E. coasts, causing moderate N.E. or N. winds over our islands. By 8 A.M. on the 26th, however, a well defined but shallow depression had been formed over the North of England, and travelling S.S.W. had by the 28th disappeared from our area. It caused fresh easterly winds in the North, northerly in the West, light westerly airs in the South, and south-easterly breezes in the East.

## POTATO CULTURE.*

There are few vegetables so badly treated in respect of the preparation of the soil as the Potato. Soil and its conditions are important elements in successful cultivation; and whether the natural soil intended for that crop be peat, loam, clay, or sand, or combinations, I would say trench thoroughly 15 or 18 inches deep at least, and as early in the autumn as possible. In gardens generally, at that season, there are accumulations of decayed vegetable matter as the stems of Cabbages and others of the Brassica tribe, herbaceous flower stems, leaves, grass, &c., all of which are very useful when used liberally in the bottom of each trench. These act so far as drainage, besides assisting to keep the soil open, and allowing atmospheric influences to play the more important part of breaking down and disintegrating; besides a certain chemical influence adds fertilising matter to the soil at the same time. The trenches should be 2½ feet to 3 feet deep: these should be thrown into ridges, picking out all stones of any size, and throwing the rougher portions of the soil to the surface. I have even known some who were partial to fine-looking and well-shaped tubers go the length of riddling a quarter of ground to free it from stones, in order to grow them clean, for the young tubers take the mark of every obstacle they cannot push out of the way. Hence the necessity for those who wish to be successful in exhibiting, if the natural ground has not the desired qualities, to prepare it so that it may not be too deep, not too rich, but friable and open. The ground selected should also have a free, open exposure, not by any means shaded either by trees, hedges, or walls, as nothing is more injurious to the free development of the Potato than shade of any kind, which may, indeed, add to the tops but diminishes the roots, both in quantity and quality.

Every one growing Potatos is anxious to obtain a few from the open ground as early as possible, either by planting at the foot of a wall or early border, but those who have neither of these advantages may with a little extra labour convert a whole quarter of ground, so as to give similar advantages for early crops, viz., by commencing at the north end of the quarter, and turning it up in trenches of 7 feet, trenches running from east to west, or *vice versâ*, and with a slope to the south of 12 inches on the trench of 7 feet. This will give lines of 5 feet long, at 2 feet apart, and will produce heavier crops, and about as early as those from the borders.

Before coming to speak of seed and planting, I think it proper to name a few sorts—not a competitor's list, but such as have been found in general to be good, useful sorts for table use, and most of which are likely to retain a place in the seedsman's catalogues for some time:—White Kidney—Ashleaf of sorts early, Ashtop Fluke, Woodstock Kidney, Snowflake, and Magnum Bonum. Coloured Kidney—Purple Ashleaf, Bountiful, Staffold Hall, and Red Regents. White Round—Handsworth Early, White Fortyfold, Coldstream, Regents, and Victoria. Coloured Round—Fortyfold, Emperor, Grampian, and Blue Fluke. Potatos are like other articles in the vegetable way; known sorts are not the same in every locality, neither are they the same every season. Besides there are some varieties that may resist the disease in one, and be attacked the following season, so much depends upon the time the attack makes its visitation. Hence, there is some excuse for those who cultivate a number of sorts, as by doing so a fair supply can always be had, and a few to spare for the disease besides. I refrain from giving names of sorts suitable for competition, as these vary so much every year, besides the competition table requires colour, size, and shape only, while for the gentleman's table a white mealy Potato of good quality and of moderate uniform size is always preferred.

*Seed.*—Previous to the advent of the disease much abuse existed as to a proper selection. Some used all the larger roots for table use, and planted only the refuse, while others chopped them all and sundry with a spade to save time in cutting. Both practices were abuses, and must have occasioned bad results. At the present time good cultivators are divided in opinion on this point. The one prefers to use moderate-sized tubers whole, cutting out all the eyes to one, or even very large Potatos doing the same, giving distance in planting, or they may plant as they are, and take off the extra shoots as they appear above ground. The other system comes to us from America, and is now very generally practised—viz., that of cutting up the largest and finest-shaped Potatos into single eyes, dusting with lime to prevent the loss of sap. This I find is the most economical, by giving the best-formed tubers and the largest returns. The most notable example of this method was the Hooper's contest of 1875, in which from 1 lb. of sets planted (Snowflake and Eureka were the sorts selected) the results were from 60 up to 600 lb. of sound produce; the number of eyes into which 1 lb. was cut varied from forty-eight to seventy-two, and they were planted 12 to 18 inches apart in the lines, which again was from 4 to 6 feet distant. The seed should, if possible, be selected while digging up, and not over-ripe, but selecting the most uniform and true to its type. This is often to be known as much by the haulm as the tubers. They are then to be laid aside on shelves or lofts, or any airy place under cover, thinly spread out, where they can be looked over, and diseased or injured ones picked out—ultimately to be stored, each sort by itself, in shallow boxes or cellars, where they can be clear of frost and not too warm nor close to induce an early growth. Potatos, except for forcing purposes, should not be allowed to sprout before planting.

*Forcing.*—If very early Potatos are desired, forcing in pots or boxes is the most convenient, and, if large enough, they may remain in them till they come to maturity, planting but one seed in each, earthing up as they grow. Forcing in frames or pits is the most common for any extent, using from 2 to 3 feet of hot dung, mixed with leaves, to produce a gentle heat; when this subsides, 10 to 12 inches of light, open mould is placed upon it, and thereafter the Potatos are planted, two lines under each ordinary sized light. The sets may be started 2 or 3 inches. If desired early, plant shallow, and earth up as they grow; also cover at night with mats or straw to protect from frost. As they advance to maturity, considerable air should be given, which will add both to the quantity and quality of the Potatos. In forcing the Potato it is invariably the Ashleaf in some of its varieties that is used; these should never be cut for forcing, but medium-sized sets should be used whole, placing them perpendicularly, thick end uppermost, so that when all are planted in one way the crop comes more uniform and sooner arrives at maturity. Those also who grow in early borders, or in such beds as I have mentioned, use the Ashleaf, started and carefully transplanted with a trowel, placing over the roots at the time a handful of refuse soil from the potting bench, or some such dry material. Lines 2 feet apart are sufficient, and when they appear above ground, if there is any danger of frost, examine daily and draw the mould over them. Besides, flowerpots, mats, boards, and branches are all used for the same purpose of protection.

*Main Crops.*—In the more general planting of the main garden crop—say in February or March, according as the season is suitable and the soil dry—if the ground has been trenched in autumn, as recommended, the ridges are now to be levelled down, and if the ground requires any heavy manure, such as cow or horse-dung, or old hotbed manure, this can be dug in preparatory to taking out the lines. Avoid fresh manure, as it spoils the flavour of the Potatos. The lines should run south and north if possible. These then are to be marked off only a few inches deep, either with the hoe or spade, 3 feet apart, and in these, at planting time, the lighter manures are often used with advantage, as wood-ashes, leaf-mould, lime, salt, woollen rags, bone-dust, guano, soil and Potato manure. I do not mean all of these to be used at one time, but one, two, or three, as may be thought necessary for the ground, and according to the planter's choice in selecting, and his means of obtaining them. Seeds may be from 10 to 15 inches apart in the lines, and some time after planting the ground between the lines is to be dug up with a four-pronged digging fork. Hoeing and earthing up is then all that is necessary till they arrive at maturity.

Two or three points are necessary to be considered in respect to Potato culture, viz., do everything to the ground when in a dry state; give plenty of space according to the respective sorts, so that the roots and tops may have ample room for development; plant shallow, eyes always uppermost, and cover lightly. The sorts of Potatos for the main crop are more varied than for forcing, but the white kidneys are preferred for table use during summer, while round sorts are in general the heaviest croppers, and more in use with amateurs and for market purposes, while the coloured varieties are better keepers and of better quality for winter and spring use. Storing for general use comes to be very different from what I mentioned for planting—the one by exposure to light and air will become green, whereas if those intended for use become green, they are useless for cooking and unfit for eating. They are very often stored in what are called pits on the ground, placing each sort by itself or in such quantities as might be suitable for taking indoors at one time. These are covered either with turf, straw, dried Fern, or Rushes, whatever may be easiest obtained, and afterwards a good covering of dry earth is placed above all, and of sufficient thickness to protect them from frost. The Potatos so covered should always be dry, and all such as might be showing symptoms of decay, or in any way injured, should be taken out. But from the experience of this season (January, 1881), with frost, I would advise those having much to do in keeping Potatos either to use cellars or to have a house set apart for Potatos where they could be conveniently looked over in a long stormy winter, so as easily to obtain the daily supply, and to pick out any that may be going wrong; but even here they must be well protected with layers of dry earth, sand, or ashes, covered properly over with some dry and light material easily removed and effective against frost, because they ought to be kept dark and close to retain the good qualities of a proper Potato.

Seed-raising becomes necessary in order to improve the sorts, as a degeneracy in the Potato is known to exist. Some speak of growing the same sort for thirty years without detecting any deterioration in it, though from fifteen to twenty years is generally given as the limits of a race; but as many survive more than the space of the generation of our race, so in the Potato: by good culture and a change of soils a healthy state is the longer preserved. Since the disease of thirty-five years ago the raising of new sorts from the seed has been often recommended as the principal remedy in getting clear of it. Many therefore resorted to seed-raising without the knowledge of selection by hybridising, consequently of the new names we yearly hear of, many soon fall to the ground, because, when out of the raisers' hands, it is discovered very often that, though they may be new, they are nothing better than sorts we had before. Now, it is only those who attend to fertilising, by selecting sorts possessing the qualities sought for, that are rewarded with success, and even in their case there is much chance work, for out of perhaps 100 plants of seedlings only a few may be worth retaining, and perhaps none.

* Condensed from a paper read by Mr. R. Farquhar, gardener, Fyvie Castle, before the North of Scotland Horticultural Association.

## Home Correspondence.

**Ivies and Coal Smoke.**—Mr. Croucher's note at p. 277 struck me in the way of a surprise. I was prepared to back Ivies against any known or unknown plants to endure any amount of coal smoke, and when my surprise is over I think I shall be ready to resume the backing. Within the past three years I have seen some interesting practice with Ivies in a sooty spot where vegetation of every kind experiences a painful struggle for existence, and yet some thirty kinds of Ivies, including the more delicate of the variegated leaved varieties, have thriven in the most delightful manner. Probably the soil in which Mr. Croucher's sulky Ivies are located is sour and sooty. Old London gardens are often more poisonous below than above, and I would suggest that the varieties he finds most troublesome would probably behave better if aided with some fresh turfy loam, a little of which would go a long way if laid in a trench only one foot deep. The noble Rœgneriana (coriacea of Hibberd's list) requires a good soil, and, in common with all large-leaved Ivies (the common Irish included), is usually very much disfigured by wintry weather in places where the atmosphere is loaded with smoke. As many years ago I invented an Ivy expressly to suit Mr. Croucher's case, it is but proper I should recommend him to plant Hibberd's Emerald, which is now pretty well known in the trade and therefore easily procurable. But should Mr. Croucher have any difficulty in obtaining it, I will gladly send him a parcel of plants some time in the forthcoming summer. This particular Emerald Ivy will endure any amount of atmospheric poisoning, and suffers nothing in winter from the severest frost. In its more obvious characters it comes near to the Irish, but is more dense in growth, trains itself more closely, is of a lighter green colour, and in spring it makes a free growth of lovely golden-green leafage a month or more in advance of the new growth of any other Ivy whatever. As this may meet

the eye of some one similarly circumstanced to my friend at Hammersmith, permit me to say that Ivies occasionally fail in town gardens because they are very badly treated. They are planted in sour, worn-out soil under the deepest shade of large trees, and denied the aid of occasional irrigation. The plant is like a donkey—it can live on very little and bear a lot of hard usage, but it cannot live on nothing. The plantation of thirty sorts referred to above are very badly circumstanced in respect of atmosphere, but they are fully exposed to rain and sunshine on a dwarf wall where there are no trees to steal their food and sunlight. This soil is a very unkind pasty clay, but it has the quality of freshness, and it was liberally dressed with lime rubbish before the Ivies were planted. Even at this moment, when Ivies everywhere are at their worst, these look bright and healthy, and are in no appreciable degree disfigured by the winter. *Shirley Hibberd, Stoke Newington.*

**Hyacinthus candicans.**—Bulbs of this plant would appear to be hardy only so long as they are buried deep in the soil, although it yet remains to be seen how those left in the soil have stood the unusual frost of the past winter. Some dried bulbs potted up in December and stood in the most sheltered part of an unheated house, were found after the recent thaw to have been quite destroyed. This would put the bulbs upon the same footing as those of the Gladiolus—hardy enough when out of harm's way. *B.* [They have been recorded to have been uninjured when left exposed on the surface of the ground through the winter. Eds.]

**Galanthus Elwesii.**—The variety of this Snowdrop without the transverse bands of white on the petals, is, I think, not so rare as "Jay Aye" supposes. I have not unfrequently met with it, and only the other day a flower came under my notice picked from a recent importation of bulbs that had almost entirely green petals. *W. Goldring.*

**Double Wallflowers.**—It is a curious feature in many garden plants that when single kinds so far change their normal characters as to produce double flowers, they usually do so at the expense of constitution. Double Violets, Primroses, Auriculas, and, not least, Wallflowers, give ample evidence of this. Owing to this loss of robustness, we seem to be losing altogether our old and once favoured double kinds that a generation since were the pride and glory of many a cottage garden. They are fast disappearing, and now are as scarce as once they were common. We have trusted too much to their assumed hardy character, and have found it unreliable. A succession of hard winters has killed the old plants, and where no cuttings have been put in the stocks are gone altogether. I much doubt whether the fine old black kind can be found anywhere, and the yellow and reddish mottled are few enough. One of the hardiest kinds I have met with was a dwarf yellow kind, which the Rev. Mr. Harpur Crewe found in a farm garden somewhere. A plant of this has stood in an exposed place through all the winter; but though alive, it is somewhat the worse for the exposure. Fortunately I had put in some cuttings in a cool house in October, and these, nicely rooted, had been potted up. This is the course we ought to have adopted with the other kinds. *A. D.*

**Snowdrops.**—Galanthus Imperati and G. Elwesii flower about the same time with us in Kent, 10 mile from London, and were open in the first week of February. The only difference between these species I am able to see is to be found in the markings of the inner whorl of the perianth. G. Elwesii is most decidedly the prettiest. The Crimean Snowdrop, G. plicatus—the one with the margins of its leaves folded back—is about a week later, and G. nivalis, the last, is only now (February 28) opening. *T. D. Hatfield, Southwood.*

**The Ready Method of Transplanting.**—The statements made by "Philodendron" at p. 151 having been received by several of our readers with some amount of incredulity, we take the earliest opportunity afforded us of stating that, as we have paid a visit to "Philodendron's" beautiful estate, "lying between Tunbridge Wells and Hastings," and seen the transplanter at work, we are in a position to corroborate the assertions then made, and further, to give some details of the implement with which the ready method of transplanting is carried out. It may be described as consisting—1 (see fig. 57, A), of a wrought iron or steel fork, with two curved tines, shoulders and handle, weighing about 60 lb.; 2, a tubular iron lever (fig. 57, B), from 8 to 10 feet long; and 3, a fulcrum (fig. 58), covering a large surface of soil, formed of two blocks of wood united by means of a stout iron arch. At the top of this arch there is a hole through which passes an iron hook from 18 to 20 inches long, the upper part of which has a screw thread, while the lowest end forms a hook. On the handle of the fork there is an adjustable treadle (fig. 57, C) for use on either the right or left hand side, may best suit the convenience of the workmen. The mode of working the implement is as follows:—The fork is placed upright on the soil at a distance, say, from 2 to 4 feet from the trunk of the tree to be lifted. The operator then places his foot on the treadle, and with his hands on the handle, which is 3 feet long, sways the tool from side to side for a few seconds, his weight being first on one tine and then the other. This swaying motion causes the tines to enter the ground gradually, and being curved their direction inclines inwards. The

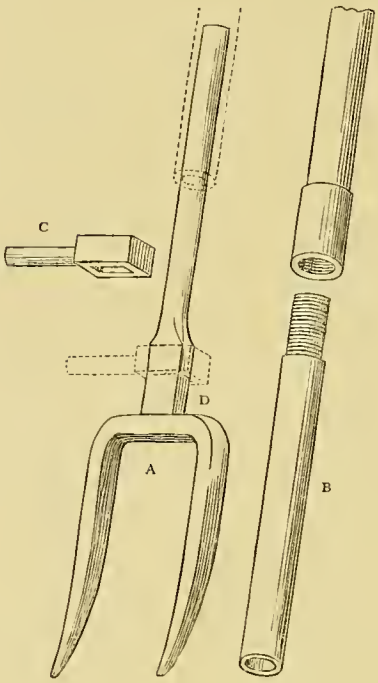



Fig. 57.—Transplanting Tools.

lever is now slipped on to the handle of the fork, the swaying motion being continued, to carry the tines under the trunk, after which a "spit" or two of soil is removed from behind the shoulder of the fork, a simple fulcrum—a stout flat piece of wood—is slipped in behind, and downward pressure put on the lever, when a large ball of earth with apparently all, or at any rate a very large proportion of the roots of the tree, is gradually forced upwards above the level of the ground. Trees that can be easily lifted by hand are put on a trolly or sledge without

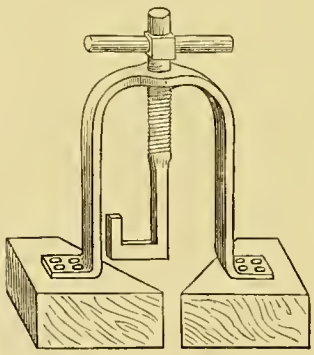


Fig. 58.—Fulcrum of Transplanting Tool.

further ado; but when they range from 8 to 10 feet and upwards in height, the compound fulcrum (fig. 58) is brought into use, and slipped over the handle, so that when in position it rests in the hook at the point marked D, and a few twists of the screw brings it up taut, and so increases the amount of leverage. Two handy men used the implement with great ease. The first tree lifted was a Larch 16 feet high, which was brought clean out of the ground, with roots from 3 to 4 feet in length, in the space of two or three minutes. An Arbor-vitæ, which had been in the same place six years, and which was 10 feet high, came up in about the same space of time; and another one, about 8 feet in height, was successfully raised in one minute exactly; as were also several Conifers of different sorts, ranging about 5 feet in height, each with a good ball of earth and a mass of fine roots. Many specimen Conifers and other trees were shown to us which have been lifted by this implement at various times during the last two or three years, and which in every instance have made a remarkably vigorous growth since, thus testifying to the success of the "ready method" of transplanting. We have only to add that "Philodendron" has patented the implement; and conclude by strongly recommending it to the notice of planters. Eds.

**Snowdrops and Snow.**—That is a very pretty fancy suggested by Mr. Fish, that snow conserves the heat of the earth, but there is some little lack of exactness in the words, "'A. D.'s' idea that cold fosters growth in the Snowdrop is so far supported by the fact that it refuses to be forced;" and further on, "In regard to Snowdrops under the snow they are fostered by heat and not by cold." No doubt by these diverse remarks Mr. Fish meant something clear, but to the average reader it is not so. Neither is it clear how snow conserves the heat of the earth. When snow falls upon soil that is warmer than itself the snow is melted until at length the continuous infusion of exceedingly cold moisture brings the soil to the same temperature as the snow is, and then it melts no longer. When a general thaw of the snow does come, it always originates from above and not from below. There is no proof whatever that the thawing of snow is assisted by terrestrial heat, in fact, it would appear that the earth has no power of itself to emit heat, but can only do so when the rays of the sun act as conductors. These withdrawn the earth's heat gradually disappears. How little the earth's heat operates upon and influences the temperature of its crust is found when we have, as was the case last January, some 10 to 12 inches of frost in the soil before the snow fell. Yet wherever the snow afterwards covered the soil to the depth of several inches, and effectually excluded the upper or external cold, there was not the least diminution of the frost beneath, neither did that frost in the soil abate until the snow had first disappeared and the soil began to thaw from the surface. In all thaws we find the deeper the frost the longer is it in getting out, because the farther removed from the influence of the warmer air. Did the earth's heat theory operate the thaw below should proceed simultaneously with the process above. The most remarkable thing about the Snowdrops under the snow is, that although the soil is frozen literally as hard as a rock, yet growth goes on; but it is nothing novel, because all accounts agree in showing that in its natural Siberian habitat, where doubtless the earth is frozen with an intensity that we have here no conception of, the pretty blue Squill is found in full bloom when the snow disappears. I certainly think the idea that "cold fosters growth in the Snowdrop" is the most correct one. Then Mr. Fish suggests another curious idea when he says that "snow may have manure in it." Now, in his eastern exposure, when the frozen vapour is driven on to Suffolk from off the vast expanse of the German Ocean and the North Sea, there is little probability that in its course it will gather manurial elements. Here, on the other hand, the case is widely different, for between Bedfont and the east wind lies that monster metropolis, with its tens of thousands of belching chimneys, and from the smoke of which the snow in its course must gather a hundred parts of manurial matter to one part in Suffolk, and yet I do not find that West Middlesex is therefore any the more fertile than other places, putting aside, of course, what advantage it derives from London dung. I fear we are so ungrateful as to regard the sooty grime left behind by the snow as not only a nuisance but destructive to vegetation. Still, it is so trifling that it would not have occurred to us to consider it but for Mr. Fish's interesting suggestion. Curiously enough, Mr. Croucher, who, like me, resides on the western side of London, but nearer to its malign aërial influences, objects to the soot in the air altogether, and tells us that it kills the plants: that, however, is but the universal experience of Londoners. Mr. Fish's reference to April 1 was no doubt a slip of the pen, but a very awkward one, as All Fools' Day and Valentine's Day do not usually come in the same month; still it is just possible that in inditing us a Snowdrop Valentine he thought a slight infusion of the funny would not be unacceptable. *A. D.*

**Iris (Xiphion) Histrio.**—I have at last succeeded in getting this beautiful Iris to grow here, after several unsuccessful attempts. It opened its first flower in the open border, where it has had no protection, just a month ago. Mr. Nelson, of Aldborough, kindly presented me last autumn with a few healthy bulbs grown in his garden, where all hardy bulbs seem to grow and increase like Onions. I could never get Iris (Xiphion) reticulata to grow here till I obtained bulbs from Mr. Nelson. These at once made themselves perfectly at home, and have increased with great rapidity. I should like to know if any one in England has succeeded in growing Iris

(Xiphion) Kolpakowskyana satisfactorily. Dr. Regel has more than once sent me bulbs of this pretty species, but I can do no good with them at all, either in a pot, planted out in a glazed pit, or in the open border. I think I could manage to grow this plant by raising it from seed, but I have not seen it advertised in any of the seed catalogues sent to me. I cannot get Iris (Xiphion) tingitanum to bloom here. It comes up, year after year, and looks strong and healthy, but it has never yet produced a flower. *H. Harpur-Crewe, Drayton Beauchamp Rectory, Tring, Feb.* 28.

Æchmea Mariæ Reginæ.—In answer to Mr. James Moir's question respecting the flowering of this fine Bromeliad, a native of Costa Rica, which was distributed a few years ago by Mr. B. S. Williams, of Holloway, allow me to say that I have seen it in flower in several places, not only in Great Britain and Ireland, but also in America, although it is not so generally cultivated as it ought to be, for it is without doubt the finest Bromeliad yet introduced. Amongst the many novelties I had the pleasure, in conjunction with Mr. Henry Williams, of taking to the Philadelphia International Exhibition in 1876, we selected a fine specimen of this just throwing up its flower-spike. The plants in question were packed up in close cases for upwards of a fortnight. A short time after we arrived it opened a splendid spike, one of the finest I have ever seen. This, I need not say, was greatly admired by the many thousands of visitors, and caused quite a sensation amongst our brother horticulturists on the other side of the Atlantic, it being the first time it had been seen in flower in America. The spike lasted nearly two months; the rich magenta boat-shaped bracts, tinted with rose, developed themselves to perfection. This, in contrast with the upper portion of the spike, where the flowers are produced, which are tipped with dark blue, changing in age to rose colour, renders the plant very attractive. *Alfred Outram.*

Scottish History.—I had occasion some time ago to draw attention to some inaccuracies in an article about Dunkeld; I find another article in the *Gardeners' Chronicle* of the 12th about Blair Drummond, which gives the date of Rob Roy McGregor's death as 1772. As a matter of fact he had been dead nearly forty years in 1772. Sir Walter Scott says the time of his death was uncertain, but he believed that Rob survived in 1738. McGregor is supposed to have been born about the middle of the seventeenth century, for he took an active part in a cattle stealing foray called the Hership of Kippen in 1691. Every reader of Scottish history knows he was present at the battle of Sherriffmuir in 1715, for what says the song:—

"Rob Roy he stood watch
On a hill for to catch
The booty, for aught that I saw man,
For he never advanced
From the place where he stanced
Till nae mair was to do there at a' man."

Rob Roy's death is recorded in the *Caledonian Mercury* (our first Scottish newspaper) under date of December 28, 1734, as having taken place a few days before that time. *A. Donald Mackenzie.*

Grouping Plants for Effect.—Mr. W. Hinds, in last Saturday's *Gardeners' Chronicle*, says truly that "the primary object of these exhibitions was to educate and promote a more artistic system of grouping or arranging plants." As this object is rarely attained at provincial exhibitions, I think we may trace the fault to the very vague manner in which the schedules, as a rule, state the conditions. If it was distinctly stated that a certain space was not to be exceeded, and that artistic arrangements, such as should govern general decorations, were to be considered by the judges rather than the quality of individual plants, we should be getting into a better groove. I have repeatedly assisted in judging such groups, and have found many judges attach too much importance to the quality and value of individual plants. I think all schedules should give definite instructions to guide exhibitors as well as judges, and that lightness of arrangement rather than overcrowding should be a necessary point in this case. *An Old Judge.*

Ash Tennis.—I see in the *Gardeners' Chronicle* a recommendation of gravel tennis for winter and damp weather, and a very good tennis court it must make; but as binding gravel is in many places very difficult to obtain except at such an expense as would drive it quite out of the question, allow me to recommend ashes as a substitute. A year or two ago I had the laying-out of a public garden where it was greatly desired to have a tennis ground which could be played upon in winter and damp weather in summer when not actually raining, and there being no binding gravel in the neighbourhood I made the court of ashes, rough below, fine above—the harder burned the better—and a very good tennis ground it made, and was played upon almost constantly, and although we had also one on the grass as well, the ashed one seemed mostly to be preferred. It is true it required rolling oftener than the gravel one would, but that was very willingly put up with, as it was pleasant to tread upon, being neither slippery nor too hard, and as ashes are cheap and in most places easily had, I can recommend this material for a tennis ground to any one who might be otherwise compelled to do without one, and also to all others. You did not say how the "court" proper was marked off on or in the gravel. I marked this off with strips of wood, ¾ or 1 inch deals, and 6 inches wide, let into the ground, the upper edge being just level with the ashes, and this, with a wire net with iron fixtures, made a permanent thing of both, and answered admirably. *J. M. J.*

The Highfield House Plant Label.—Every careful gardener knows how disappointing it is to find the plant labels decayed, or the names thereon obliterated, and to obviate this the following label will be found to be a marked improvement. It will keep sound for many years, being made of the split boughs of Yew trees. The thick boughs last longer than the heart of the wood, which is the reverse of that of Oak. There can be a double record with this label, the one side being smooth; if rubbed with paraffin, and immediately written on with Cowen's ink pencil, the name will be legible for a lengthy period. The second record is a number, and this will last for many years, and can be read by the feel alone. The label is cut so that one side shall be longer than the other; it is divided into three sections, the first (*i.e.*, at the top) containing units, the second

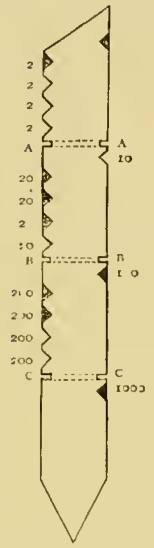



Fig. 59.—The Highfield Plant Label.

tens, the third hundreds. The single pieces cut out on the edge of the label on the long side count one, ten, or a hundred, according to the section they are placed in, whilst each of those on the opposite edge represents two, twenty, or two hundred, as shown by the figures. A line is cut across at A A, B B, and C C. The incisions marked black in the diagram, starting from below, and going from side to side from one black notch to the next of the same colour, will represent the number 1563, whilst those not black (excluding all the black ones) will represent 436. This explanation will be sufficient to enable any one to make labels, from one to a thousand, &c. The labels are not difficult to cut, and the method of counting is simple. This label can also be made of zinc, with the marks on the edges cut out as in the diagram, and in this label the sections can be divided by short slits at A A, B B, and C C. For hardy plants the Yew label is the best, and if made 10 inches in length will remain firm in the ground. *E. J. Lowe.*

Potato Manures.—In a week or two the work of planting Potatos will commence, and in too many cases, as before, planters will continue to use dressings of strong animal manures. The result later on is inevitable—haulm growth of great luxuriance and full of sap, and then the disease rampant. I am sure great good would result to the Potato in general if growers would avoid animal manures, and employ only the best artificial manures that contain elements best suited for the production of sound firm tubers, and less of mere plant stimulus. If those who are disposed to give Potato manures a fair trial will but turn to their *Chronicles* of last autumn, they will there be reminded of the trial of certain Potato manures conducted here last summer and the results. Only the most entire confidence in the value of what was then proved to be the best Potato manure leads me to advise growers to give that valuable product a fair trial this season, as I am sure the results will give ample satisfaction. Realising so strongly the benefits that such a manure would give to Potato growers generally, I advised the Messrs. Hills & Co., the manufacturers of the manure, to make a first-class London seed-house their retail agents, that it might thus be brought within reach of all classes of growers. The Messrs. Hooper, of Covent Garden, have undertaken the agency, and as your advertising columns now show. I prefer sowing the manure in with the sets in trenches, using about 4 lb. to rows of 50 feet. Rather less would suffice where the ground was good. It would be well if those who take an interest in these artificial manures would obtain samples of several kinds, and thus for themselves find out the best. This manure of the Messrs. Hills is manufactured specially for the Potato. *A. D.*

Primula sinensis flore-pleno.—These are, without doubt, most useful plants for cutting from in the winter months. I saw the other day in Mr. Drover's nursery, Hillside, Ventnor, Isle of Wight, some of the finest grown specimens I have seen. They were growing in 24-inch pots, were 2 feet through, and one mass of flowers. They had been in bloom for some time, and had every likelihood of continuing to flower for some time to come. Under the same treatment as Mr. Drover's they must be most useful where cut flowers are required. *A. Outram.*

The Grape Crop at Throapham Manor.—Another correspondent, I see, takes exception to "B. A.'s" statements as being much exaggerated. In cases of this description exaggeration is so thoroughly reprehensible and calculated to breed discontent in the minds of employers, that it should not go forth without being challenged. Has your correspondent, "Truth," any means of refuting "B. A.'s" statements? If so, it is for "B. A.," or Mr. Hatswell to give your readers an outline of the cultural practice which gives such results as twenty-two bunches to the Vine, the canes planted 3 feet apart in a house only 12 feet wide. It is needless to dispute the number of bunches; but who is this "B. A.," that we are expected to give credence to as to "the crop throughout being well finished, the berries large and well-coloured," and, I may add, in such "vast" quantities as to necessitate them to be computed by the "cwt."? The whole thing appears to me to have a smack of the marvellous about it. "B. A." must have been in Wonderland during the Christmas festivities, previous to writing his description, or he may have fallen into the flood of the fat catalogue tide, which sets in about New Year's Day, and so got saturated with that kind of enthusiasm which sees objects very much magnified, the glass in this case being smoked to give the necessary "well-coloured" tint to the fruit. Let "B. A." remove the veil of his incognito, so that your readers may know where he acquired his standard of excellence. What connection has he with Mr. F. Hatswell? and what object has he in view in foisting off as his especial *protégé* this new star in the horizon? Mr. Hatswell and "B. A." have to learn that young vigorous Vines show more fruit bunches than is wise to allow them to carry, and that dipping into both capital and interest is not the best way of keeping a balance at their banker's. After Mr. Hatswell has overdrawn his banker's account his employer may coolly tell him so, and politely show him the door (garden gate). "B. A." will then find out that his swans have only been geese, and the wonderful meteor that was to dazzle our eyes has only been a flash-in-the-pan. *Foster's Seedling.*

Linum trigynum.—I think I have made remarks on this before, but as it is such an exceedingly useful decorative plant, and one that so seldom has justice done it, I feel constrained to do so again, in the hope that those who have parted with it may be induced to give it a fair trial, as really, when well grown, it is one of the showiest and best plants that can be had for the winter, being not only exceedingly free-flowering, but of a colour and lasting quality unequalled by any, as here we have had it in bloom for the past three months, and the same plants look good for at least another to come. There are two causes why people are not more generally successful with them: the one is, that they are often kept in houses, or treated with other plants during the summer, and then after that they do not receive sufficient warmth in the winter; for although Linum trigynum may be regarded as a greenhouse subject, it requires more heat than it gets there to induce it to unfold its gay blossoms. The most important part, however, is its summer treatment, for if not kept clean and healthy then, no after-management will repair the past, as its flowering and beauty quite depend on the condition the foliage is in. The difficulty in the cultivation of Linum trigynum is to keep this free from red-spider, a pest that is almost sure to assail it, and the only way to steer clear of this troublesome enemy is to devote a

compartment in a pit or frame especially to the plants where they can be plunged in a bed of half-rotten leaves or other nonconducting material, and treated at will. So treated, they can then be heavily syringed both morning and evening during the summer, and when doing so the great point is to thoroughly wet the underside of the foliage, as that is where the red-spider lurks. To insure free growth it is necessary to close early to shut in sun-heat, which, after the syringing, creates a close, humid atmosphere, highly favourable to the health of the plants. These flourish best in loose sandy peat or leaf-soil, in which they should be potted in well-drained pots, for, although they like plenty of water, they only do well when it can pass quickly through. The sized pots we grow ours in are 6 and 8-inch, which are quite large enough for year-old stock, as Linums do not require much root-room, and may always be fed with liquid manure, of which, if clear and weak, they may have frequent supplies. The easiest way to propagate them is to cut back old plants any time now, and put them in moist heat, when they will soon throw out young shoots, which, when 3 inches or so long, should be taken off with a heel, and inserted in the ordinary manner in prepared pots, and then placed in a close dung frame, where they soon emit roots, and may then be potted singly and nursed on in the manner referred to above. *J. S.*

**Birds in Song.**—On Wednesday, the 16th inst., I heard the chaffinch in full song. The cock-birds had made their presence known for some little time previously by their well-known note of pink-pink; but it was not till the 16th that they really burst into song. On Friday, the 18th, the blackbird broke into song, and on the 22d (Tuesday) the thrush followed suit. Last year the dates were the 5th and 10th of the month respectively for these two birds. Where we had Primroses on the 2d last year there are no flowers yet, and though the 27th has not yet arrived it is quite clear we shall have no Cowslips on that date this year. Violets were gathered last week (the 16th) same as last year. *J. A. C., Northfield, Annan, Feb. 24.*

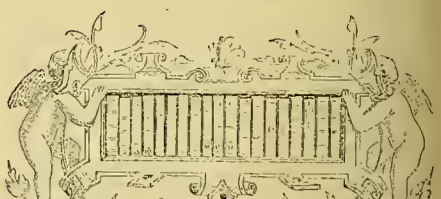
**The Gardeners' Royal Benevolent Institution.**—It is gratifying to see, by the correspondence in the *Gardeners' Chronicle*, that a lively interest is evinced by gardeners and others in this excellent Institution, and it is a very satisfactory fact to record that during the last few years a considerable extension of membership has taken place. There can be no doubt but that this is mainly owing to the visits paid by the secretary (Mr. Cutler) to the provinces, thereby bringing the claims of the Institution more immediately under the notice of gardeners and others connected with horticulture. I know that the Institution has done a vast amount of good—it has done nothing but good, and, therefore, is deserving the hearty support of every one. There can be no doubt but that a reform is required as to the mode of election to this and all kindred societies—there ought not to be any canvassing for votes. It is to be hoped that this will soon be the law of the land in reference to candidates for parliamentary honours, and the same principle will no doubt be applied to our other institutions; but it is a well known fact that those who have subscribed a certain number of years are elected pensioners without a contest, and, as a rule, those who have subscribed stand a much better chance of being elected than those who have not. I suppose there always will be grumblers, and egotists who think they can do certain work better than others. Such (and their name is legion), if they had the management of the Gardeners' Benevolent Institution, would soon find that the Institution is exceedingly well managed, and that a vast amount of tact and energy is requisite to carry out all the details in connection with the same. But how much more pleasing is the contemplation when one thinks how much good this Institution is doing! One has recently heard the melancholy street chant of the "frozen-out gardeners" who had no work to do; but our Institution (every head gardener in the country ought to call it "*our* Institution") assists those who have had work to do, and who have done it honestly, laboriously, but now have it no more, because they are frozen out—the frosts of age having settled on their heads. I am told that the committee are thinking of increasing the amount of the pension. I sincerely trust that this will be the case, and hope that the increased income will be commensurate with the excellent object the committee have in view. It seems to me, I was going to say, wicked to say one word against so excellent a society. It is well for those who never need the aid this Institution affords. Those who can afford a guinea a year, and who are not subscribers, I would earnestly ask to become one of us, in order to enjoy the luxury of helping our poorer brethren belonging to the craft. *Bruce Findlay, Manchester.*

—— It seems to be forgotten by all correspondents who have lately written on this subject that a life subscription of 10 guineas entitles to a pension without election, as well as a subscription for fifteen years. It is important to bear this in mind, as many a gardener may be in a position at times to give one subscription of 10 guineas who might not be able to keep up his annual subscription of a guinea. For example, at the two Manchester shows, those in June and August, over £3000 are to be awarded in prizes. Surely it might be possible for ten gardeners out of all this money that will thus be taken, to subscribe 10 guineas each, and thus give £100 to this most deserving Society, and secure ten men against absolute destitution when age and want, that ill-matched pair, may overtake them. There are also not a few employers, who dislike annual subscribing, who might be inclined to give one donation of 10 guineas, to secure their deserving gardeners against want. No doubt the Gardeners' Benevolent Institution is what its name imports, and not a friendly society, though all friends of gardeners might well help to make it more of the latter by assisting it to the utmost of their ability. *D. T. Fish.*

—— Much has already been said, and much more remains to be said, in regard to the Gardeners' Royal Benevolent Institution. In my opinion (and I cast no reflection on any man nor any body of men) two things want doing in the above-named Society: the first is, the system of canvassing at election time wants breaking up; and the other is, the abolition of the thirteenth rule, that reads as follows:—"That no person shall be considered eligible as a candidate for the pension who is in receipt of parochial relief; and that in the event of a pensioner receiving such parochial relief, his or her name shall be immediately struck off the list of pensioners on the committee becoming acquainted with the fact of such parochial relief being received; and such pension shall not be resumed even in the event of the person ceasing to obtain parochial relief, without a re-election, unless recommended by two-thirds of the committee." To my mind this seems arbitrary, and far more stringent than there is cause for. I am a life subscriber of £10 10*s.*, but had I known the above rule I might have hesitated about the subscription before paying it. I trust I shall never need the aid. Unless a man and his wife in their old age have something in store beside, the £16, when divided into fifty-two weekly instalments, will afford them but a small margin for the comforts of life when they need them most. I have been all my life, and am, a rent and tax payer, directly and indirectly; and when I have helped others, if needs be, there can be nothing wrong in others helping me. Comparatively speaking, few gardeners can lay up a competency; few are so fortunate as to hold situations where they can gain an independence, or obtain the desired pension; indeed, many of our craft have very little chance of laying up store against the time to come. In return for a life of toil and anxious care, to all other ills this one must be added—that of short terms of servitude. In many such cases, the from-hand-to-mouth process becomes the only possible one. If the pension of the Institution was such as to place its members above want, then I would grant all the restrictions you can possibly enact. To my mind the canvass of last election reveals a deplorable state of destitution that ought not to exist, such as few can be aware of; and yet, according to rule, they are told if they intend to benefit by the benevolent "they must not have relief from the parish." *A Subscriber.*

—— If Mr. Clarke made a leap in the dark, and gave his vote, as he says he did, to a poor deserving non-subscriber without knowing what he was doing, he must not expect to Boycott other subscribers because they voted according to their wishes. If Mr. Clarke will take the trouble to add up the money subscribed on the page on which his name stands on the list of subscribers, he will then appreciate the proportion of money that has been paid to the Institution for benevolent purposes, and how much has been paid by gardeners for benefit purposes, if I might call it so. I would rather vote for a deserving non-subscriber at any time than I would for a candidate that had paid a pound or two at the last push to give colour to his claim. It is impossible for gardeners to ignore the influence of those honorary subscribers who have so liberally supported the Institution. Let gardeners one and all support those who have subscribed, and no one will find fault with them. But surely those who get no benefit from the Institution, and have subscribed by far the greater part of the money, might vote for a good cause on the plea of benevolence, provided it is legally done. I cannot understand the quiet slap "Z.," at p. 212, has given to the Institution; rightly speaking it has no meaning but might prejudice the younger minds. "Z." recommends gardeners to join the Odd Fellows, or some kindred society, and for immediate relief in illness the advice is undoubtedly good, but they do not meet the case of aged and indigent gardeners. An Odd Fellow must be ill and receive a doctor's certificate or he is not eligible for the money allowance of 10*s.*, in some places 12*s.* per week, which goes on for a year, the recipient not being allowed to earn a penny, if he were able to do so, in this time. It is then reduced to half, and goes on as long as illness continues, or the lodge can bear the burden. I would ask what society could pay the same amount of money as that paid by the Gardeners' Benevolent Society without becoming bankrupt; and in this case it could not be done if it were not for the benevolent disposition of honorary members. I look upon this Society as one of the best managed in the kingdom, by gentlemen whose services are given, with the assistance of an able secretary whose work cannot be light; not one of those are known to me personally, but their names are a sufficient guarantee to satisfy the most sceptical. *Justice.*

—— What I have written was done entirely in the interest of the Society, and I may now say that I have been a member of the Loyal Hanover Lodge of Odd Fellows situated at Brighton since 1862. I became a member (and am still so) of the United Horticultural Benefit Society in 1866, and I first became a subscriber to the Gardeners' Benevolent Institution in 1874, and I leave "Z." and his uncharitable criticisms to his own reflections. *J. Clarke, The Gardens, Cothelstone House, Taunton.* [This discussion must now cease. Every one must see that the Institution deserves the support of all gardeners; and if they wish to alter some of the rules, the constitutional method of so doing is to become subscribers and then exercise their privileges accordingly. Eds.]



## Notices of Books.

**Practical Botany for Elementary Students.** By D. Houston. Stewart & Co.

Just the sort of book for class use with the aid of a demonstrator. It consists of a series of directions for the examination and description in one sequence and proper manner of some fifteen common plants. The use of English names only is an inconvenience not compensated for by any advantages. Clematis is surely as easily remembered as Travellers' Joy, or Old Man's Beard. The mischief that may arise from the use of such names is shown on p. 16, where the "tubers of Aconite" and the "tubers of Monkshood" are mentioned as if the two names signified different plants. Of course the application of the term tuber here is also open to question. The sections relating to general properties and uses require revision to make them more thoroughly representative.

**Plant Life**; *Popular Papers on the Phenomena of Botany.* Marshall, Japp & Co.

As its title implies, this is a series of chapters devoted to the explanation, in familiar phraseology, of many of those points of structure, and specially of physiological action, whose importance has been so strikingly illustrated of late years by the labours of Darwin, Lubbock, and others. The author writes fluently, and, what is more to the purpose, correctly; so that his book is well suited to excite the interest of those who have a liking for plants.

**Hints to Preachers.** By S. Reynolds Hole. Oxford and London: Parker.

It comes upon us as a novelty to meet the author of the *Book about Roses* in this department of literature. It is not for us here to enter upon the matter of this book, but we may say that his method is scientific, more so than in his gardening books, and well adapted for its purpose; the language is fluent, the arguments and deductions clear and to the point, and relieved here and there by the "sparkle" which obviates one of the most fatal defects in a sermon—dulness; indeed there is not a dull page throughout the volume.

—— *Carter's Practical Gardener.*—As this is considerably more than a mere trade publication it is incumbent on us to notice it more fully than we should an ordinary catalogue. In fact it is no catalogue, but a series of short well written practical articles on almost all branches of gardening. The services of many of the best known practical gardeners and calendar writers have been enlisted, and the only fear is lest these gentlemen by their ubiquitous publication may sooner or later find their occupation gone and their counsels depreciated by the very frequency of their appearance.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,* For the Week ending Wednesday, March 2, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Feb. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 24 | 30.06 | + 0.25 | 39.5 | 32.0 | 7.5 | 35.6 | — 3.7 | 30.6 | 82 | N. : N.W. | 0.06 |
| 25 | 29.89 | + 0.08 | 37.0 | 33.0 | 4.0 | 34.8 | — 4.7 | 29.0 | 77 | N. : E. | 0.00 |
| 26 | 29.67 | — 0.14 | 41.7 | 28.9 | 15.8 | 36.5 | — 3.2 | 28.9 | 74 | S.W. | 0.00 |
| 27 | 29.64 | — 0.17 | 39.8 | 31.0 | 8.8 | 33.8 | — 6.1 | 29.3 | 84 | N.E | 0.02 |
| 28 | 29.59 | — 0.22 | 34.5 | 28.2 | 6.3 | 31.1 | — 9.0 | 25.6 | 78 | NNW | 0.00 |
| Mar. 1 | 29.90 | + 0.08 | 41.0 | 24.2 | 16.8 | 32.5 | — 7.8 | 22.8 | 67 | NNW : N.W. | 0.00 |
| 2 | 30.07 | + 0.23 | 42.0 | 32.0 | 10.0 | 35.9 | — 4.5 | 27.8 | 75 | N. N.E. E. | 0.00 |
| Mean | 29.83 | + 0.05 | 39.8 | 29.9 | 9.9 | 34.3 | — 5.6 | 27.7 | 77 | N. : E | 0.08 |

Feb. 24.—Snow to the depth of 2 inches. Dull and gloomy till 1 P.M.; sun shining afterwards. A calm, dark night.
— 25.—Dull and gloomy, but comparatively fine. Dark, quiet night.
— 26.—A fine day. Dark sky at night.
— 27.—Snow began to fall at 8 A.M., fell heavily till 10 A.M. Sun shining after 1 P.M. Clear night.
— 28.—Overcast and dull till half past 1 P.M.; sun shining at intervals afterwards. A clear and very cold night.
Mar. 1.—Fine, clear, cold morning. A cheerful day. Clear, fine, frosty night.
— 2.—Fine, but dull morning; clouds broke at 10 30 A.M.; sun shone afterwards. On the whole, a bright, clear day. Fine, cold, cloudy night.

London: *Atmospheric Pressure.*—During the week ending February 26, in the neighbourhood of London, the reading of the barometer at the level of the sea increased from 30.11 inches at the beginning of the week to 30.27 inches by the night of the 21st; it then decreased to 30.14 inches by the afternoon of the 22d, and by the morning of the 24th it had again increased to 30.27 inches. At the end of the week the reading was 29.85 inches. The mean reading at the level of the sea was 30.13 inches, being 0.21 inch higher than last week, and 0.14 inch higher than the average for the week.

*Temperature.*—The highest reading in the week was 44°.7, on the 26th, the next highest being 39°.5, on the 24th. The lowest of the seven high day readings was 35° on both the 21st and 22d. The mean of the seven high day readings was 37°.8. The lowest reading recorded was 28°.9, on the 26th (the same day on which the highest reading occurred); the next lowest was 30°.3, on both the 21st and 22d; and the highest of the seven low readings during the week was 33°, on the 25th. The mean of the seven low night temperatures was 31°.6. The greatest range of temperature in one day was 15°.8, on the 26th, the next greatest being 7°.5, on the 24th, and the least 3°, on the 23d. The mean of the seven daily ranges was 6°.2.

The mean daily temperatures were 36°.6 on the 20th, 32°.6 on the 21st, 33° on the 22d, 33°.4 on the 23d, 35°.6 on the 24th, 34°.8 on the 25th, and 36°.5 on the 26th. They were respectively 2°.3, 6°.4, 6°.1, 5°.8, 3°.7, 4°.7, and 3°.2 below their averages.

The mean temperature for the week was 34°.6, being 3°.5 lower than last week, and 4°.6 below the average of the corresponding week for sixty years.

The highest reading of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, was 110° on the 26th, the next highest being 92°, on the 24th, and 55°, on the 25th. On the 21st and 22d the readings were 39°.5 and 38°.5 respectively. The mean of the seven daily readings was 59°.9.

*Rain.*—Rain fell on four days; the greatest amount was 0.48 inch, on the 23d; the next greatest being 0.30 inch, on the 21st; and the least 0.06 inch, on the 24th. The total amount that fell in the week was 1.10 inch.

The weather was mostly dull and gloomy, and the sky was nearly constantly overcast till the 26th, which was a fine day. On Monday the depth of snow at Blackheath was half an inch, at stations a little north of London was several inches in depth, and at Barnet was 1 foot; whilst falling it was calm. A very remarkable and unusual degree of uniformity occurred in the temperature of the 21st and 22d, the highest and lowest temperatures, and consequently the daily range, were the same on these days; the readings of the thermometer in the sun differed by only 1°.

England: *Temperature.*—During the week ending February 26 the highest temperatures were 49° at Truro, 45°.2 at Plymouth, 45° at both Cambridge and Sunderland; and the lowest of the high temperatures was 38°.3, at Bradford. The mean from all stations was 42°.9.

The lowest temperatures were 22°.2 at Wrottesley, 23° at Sheffield, and 25° at Truro; at Cambridge, Norwich, Liverpool, and Sunderland the temperature never fell below 30°. The mean from all stations was 27°.4.

The range of temperature during the week was greatest at Truro, 24°, the next in order being Plymouth, 18°.2; Wrottesley, 18°.1; Leicester, 17°.7; Birmingham, 17°.2; and at both Bristol and Sheffield it was 17°. The least ranges were 9°.4 at Liverpool and 10° at Norwich. The mean from all stations was 15°.5.

The mean of the seven high day temperatures was highest at Truro, 44°; the next in order being 42°.5 at Plymouth, 40°.5 at Hull, 40°.4 at Sunderland, and 39.°5 at Brighton; at Blackheath, Wrottesley, Nottingham, Sheffield, and Bradford the mean did not exceed 38°. The mean from all stations was 39°.

The mean of the seven low night temperatures was least at Wrottesley, 27°.5; the next in order being Sheffield, 29°.6, Leicester, 30°.1, and Nottingham, 30°.5. The mean was highest at Norwich, 33°.3, and Cambridge, 32°.8. The mean from all stations was 31°.2.

The mean daily range was greatest at Truro, 12°.1; the next in order being Plymouth, 10°.5, Birmingham, 9°.4, and Wrottesley, 9°.2; the lowest mean daily ranges were 5°.1 at Norwich, and 6°.1 at Cambridge. The mean from all stations was 7°.8.

The mean temperature for the week was highest at Truro, 37°.5; the next in order being Plymouth, 36°.7; and Sunderland, 35°.9; at Leicester, Wrottesley, Nottingham, Sheffield, and Bradford, the mean temperature did not exceed 34°. The mean from all stations was 34°.6.

*Rain.*—Rain fell at all stations, with the exception of the two most southerly—Truro and Plymouth; the greatest fall for the week was 1.10 inch at Blackheath; the next in order being 0.72 inch at Birmingham, and 0.67 inch at Nottingham. The mean from all stations was 0.42 inch, and the average number of days on which rain fell was three. *Snow* fell at Bristol on the 21st and 22d, Cambridge on the 20th, 22d, and 23d; Birmingham on the 21st and 22d, Leicester and Wrottesley on the 22d, Bradford on the 21st, 22d, 25th, and 26th, and Sheffield on the 20th, 21st, and 22d.

Scotland: *Temperature.*—During the week ending Saturday, February 26, the highest temperature was 46°, at Greenock, the next in order being 44°.6 at Edinburgh and 43°.6 at Leith. The lowest of the high temperatures was 38°.5, at Glasgow. The general mean was 42°.9.

The lowest temperature was 20°.3, at Glasgow, the next in order being Dundee, 25°, and Aberdeen, 25°.4. The general mean was 26°.1.

The mean temperature for the week was highest at Leith, 35°.8, and lowest at Glasgow, 32°.5. The general mean was 34°.6.

*Rain.*—The largest amount registered was 0.90 inch, at Dundee, the next greatest being 0.46 inch at Leith; at Glasgow no rain fell. The general mean was 0.36 inch.

JAMES GLAISHER, F.R.S.

## Answers to Correspondents.

Books: *H. D.* The only book of the kind that we know of is now out of print, and difficult to obtain. You will find a set of designs that will perhaps suit your purpose in the new edition of Carters' *Practical Gardener*, and in Cannell's *Floral Guide* for the present year.—*G. S. C.* We do not know the price, not having seen the book advertised.

Bulbs: *J. McA.* We do not recognise the bulbs, but if you can procure for us a specimen in flower we will endeavour to name it for you.

Camellia Sport: *J. C.* The sport is an interesting one, but the flower is not of any particular value, as it lacks both size and form. The case is one of reversion to the original colour, the flowers of C. japonica being red.

Climbers for Verandahs: *J. Colebrooke.* The climbing Devoniensis Rose should, as you say, find a place, and we would add such Clematises as Jackmanni, lanuginosa, and lanuginosa nivea, Jasminum officinale, nudiflorum, and revolutum, if the situation is not too much exposed, and Forsythia Fortunei; and for evergreens some of the small-leaved Ivies, green and variegated.

Cucumber Clubbing: *G. E.* The immediate cause of the clubbing is the attack of vibrios—minute creatures which exist in the soil. You had better clear all out, cleanse the pits, and use fresh soil, prepared so as to destroy animal life.

Erratum.—At p. 277, in the note on Petasites alba, for "weakly" read "weedy."

Exhibiting Orchids: *Old Subscriber.* "Three exotic Orchids" ought to mean three plants, not three half-dozens. Whether in the case you refer to it is to mean one or the other depends on the interpretation put on their own words by the managers of the show, as we presume from the nature of your question there is no definition given. They should be three plants honestly grown on into size. It is a question which is now cropping up in various quarters, and would be best met by inserting the words "made up plants excluded" in all the Orchid classes of all future schedules.

Mice in Gardens: *T. H. Theobald.* Trap them with the common figure of 4 trap, and bait with rind of bacon. These traps are so simple that any number may be set up.

Names of Plants: *G. Merritt.* 1, Libocedrus decurrens; 2, Juniperus sinensis; 3, Thuja Lobbii; 4, Taxodium sempervirens; 5, Abies canadensis; 6, Cedrus Deodara; 7, Abies Albertiana.—*T. T.* Sparmannia africana.—*A Young Gardener.* Juniperus tamariscifolia.—*S. Taylor.* 1, Selaginella stenophylla; 2, S. viticulosa; 3, S. fulcrata (Pervillei); 4, S. caulescens; 5, S. cuspidata.—*B.* Odontoglossum gloriosum.—*Salopian.* The seeds of Abrus precatorius, which are used in tropical regions for making necklaces, and in India as a standard weight for diamonds.—*A. B. N.* We cannot undertake to name such scraps; besides, such things have little to do with horticulture. Apply to Messrs. Lovel Reeve & Co., Henrietta Street, Covent Garden, for books on the subjects named.—*E. Cooper.* A fine form of Odontoglossum Wilckeanum. *H. G. Rchb.*—*W. H. C.* The leaves and bulbs are not determinable; 5, Adiantum Sanctæ Catharinæ; 6, A. affine.—*W. Roberts.* 1, Lomaria nuda; 2, Asplenium marinum; 3, Lomaria Patersoni; 4, indeterminable; 5, Acacia Sentis.—*K. N.* Asplenium lucidum, Onychium japonicum, Begonia Rex.

Native Cherry of Australia: *H. C.* The native Cherry of the Australian colonists, which has "the stones growing outside," is the fruit of some species of Exocarpus, a genus of Santalaceæ in which the drupe, or nut, rests on "the enlarged usually succulent pedicel," and thus has the appearance described.

Pear: *R. N. H.* If the whole tree is as badly affected as the spur you send, you had better burn the tree. Otherwise try syringing with paraffin oil, one wineglassful to one gallon of water, kept well stirred up while being used.

Planting Vines: *Jacques.* Let the glazing of the houses be finished, and the border properly made up, before you think of planting, so that there may be no trampling of workmen afterwards. Keep the Vines quiet till that can be done, then plant, bending down the canes, and carefully laying out the roots. When the Vines break, select the two best shoots, the strongest of which is to be trained-in permanently, and the other removed as soon as it can be determined which is the best.

Primula sinensis: *J. Crook.* Yours is a remarkably good strain as regards size of flower, substance, and colour. We can say nothing of habit, but according to your description that must be good also. They appear to us to be equal to any we have seen so far as the respective colours are concerned.—*Francis.* Not so good as Chiswick Red or Dr. Denny, but not a bad strain to breed from.

Transplanting Machine: *J. G. H.* We have not seen the machine advertised by any English makers.

Viola odoratissima: *H. Cannell.* The flowers were remarkably large, and the scent exquisite. You may well say they approach those of the Pansy in size and in form, and that this is the king of its tribe.

Violets: *Jacques.* Plant them in very rich light soil any time during the spring, that they may grow on into strong plants for blooming in next season.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* Advertisements, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

## CATALOGUES RECEIVED.

James Dickson & Sons, 108, Eastgate Street, Chester—Farm Seeds.

Little & Ballantyne, Carlisle—Farm Seeds.

Cranston's Nursery and Seed Company, King's Acre, Hereford—New Roses for 1881, Tea Roses, &c.

George White, Carriagehill House, Paisley—Florists' Flowers, Herbaceous Plants, &c.

Thomas Kennedy & Co., Dumfries—Select Agricultural Seeds.

Communications Received.—R. Inglis.—H. Elliott & Co.—D. T. F.—H. G. R.—W. I.—T. D. H.—E. C—H. E—J. R. J.—T. H. H.—P. W.—J. J.—J. C. Nelson.—B. P.—R. N. H.—Garden Boy.—K. N.—J. C. B.—B.—A. S. Wilson.—J. Weeks & Co.—A. S.—G. T. M.—G N.

# Markets.

*COVENT GARDEN, March 3.*

Lent season having commenced has quite put a stop to trade, best Grapes being the principal demand. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Lemons, per 100 | 4 0– 6 0 |
| Cobs, per lb. | 2 0– 2 6 | Pears, per dozen | 4 0–12 0 |
| Grapes, per lb. | 3 0–12 0 | Pine-apples, per lb. | 1 0– 2 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Herbs, per bunch | 0 2– 0 4 |
| Asparag., Fr., bndl. | 25 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — English, bund. | 8 0–18 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| — Sprue, per bund. | 1 6– 2 0 | — Cos, each | 0 4– 1 0 |
| Beans, French, p. lb. | 3 0– .. | Mint, green, bunch | 1 6– .. |
| — Broad, per lb. | 1 0– .. | Mushrooms, p. baskt. | 1 6– 2 0 |
| Beet, per doz. | 1 6– 2 6 | Onions, per bushel | 5 0– .. |
| Cabbages, per doz. | 1 0– 2 0 | — Spring, per bun. | 0 6– .. |
| Carrots, per bunch | 0 4– 0 6 | Parsley, per bunch | 0 4– .. |
| — New Fr., bund. | 4 0– .. | Radishes, per bun. | 0 2– 0 6 |
| Cauliflowers, English, each | 0 3– 0 6 | Rhubarb, per bund. | 1 0– .. |
| Celery, per bundle | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Chilis, per 100 | 3 0– .. | Small salading, pun. | 0 4– .. |
| Cucumbers, each | 1 6– 3 6 | Spinach, per bushel | 4 0– .. |
| Endive, per doz. | 2 0– 3 0 | Tomatos, per lb. | 0 9– 1 0 |
| Garlic, per lb. | 1 0– .. | Turnips, new, bunch | 0 4– .. |

POTATOS:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 6 0– 9 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Azalea, 12 sprays | 0 6– 1 0 | Pelargoniums, 12 spr. | 1 6– 2 0 |
| Bouvardias, per bun. | 1 0– 3 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Primula, double, per bunch | 1 0– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | — single, 12 sprs. | 0 6– 1 0 |
| Cyclamen, 12 blms. | 0 3– 0 6 | Roses (indoor), doz. | 3 0– 9 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | — yellow Fr., doz. | 2 0– 4 0 |
| Eucharis, per doz. | 4 0– 9 0 | — red French, doz. | 3 0– 4 0 |
| Euphorbia, 12 sprays | 2 0– 3 0 | — Christmas, 12 bl. | 0 9– 1 0 |
| Gardenias, 12 blms. | 15 0–30 0 | Snowdrops, 12 bun. | 2 0– 4 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Hyacinth, Roman, 12 sprays | 1 0– 2 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Tuberoses, per dozen | 4 0– 8 0 |
| — red, 12 blooms | 1 0– 3 0 | Tulips, 12 bunches | 10 0–15 0 |
| Lilac, Fr., per bunch | 7 0– 8 0 | Violets, 12 bunches | 1 6– 2 6 |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | — Neapolitan, Fr., per bunch | 3 6– 5 0 |
| Marguerites, 12 blms. | 0 4– 0 9 | — Czar, Fr., bunch | 2 0– 2 6 |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ficus elasticus, each | 1 6– 7 6 |
| Begonias, per doz. | 6 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cineraria, per doz. | 10 0–12 0 | Genista, per doz. | 12 0–18 0 |
| Cyclamen, per doz. | 12 0–24 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cyperus, per dozen | 6 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Dracæna termicalis | 30 0–60 0 | Myrtles, per doz. | 6 0–12 0 |
| — viridis, per doz. | 12 0–24 0 | Palms in var., each | 2 6–21 0 |
| Epiphyllum, per doz. | 18 0–30 0 | Primula, single, per dozen | 5 0– 6 0 |
| Erica hyemalis | 9 0–18 0 | Scillas, 12 pots | 9 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Snowdrops, 12 pots | 6 0– 9 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |

## SEEDS.

LONDON: *March 2.*—Messrs. John Shaw & Sons, of 37, Mark Lane, report that no great animation is yet shown on the seed market. Field work being so much in arrear, the sowing consumptive demand is naturally delayed thereby. With regard to quotations for Clover seed, &c. no change of importance can to-day be noted. Higher prices are asked for Timothy and Sainfoin. Spring Tares are scarce and somewhat dearer. The trade for Canary seed continues lifeless. Linseed is firm.

## HAY.

At the Whitechapel Market on Tuesday fodder was in very large supply, and sold at the following rates:—Prime Clover, 100s. to 120s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 105s.; inferior, 30s. to 75s.; straw, 30s. to 44s. per load.—On Thursday there was a large supply of hay and straw on sale. The trade was steady, and prices were as follows:—Prime Clover, 100s. to 120s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 107s.; inferior, 30s. to 70s.; and straw, 30s. to 44s. per load.—Cumberland Market quotations:—Superior meadow hay, 95s. to 105s.; inferior, 50s. to 84s.; superior Clover, 110s. to 120s.; inferior, 80s. to 90s.; and straw, 38s. to 44s. perload.

## POTATOS.

From the Borough and Spitalfields markets reports we learn that arrivals are liberal, but the trade very dull at the following rates:—Scotch Regents, 90s. to 95s. per ton; Champions, 75s. to 80s.; Victorias, 100s. to 110s.; Essex Champions, 80s. to 90s. per ton; German reds, 3s. 6d. to 4s. 6d.; Belgian kidneys, 3s. 6d. per bag.

**Government Stock.**—Consols closed on Monday at 99⅛ to 99⅛ for both delivery and the account. On Tuesday the final quotations were 99⅛ to 99¼ for delivery, and 99 5/16 to 99 7/16 for the account. Wednesday's closing figures were 99⅛ to 99¼ for delivery, and 99⅜ to 99½ for the account. The final quotations of Thursday were, for delivery, 99⅛ to 99¼, and 99 7/16 to 99 9/16 for the account.

From Mr. EDWD. MORGAN, Wynnstay.

"I have had your Collection of Vegetable Seeds for several years past, and I am glad to say that they have produced excellent crops, running on all the year round."

WEBBS'

SEED POTATOS

ARE THE BEST.

WEBBS' SCHOOLMASTER

*(Improved). The Best Potato in Cultivation.*

3s. per peck, 10s. per bushel, 27s. per sack.

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*(Improved). The Great Disease-resister.*

2s. 6d. per peck, 9s. per bushel, 23s. per sack.

WEBBS'

POPULAR BOXES

OF

FLORAL GEMS,

AT

2s. 6d., 5s., 7s. 6d., and 10s. 6d.

Each, Post-free,

Are specially suitable for the Gardens of Ladies and Amateurs.

20s. *value Carriage Free.* 5 *per cent. Discount for Cash.*

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GARDENING GUIDE.

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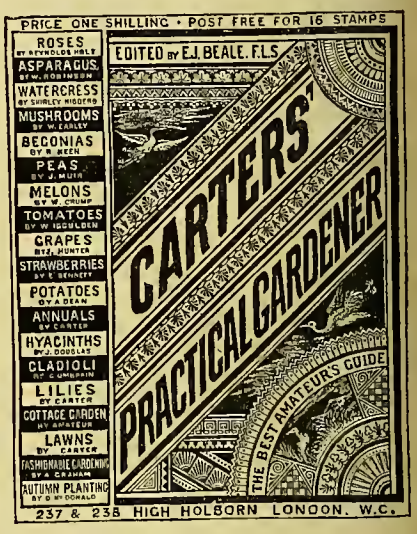


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CARTERS' PRACTICAL GARDENER. Price 1s. WINDOWS, by EARLEY.

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CARTERS' PRACTICAL GARDENER. Price 1s. FRUITS, by BRIDGMAN.

CARTERS' PRACTICAL GARDENER. Price 1s. CHRYSANTHEMUMS, by OTTOWAY.

CARTERS' PRACTICAL GARDENER. Price 1s. BEGONIAS, by KEENE.

CARTERS' PRACTICAL GARDENER. Price 1s. AZALEAS, by CARTER.

CARTERS' PRACTICAL GARDENER. Price 1s. CAMELLIAS, by C. H. S.

CARTERS' PRACTICAL GARDENER. Price 1s. &c., &c.

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CARTERS' PRACTICAL GARDENER. Price 1s. at the Railway Bookstalls.

CARTERS' PRACTICAL GARDENER. Price 1s., post-free 1s. 4d., from

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237, 238, High Holborn, London, W.C.

# THE BEST EARLY POTATOS.

**SUTTONS'**
**IMPROVED EARLY ASHLEAF.**
The earliest and best cooking Kidney Potato.

**SUTTONS' FILLBASKET (New).**
The earliest and best cooking Round Potato.

**SURPRISE (New).**
A perfectly distinct, first early Round Potato, of splendid cooking quality.

**WOODSTOCK KIDNEY.**
The best cooking Potato known, and unequalled for exhibition purposes. Very early. Forces well.

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"Your Woodstock Kidney was simply perfection in yield and quality. I say this after an experience of nearly sixty years in growing Potatos."

**Special Low Rates per Sack of 168 lb.**
Particulars post-free on application.

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# ACKNOWLEDGED HIGH-CLASS NEW SEEDS.

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## ECLIPSE CAULIFLOWER.

This New and Distinct Cauliflower has become a favourite in every garden where it has been cultivated, and has given the most unqualified satisfaction. By successional sowings it can be had from August to Christmas.

**In sealed packets, 1s. 6d. each.**

*From* Mr. WM. PATERSON, *Head Gardener to* Her Majesty the Queen, *Balmoral Castle.*—"Your Eclipse Cauliflower still bears the high opinion I have formed of it, and has been excellent with me this season.—September 1880."

## "BEST OF ALL" MELONS (MARCELLUS).

This is a strong and robust grower, free setter and very early. The fruit is round and generally about 3 or 4 lb. in weight. The flesh is white, rich, melting, and has a most delicious flavour. It cannot fail to become a favourite where high-class beautiful Melons are esteemed.

**In sealed packets, 2s. 6d. each.**

*From* Mr. J. HUNTER, *Head Gardener to the* Earl of Durham, *Lambton Castle.*—"I have grown your Marcellus Melon, which has proved itself to be my best for the season; remarkable for its beautiful netting and handsome shape, of a high orange colour, unsurpassed as an exhibition variety, its flavour is rich and melting, constitution strong and robust, and a free setter, I mean growing it largely next season in place of others."

## QUEEN OF TOMATOS.

This remarkable Tomato is of free growth and compact in habit, and the fruit has a very handsome appearance on the plant. The fruit (average size of a Victoria Plum) hangs on stems 10 to 12 inches in length, numbering ten to fifteen fruit regularly set on each side, pear-shaped, and of a brilliant red colour; skin smooth and glossy, exquisite in flavour, and very prolific, bearing clusters in abundance.

**In sealed packets, 1s. 6d. each.**

*From* Mr. ROBERT CRAIG, *Head Gardener to the* Hon. General Upton, *Levens Hall.*—"Your 'Queen of Tomatos' has been the admiration of all here, and cannot fail to become a general favourite. A free setter with a hardy constitution, and of excellent flavour. I exhibited a dish at the Kendal Horticultural Show in July last. It was admired by all, and was one of the gems of the show.—September 1880."

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**THE LARGEST ROSE GARDENS IN ENGLAND.**

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**VINES—VINES—VINES.**

W. G. CALDWELL AND SONS can still supply strong FRUITING CANES of the following varieties, at 4s. 6d. each; Planting Canes, 3s. each:—

Alnwick Seedling, Black Humburgh, Duke of Buccleuch, Gros Colmar, | Foster's Seedling, Lady Downe's, Madresfield Court, Trebbiano.

The Nurseries, Knutsford, Cheshire.

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**In use from October to March.**

This is the only variety which has withstood the recent severe weather; it has been tested by the most practical Gardeners, and pronounced the best sort in cultivation. The Royal Horticultural Society's trials of Brussels Sprouts at Chiswick also placed the "Aigburth" variety in the place of honour—1st. The *Gardeners' Chronicle* remarks in leading article, January 29, p. 136, "The trial of Brussels Sprouts at Chiswick served to show the decided superiority of certain stocks in a remarkable manner: the best were the 'Aigburth.'"

*In Sealed Packets only, post-free,* 1s. *each.*

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**SPECIAL OFFERS:—**

**100 Tons Scotch Champions,** good seed size, no waste in cutting, in quantities not less than 1 ton. Price £4 10s. per ton. Can supply from either light or heavy soils.

**50 Tons Seed Size Victorias,** at £5 per ton.

**Also,** large quantities of the **well known Berkshire Favourite,** for present consumption; recommended by thousands as the best obtainable variety at this time of the year: £5 5s. per ton. All free on Rail.

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FOR SALE, 20,000 Black CURRANT TREES (excellent sorts and abundant bearers); also a large quantity of the choicest PEAR, APPLE, CHERRY, PERSHORE PLUM, DAMSON, and other Fruit Trees, ready worked. About 10,000 good strong APPLE QUICK, and 2000 capital HAWTHORN QUICK, and a large quantity of LARCH and SPRUCE TREES, all ready for planting-out. Apply, THE CAGE, Market Street, Tenbury.

**To the Trade.**

R. AND A. MORRISON beg to call the attention of the Trade to our Advertisement below, and to assure them that our stock of LARCH and SCOTCH FIR, of which we always make a speciality, is this season very large and very fine. Our LARCH are very healthy, not a speck of bug being on them last summer; of 2-yr. Seedlings we can offer 1,000,000; of 1-yr. 1-yr. upwards of 1,200,000; and of the sizes from 12 to 30 inches, as advertised, we have upwards of 1,500,000 still to offer. Our Scotch FIR are guaranteed true native Highland Scotch Pine, growo from seed specially collected for us in the forests in the North of Scotland and taken out in our own kilns in the nursery. Of the different sizes advertised we have still to offer upwards of 3,000,000.

Arrangements may be made for paying carriage to Carlisle.

**Special Trade Offer.**

R. AND A. MORRISON, The Nurseries, Elgin, beg to offer the following:—

LARCH, 2-yr., fine, 4s.; 1-yr., 1-yr., very fine, 6s.; 12 to 18 inches, 12s. 6d.; 18 to 24 inches, 17s. 6d.; 18 to 30 inches, 20s. per 1000.
FIR, Scotch (Native), 1-yr., 1-yr., 6s. 6d.; 2-yr., 1-yr., 7s. 6d.; 1-yr., 2-yr., very fine, 8s. 6d.; 2-yr., 2-yr., 12s. 6d. per 1000.
PINE, Austrian, Laricio, and montana, 2-yr., 1-yr., 7s. 6d.; 2-yr., 2-yr., 10s. per 1000.
ALDER, transplanted, 18 to 24 inches, 10s. 6d. per 1000.
ELM, Wych, 2-yr., 2s. 6d. per 1000.
MAPLE, Norway, 2-yr., 1-yr., very fine, 10s. 6d. per 1000.
POPLARS, argentea, fine, 18 to 24 inches, 21s.; 24 to 36 inches, 30s. per 1000. Balsam, 18 to 24 inches, 10s. 6d.; 24 to 36 inches, 15s. 6d.; 3 to 4 feet, 21s. per 1000. Black Italian and White Egyptian same sizes and same prices.

# ROOTED CUTTINGS

**(Choice Varieties with Names).**

FREE AND SAFE BY POST. FREE AND SAFE BY POST.

Our fine collection of Choice Florists' Flowers has received some grand additions during the past season, and we have much pleasure in offering the following in well rooted healthy cuttings, which, by our improved system of packing, can now be sent by post with perfect safety to any part of the British Isles. The selection of varieties must in all instances be left to us.

| | Per doz.—s. | d. |
|---|---|---|
| CHRYSANTHEMUMS, New Varieties of 1880, of Continental origin, and including some novel and splendid sorts | 6 | 0 |
| ,, Large-flowered, superb exhibition in curved and reflexed varieties | 4 | 0 |
| ,, Japanese ,, ,, very fine sorts | 4 | 0 |
| ,, Pompon ,, ,, ,, | 3 | 0 |
| ,, Popular varieties, from different classes | 2 | 6 |
| COLEUS, Six brilliant new varieties offered by us for the first time; highly recommended, the set, one of each, 4s. 6d. | | |
| DAHLIAS, new and select, including new varieties of 1880; very choice | 5 | 0 |
| ,, Show varieties, very fine, from our magnificent collection | 3 | 6 |
| ,, Fancy ,, ,, ,, | 3 | 6 |
| ,, Pompon or Bouquet, a charming assortment | 3 | 6 |
| ,, Bedding, fine dwarf varieties | 3 | 6 |
| FUCHSIAS, new varieties of 1880, English and Continental, including some magnificent double flowers; very fine | 6 | 0 |
| ,, Very fine exhibition varieties, single and double | 4 | 6 |
| ,, Good showy varieties, single and double | 2 | 6 |
| ,, Very choice mixed, without names | 1 | 6 |
| GERANIUMS, ZONAL (PELARGONIUMS), choice new varieties of 1880, Denny's, Pearson's, Lemoine's, &c. | 12 | 0 |
| ,, New varieties of 1879; very fine | 7 | 6 |
| ,, Superb exhibition varieties, carefully selected from our fine collection | 6 | 0 |
| ,, Extra choice sorts | 4 | 0 |
| ,, Double-flowered new varieties of 1880, very fine, with large handsome trusses of beautiful flowers, that continue for a long period; highly recommended | 12 | 0 |
| ,, Double-flowered very choice varieties | 4 | 0 |
| ,, White, Madame A. Baltet, splendid double white, 6d. each | 5 | 6 |
| ,, Ivy-leaved, Double, newest and choicest sorts, including new varieties of 1880; very fine trusses of charmingly beautiful flowers | 10 | 0 |
| ,, Ivy-leaved, Single varieties, excellent for hanging-baskets, &c. | 2 | 6 |
| MIMULUS, Daniels' superb large-flowered | 2 | 6 |
| PHLOX, HERBACEOUS, new and select, including new varieties of 1880 | 6 | 0 |
| ,, very choice varieties from our superb collection | 3 | 6 |
| PENTSTEMONS, very select, including new varieties of 1880 | 5 | 0 |
| ,, Choice sorts from our very fine collection | 3 | 0 |

*From* R. J. HAMILTON, Esq., *Tunbridge.*

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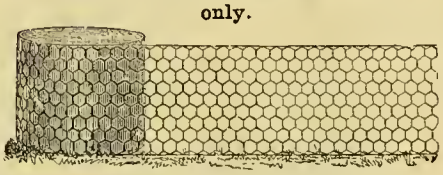

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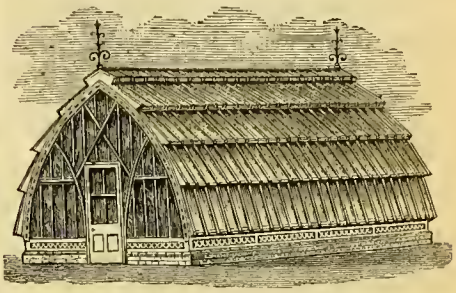

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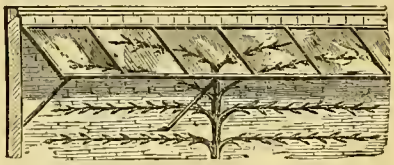

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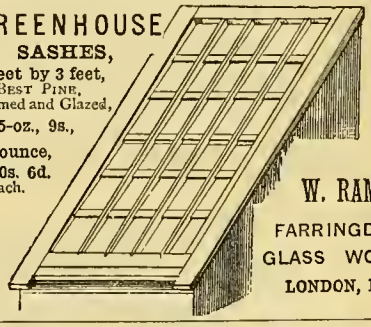

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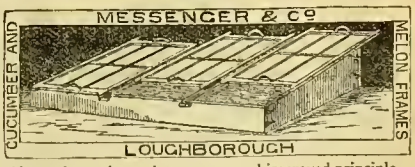


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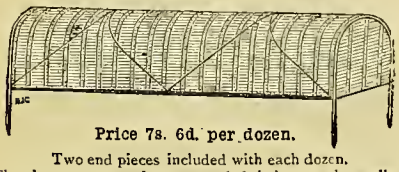

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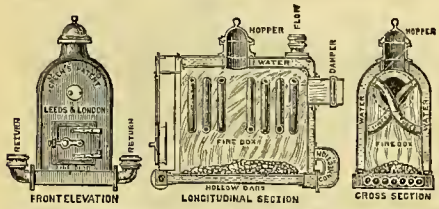


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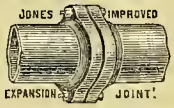


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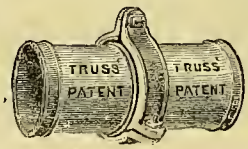


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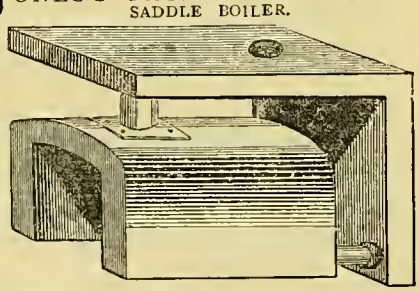

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| 20 " | 18 " | 30 " | 500 | 9 | 0 | 0 |
| 24 " | 24 " | 24 " | 700 | 12 | 0 | 0 |
| 24 " | 24 " | 30 " | 850 | 14 | 0 | 0 |
| 24 " | 24 " | 36 " | 1000 | 16 | 0 | 0 |
| 24 " | 24 " | 48 " | 1400 | 20 | 0 | 0 |
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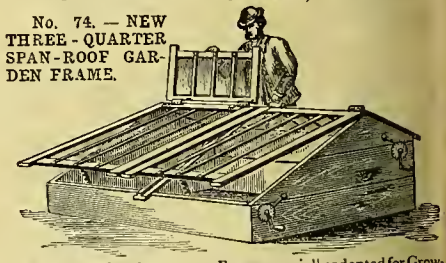

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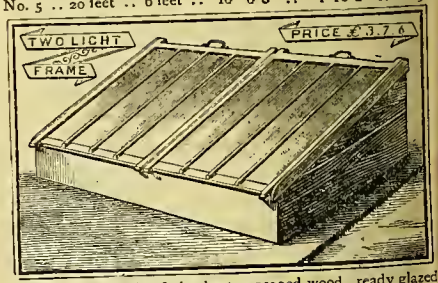


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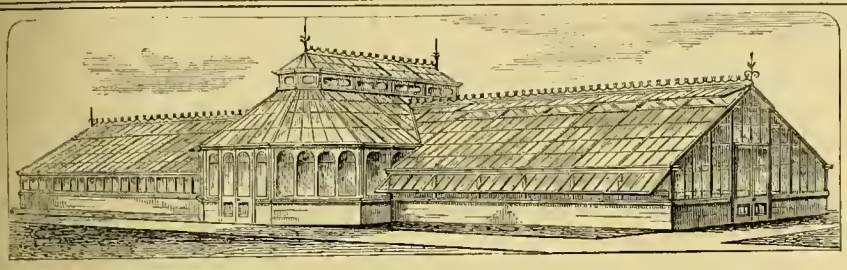

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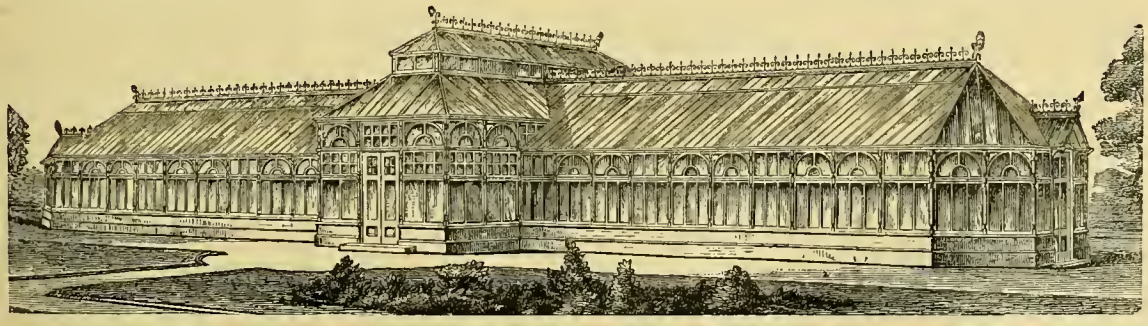

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**BALSAMS**—Especially for seeding, in eighteen distinct colours, occupying a house 100 feet in length, and forming one of the greatest floral displays at Swanley every August. 1*s.* per packet.

**CALCEOLARIAS** — These also more than occupy a 100-foot house, and when at their height of flowering, usually in June, it would be difficult even to imagine anything more lovely and beautiful than these wonderfully spotted kinds. 2*s.* 6*d.* per packet.

,, **(Hybrid Shrubby).**—It is now many years since Messrs. Major and Burley offered seeds of this charming class. We are pleased to say that we have harvested a grand lot of seed from the best, and would revive an old but beautiful feature in both greenhouse and garden. 1*s.* 6*d.* per packet.

**CARNATIONS and PICOTEES.** — We purchased all Mr. Dodwell's surplus seeds. It is needless to tell the public that this gentleman is the Champion Amateur Prize-taker, and only the best of the best exhibition kinds does he grow. 2*s.* 6*d.* per packet.

**COCKSCOMBS** — In eight distinct colours. These bear no comparison to those usually seen. Colours varying even as wide as yellow to the most lovely crimson and gold that it is possible to imagine. Mixed, 2*s.* 6*d.* per packet.

**CHRYSANTHEMUM, Etoile d'Or.**—Almost perpetual blooming, and for cut flowers the most useful of all yellow-flowering plants. 1*s.* 6*d.* per packet.

,, **Sultan and Lord Beaconsfield.**—Garden Annuals; both are equally useful and even more beautiful for cut flowers all the summer season than the preceding. 1*s.* per packet.

**GLADIOLUS (Lemoine's New Hardy.)**—A perfect cross between the hardy kinds and the fine hybrids, giving us, therefore, quite a new splendid hardy Gladiolus that can remain out without attention. 2*s.* 6*d.* per packet.

**GLOXINIAS.** — All who visited the Home for Flowers during the last summer will bear testimony to the remarkable sized flowers and the brilliancy of colour. The spotted varieties perhaps no flower can approach them for neatness and richness in colour. 2*s.* 6*d.* per packet.

**LOBELIA, Blue Beard.**—By far the best blue ever sent out. 1*s.* per packet.

**MIMULUS.** — Saved from the precise named varieties annually shown at the Floral Committee of the Royal Horticultural Society now for some years, and on each occasion unanimously acknowledged to be the best. Size and colour surprising. 1*s.* per packet.

**PHLOXES (Perennial).** — Grand hardy garden flowers. From Continental (new) named varieties. 2*s.* 6*d.* per packet.

**PANSIES (Best Show).**—All saved from ours, the finest collection in the South of England. 1*s.* 6*d.* per packet.

**SALVIA PITCHERII.**—Received First-class Certificate. If there is one plant of more value than another for autumn-flowering it is this, as it produces in abundance the most lovely blue flowers during October and November. A gem. 1*s.* per packet.

**SWEET WILLIAMS.**—These have so often been shown, and the whole Press speaks of them in such terms that they need no comment. 6*d.* per packet.

**VERBENAS.** — These also have been so often shown, eulogised by the Press, and had medals awarded, that they are universally known; and our eight stands, with trusses arranged in the most artistic manner, with such sized pips and trusses, are often taken by mistake for Phloxes. 1*s.* per packet.

**VIOLET, Odoratissima.**—It is not generally known that this variety is by far the best of all single kinds. The Violet is now a more valued flower than ever by the whole universe. 1*s.* per packet.

## H. CANNELL & SONS, THE HOME FOR FLOWERS, SWANLEY, KENT

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, March 5, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 376.—Vol. XV. { New Series. } SATURDAY, MARCH 12, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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*NOTICE.—The Double-page Plate of DAFFODILS, Companion Plate to the POET'S NARCISSUS, published on October 16, 1880, will shortly be issued.*

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
ARRANGEMENTS for 1881.
EXHIBITIONS of SPRING FLOWERS, WEDNESDAYS, March 30, April 27.
SUMMER EXHIBITIONS, WEDNESDAYS, May 25, July 6.
EVENING FÊTE and SPECIAL EXHIBITION, WEDNESDAY, June 22.
Tickets and Schedule of Prizes now ready.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of Manchester.
SPRING FLOWER SHOW, in the Town Hall, Manchester, on TUESDAY, the 15th inst. Open from 12 at Noon till 5 P.M. Non-subscribers, 1s. Mr. J. Kendrick Pyne will play the Organ at 2 o'Clock.
BRUCE FINDLAY, Curator and Secretary, Royal Botanic Gardens, Manchester.

NEWCASTLE-ON-TYNE SPRING FLOWER SHOW.
WEDNESDAY and THURSDAY, April 6 and 7. Entries close on Friday, April 1, to
JAS. J. GILLESPIE, Secretary.
Cross House Chambers, Newcastle-on-Tyne.
Schedules to be had on application to Secretary.

FARNINGHAM ROSE and HORTICULTURAL SOCIETY.
The ANNUAL EXHIBITION of this Society will be held at Farningham, on WEDNESDAY, June 29, 1881.
Schedules are now ready, and may be obtained of the Secretary,
F. BURNSIDE, Esq.
Farningham.

ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.
GRAND SUMMER SHOW, SATURDAY and MONDAY, July 30 and August 1.
CHRYSANTHEMUM, FRUIT, &c., TUESDAY and WEDNESDAY, November 22 and 23.
Very liberal List of Prizes. SCHEDULES are now ready.
C. S. FUIDGE, Secretary.
39, York Street, Lower Avenue.

To the Country Trade.
WHITE SPANISH and STRASBURG ONION.
VEITCH'S PERFECTION and FIRST EARLY PEAS.
JAMES CARTER, DUNNETT AND BEALE are prepared to quote Special Prices to their Country Friends of the above, on application.
237 and 238, High Holborn, London, W.C.

Roses, Strong Dwarf and Half-Standard.
PAUL AND SON, The "Old" Nurseries, Cheshunt, can still supply good Plants as above. They regret all Standards are exhausted for this spring's sale.

SINGLE DAHLIAS. — All the leading varieties and best colours. Low prices to the Trade.
HOOPER AND CO., Covent Garden, London, W.C.

SUTTONS' SEED POTATOS.

SUTTONS' SEED POTATOS.
SUTTONS' EARLY ASHLEAF.

SUTTONS' SEED POTATOS.
SUTTONS' FILLBASKET.

SUTTONS' SEED POTATOS.
SURPRISE.

SUTTONS' SEED POTATOS.
SUTTONS' WOODSTOCK KIDNEY.

SUTTONS' SEED POTATOS.
SCHOOLMASTER (Turner's).

SUTTONS' SEED POTATOS.
SUTTONS' READING HERO.

SUTTONS' SEED POTATOS.
SUTTONS' READING ABBEY.

SUTTONS' SEED POTATOS.
SUTTONS' MAGNUM BONUM.

SUTTONS' SEED POTATOS.
Carefully handpicked. A splendid change from all soils.

THE BEST, AND ONLY THE BEST.

SUTTONS' SEED POTATO LIST.
Beautifully Illustrated and fully Descriptive. Gratis and post-free on application.

SUTTON AND SONS, The Queen's Seedsmen, and by Special Warrant to H.R.H. the Prince of Wales, READING, BERKS.

TWELVE AMARYLLIS, finest named, 21s.; fine bulbs to produce flowers early this spring (double size, very remarkably fine, 42s.), will make a splendid show of flower. Packages gratis for cash with order, and one bulb gratis.
J. H. LEY, Royal Nursery, Croydon.

WISE AND RIDES are prepared to RECEIVE CONSIGNMENTS of choice CUT FLOWERS, FRUITS, CUCUMBERS, &c., in quantity.
3, Tavistock Court, Covent Garden, W.C.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS are requested to communicate with
W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

BUYERS wishing to avail themselves of a CHEAP OFFER of various TREES and SHRUBS should refer to large Advertisement appearing in this Paper on the 8th of last month, or see T. L. MAYOS' reduced LIST.
WANTED, strong Standard Cider and other APPLE TREES; also ASH, 3 to 4 feet.
Highfield Nursery, Hereford.

Cut Flowers.
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of Hothouse and Outdoor FLOWERS, VIOLETS, PRIMROSES, SNOWDROPS, &c. Cash by return of post.

J. A. would be pleased if any in the Trade would send him a PRICE of GARDENIAS per dozen in 60-size pots, with a view of buying several dozens. Address
J. A., Sutton's Library, Station Road, Redhill, Surrey.

WANTED, CONIFERS of sorts, and EVERGREENS of sorts, about 18 inches high; also SHRUBS. State lowest price per 100 or 1000 delivered to the Finchley Station, Great Northern Railway. Address,
JOHN TINSLEY, Hope Nursery, Hutton Grove, North Finchley.

WANTED, AT ONCE, 1000 LIGUSTRUM OVALIFOLIUM (oval-leaved Privet), 8 or 9 feet high; 500 good strong Abele and Italian POPLARS, or any other trees that will do for Planting an Avenue by the Sea.
W. WILLETT, Offices, The Drive, Hove, Sussex.

WANTED, 2-yr. Seedling ASH. Sample and price to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

WANTED, large ADIANTUM CUNEATUM, for cutting, or cut fronds.
J. R. PEARSON, Chilwell Nurseries, Notts.

WANTED to PURCHASE, from 300 to 1000 MIXED SHRUBS. Apply, with description and price, to
G., 75, High Street, Sittingbourne, Kent.

TO FARMERS and GROWERS.—Consignments of Cabbage, Savoy, Brussels Sprouts, Broccoli Sprouts, Turnip-tops, and Vegetables in general, wanted for Sale on Commission.—T. BROSNAN, Covent Garden Market, W.C.

WANTED, a quantity of strong SEAKALE ROOTS.—Apply,
W. WARREN, Worton Gardens, Isleworth, W.

LAWNS and HOW to MAKE THEM.—See CARTER'S PRACTICAL GARDENER. Price 1s.; post-free, 1s. 4d. (Winners of the only Gold Medal for Lawns, Paris, 1878.)
The Queen's Seedsmen, and by Royal Warrant to H.R.H. the Prince of Wales,
237 and 238, High Holborn, London, W.C.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT. Victoria and Paradise Nurseries, Upper Holloway, London, N.

YOUNG'S GOLDEN CHINESE JUNIPER (JUNIPERUS SINENSIS AUREA).
See large Advertisement, p. 327.
MAURICE YOUNG, Milford Nurseries, near Godalming.

JULES DE COCK, The Ornamental Plant Nurseries, Ghent, Belgium, offers to the Trade many thousands of healthy CAMELLIAS, of the best sorts, from 1 to 1½ foot high, without buds.

WONDERFUL GERANIUM. — Large plants of this decorative variety, and rooted Cuttings of MISS TALFORD CHRYSANTHEMUM, to be Sold.
W. WARREN, Worton Gardens, Isleworth, W.

CLEMATIS for BEDDING and CLIMBING.—JACKMANNI, strong plants, 12s. per dozen; other varieties, 15s., 18s., and 24s. per dozen.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Seeds.
CHARLES TURNER'S Descriptive Price LIST for the present season is now ready, and may be had on application.
The Royal Nurseries, Slough.

THIRTY-SIX ACHIMENES, Finest Sorts, for 10s.—Sent carriage free on receipt of cash. Longiflora alba, Mauve Queen, and ten other most beautiful new sorts; very large corms.
J. H. LEY, Royal Nursery, Croydon.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Samples and Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

CEDRUS DEODARA, for Avenues, Lawns, Shrubberies, or Woods. Handsome plants, 3 feet high, 30s. per dozen, £10 per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

LARCH, extra fine transplanted, various sizes, 1 to 4 feet.—Prices on application. Large orders liberally dealt with.
JAS. BACKHOUSE AND SON, York Nurseries.

RHODODENDRONS, hardy late blooming, nice healthy young plants, from £5 to £7 10s. per 100.
CLEMATIS, best named varieties, 63s. to 75s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming.

SPANISH CHESTNUT, HAZEL, ASH, LARCH, SCOTCH, BIRCH, ALDER, WILLOW, and THORN QUICK, all stout, well rooted, transplanted. A large quantity to be sold.
Mr. GEO. CHORLEY, Coaster's Nursery, Midhurst, Sussex.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts, have a large and fine stock of Pyramid and Standard FRUIT TREES, of which a Descriptive CATALOGUE will be forwarded on application.

R. AND G. NEAL have to offer fine Dwarf-trained APPLES, PLUMS, and MORELLO CHERRIES; also 1-yr. ASPARAGUS. Price on application at
The Nurseries, Wandsworth Common, S.W.

Grapes this Year.
FRUITING CANES, thoroughly ripened without bottom-heat, 7s. 6d. to 10s. 6d. each. PLANTING CANES, 3s. 6d. to 5s. each. Leading kinds.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

POTATOS (Magnum Bonum).—For Sale, about 10 tons, Lancashire grown. Price £6 10s per ton, nett cash.—EDWARD SUMNER, Carr Hall, Melling, Liverpool.

TERRA-COTTA WINDOW BOXES. (See illustration in the *Gardeners' Chronicle* of February 26 p. 276.) Prices on application.
JOHN MATTHEWS, Royal Pottery, Weston-super-Mare.

## SALES BY AUCTION.

SALE THIS DAY AT HALF-PAST 12 O'CLOCK.

**Roses, Fruit Trees, and Bulbs.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, March 12, at half-past 12 o'Clock precisely, first-class Standard and Dwarf ROSES, from France; a consignment of choice named CAMELLIAS, Indian AZALEAS, well set with bloom-buds, from Ghent; Standard, Pyramid, and Dwarf-trained FRUIT TREES, HARDY HERBACEOUS PLANTS, choice GLADIOLI, LILIUMS, TIGRIDIAS, and other BULBS for present planting, RUSTIC GARDEN WORK, &c.

On view morning of Sale, and Catalogues had.

**15,000 Lilium species, and 7000 Lilium auratum,** just received from Japan.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Gardeo, W.C., on MONDAY, March 14, at half-past 12 o'Clock precisely, an importation of 7000 Bulbs of LILIUM AURATUM, just received from Japan; also several importations of Japanese LILIES, including 15,000 Lilium species, of which drawing will be shown; 1000 Lilium Krameri; some fine bulbs of the lovely Lilium neilgherrense; an importation of 2000 Double AMERICAN TUBEROSES; a consignment of 2000 TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, and 3000 GLADIOLI from New Jersey; 60 fine Clumps of JAPANESE IRIS, &c.

On view morning of Sale, and Catalogues had.

**Periodical Sale of Poultry and Pigeons.**

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 15, at half-past 12 o'Clock precisely, first-class POULTRY and PIGEONS, consisting of Black and Dun Carriers, including many prize-winners, from Mr. John Chandler; Prize Pouters from Mr. J. Hairsine; Turbits and Jacobins from Mr. G. Hardy, who is giving up the fancy; Blue, Silver, and Black Turbits, some winners of numerous prizes, from Mr. G. Webster; also Dark Brahmas from the Rev. J. D. Peake; Black Red Game, &c., from Mr. W. Lee; Rouen and Aylesbury Ducks, and a great variety of other Prize Birds, from the yards and lofts of well-known breeders and exhibitors; GALVANISED WIRE NETTING, &c.

On view morning of Sale, and Catalogues had.

**Choice Imported Orchids.**—(Sale No. 5820.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 16, at half-past 12 o'Clock precisely, by order of Mr. W. B. Freeman, a grand lot of VANDA CŒRULEA, V. UNDULATA, V. VANDORUM, CŒLOGYNE BARBATA, C. OCELLATA, AERIDES AFFINE ROSEA, DENDROBIUM LITUIFLORUM, TRICHOSMA SUAVIS, &c.

On view morning of Sale, and Catalogues had.

**Thirty Cases of Orchids from Bogota.**

MR. J. C. STEVENS will include in his SALE on WEDNESDAY NEXT, March 16, thirty cases of ODONTOGLOSSUM TRIUMPHANS, O. ALEXANDRÆ, ONCIDIUM MACRANTHUM, MASDEVALLIA HARRYANA, ANGULOAS, PERISTERIA ELATA, &c., in thirty lots, just as received.

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

**Established Orchids.**—(Sale No. 5821.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, March 17, at half-past 12 o'Clock precisely, several small COLLECTIONS of ESTABLISHED ORCHIDS, including many fine specimen plants of rare and valuable species well worthy of attention; twelve good plants of the rare Masdevallia Shuttleworthii, six plants of Lapageria alba, and six ditto of Lapageria rubra; and some fine plants of ANTHURIUMS in flower, EUCHARIS AMAZONICA, &c.

May be viewed the morning of Sale, and Catalogues had.

**Established Orchids.**—(Sale No. 5821.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 17, at half-past 12 o'Clock precisely, a COLLECTION of ESTABLISHED ORCHIDS, including the following rare kinds:—

| | |
|---|---|
| Cypripedium Druryi | Chysis aurea |
| Cœlogyoe aspirata | Pescatorea Gaireana |
| Batemannia meleagris | Bollea Lalindei |
| Pescatorea Klabochorum | Warscewiczella marginata |
| Angræcum sesquipedale | Epidendrum hicornutum |
| Oncidium chrysomorphum | Dendrochilum filiforme |
| Epidendrum Fredericiguilielmi | Epidendrum Parkinsonianum |
| Arundina bambusæfolia | Oncidium Gardneriaoum |
| Oncidium phylloglossum | Aerides Huttoni |
| Saccolabium Hendersoni | Calanthe pleiochroma |
| Epidendrum raniferum | Oncidium leucotis |
| Lælia anceps alba | Lælia anceps rosea |
| Odontoglossum baphicantbum | OdontoglossumAndersonianum |

May be viewed the morning of Sale, and Catalogues had.

**Hardy Trees and Shrubs, Greenhouse Plants from GHENT.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, March 19, at half-past 12 o'Clock precisely, a consignment of 200 choice named CAMELLIAS, 300 Indian AZALEAS, nice healthy plants and well set with bloom-buds, from Ghent; first-class Standard, Half-Standard and Dwarf ROSES, including most of the leading kinds; Standard, Pyramid, and Dwarf-trained FRUIT TREES, Specimen CONIFERS, Ornamental flowering SHRUBS, CARNATIONS, PINKS, PICOTEES, and other hardy HERBACEOUS BORDER PLANTS; a fine lot of Specimen GREENHOUSE PLANTS, choice GLADIOLI, LILIUMS, TIGRIDIAS, and other BULBS for present planting, &c.

May be viewed the morning of Sale, and Catalogues had.

**Conifer Seeds.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 21, at half-past 12 o'Clock precisely, valuable CONIFEROUS TREE SEEDS, including Wellingtonia gigantea, Pinus Benthamiana, Picea grandis, Cupressus macrocarpa, Torreya californica, Libocedrus decurrens, and many other sorts, in large lots, to suit the Trade.

On view morning of Sale.

**The First Portion of the Celebrated Collection of ORCHIDS of JOHN DAY, Esq., TOTTENHAM.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY and FRIDAY, March 31 and April 1, at half-past 12 o'Clock precisely, the first portion of this splendid COLLECTION of ORCHIDS, comprising, amongst other fine things, the following:—

| | |
|---|---|
| Masdevallia Dayana | Aerides Schröderi |
| ,, velifera | ,, Veitchianum |
| ,, (Bull's blood) Harryana | ,, Fieldingii |
| Lælia anceps rosea | Angræcum Ellisii |
| ,, ,, alba | ,, sesquipedale |
| ,, ,, Dawsoni | Cattleya exoniensis |
| ,, autumnalis atrorubens | ,, Bluntii |
| ,, Jongbeana | ,, labiata |
| ,, elegans, in variety | Calanthe Textoni |
| Phalænopsis amabilis | Cymbidium eburneum |
| ,, grandiflora | ,, tigrinum |
| ,, Schilleriana | Cypripedium Spicerianum |
| Odontoglossum crispum (in great variety) | ,, Warnerianum |
| ,, Andersonianum | ,, Stonei |
| ,, Coradinei | ,, var. platytænium |
| ,, Ruckerianum | Dendrobilum filiforme |
| ,, nævium majus | Dendrobium superbiens |
| ,, vexillarium (in great variety) | ,, Veitchianum |
| ,, pulchellum majus | Epidendrum Cooperianum |
| | ,, syringothyrsus |

On view morning of Sale, and Catalogues had.

**Monday Next.**

CHOICE ESTABLISHED ORCHIDS, JAPAN LILIES, IRIS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, 400 lots of ESTABLISHED ORCHIDS, including very fine plants of Odontoglossum vexillarium, O. Alexandræ, Dendrobium Wardianum, D. Ainsworthii, C. Trianæ, Oncidium Gardnerianum, Vanda cœrulea, Phalænopsis corna cedra (rare), Masdevallia Davisii, M. Veitchii, and many other choice and valuable varieties, a number of them in flower; also an importation of rare and beautiful IRIS, and a new white LILY from Japan; consignments of L. NEILGHERRENSE, HUMBOLDTII, PARVUM, and WASHINGTONIANUM; an assortment of Hardy English-grown LILIES and BULBS, 400 AMARYLLIS FORMOSISSIMA, direct from Mexico; 500 L. LONGIFLORUM, Californian BULBS, &c.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Important Sale of English Grown Camellias,** well set with bloom-buds; choice AZALEA INDICA, and other GREENHOUSE PLANTS; 400 Standard, Dwarf, and Climbing ROSES; selected FRUIT TREES, Hardy CONIFERÆ, SHRUBS, AMERICAN PLANTS, DAHLIAS, &c.

MESSRS PROTHEROE AND MORRIS will SELL by AUCTION the above at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on TUESDAY, March 15, at 12 o'clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C.

**Important Sale of Orchids in Flower and in Bud,** in the City.

MESSRS. PROTHEROE AND MORRIS beg to announce that they intend holding a SERIES of SALES at the Auction Mart, Tokenhouse Yard, E.C., of ORCHIDS in flower and in bud, the first to take place on MONDAY, March 28.

Entries to be made not later than the 19th inst.

**Notice of Removal.**

MESSRS. PROTHEROE AND MORRIS beg to inform their numerous clients that on the 25th DAY of MARCH NEXT They will REMOVE from 98, Gracechurch Street, E.C. (which premises are required for City improvements) to more Commodious Offices at

No. 8, NEW BROAD STREET, E.C.;

Where all Communications should be addressed after that date.

**Munro and Upper Nurseries, Sible Hedingham, Essex.** CLEARANCE SALE.

To Nurserymen, Florists, Intending Planters, and Others.

MR. ALFRED HARVEY has been favoured with instructions to SELL by PUBLIC AUCTION, at the Nurseries, Sible Hedingham, on TUESDAY, March 15, at 10 for 11 o'Clock precisely, the remaining NURSERY STOCK, consisting of Apple, Plum, Cherry, Apricot, Dwarf and Trained Trees, a quantity of Forest Trees, Shrubs, Evergreens, Conifers, &c.; also a VINERY, several GREENHOUSES, FORCING-HOUSES, as standing; Greenhouse Plants, about 2000 Budded Rose Stocks, quantity of Garden Seeds, &c.; a Four-wheel Trolly, Light Cart, Implements, Utensils-in-Trade, Fixtures, Grey PONY, HARNESS, &c.; also the whole of the Household FURNITURE, and various effects.

Catalogues may be had at the various Inns in the neighbourhood; at the place of Sale; and of the Auctioneer, Haveringwell House, Romford.

WANTED to PURCHASE, a SEED BUSINESS, a thoroughly genuine affair, comprising Vegetable, Flower, and Farm Seeds. Preference given to West of England. Must bear close investigation.

T., Messrs. Hurst and Son, 152, Houndsditch, London, E.C.

**Valuable Nurseries in the West of England for Sale.**

TO BE SOLD, by Private Contract, with Immediate Possession, the Goodwill and Stock of a NURSERY BUSINESS, established upwards of forty years, well situated and well watered, within three minutes' walk of a most important Market Town in the West of England. The property is held for the residue of a term of years, and comprises about 7½ Acres of Land, Dwelling-house, two large Glasshouses, Propagating-house, and Potting Sheds; also an extensive and varied stock of healthy Shrubs, Fruit and Forest Trees. The above is thorough *bonâ fide*, and there being a good business connection the property offers a first-class investment.

The fullest information and particulars can be obtained by letter, addressed B., 89, Bolsover Street, Great Portland Street, London, W.C.

**Suffolk.**—(No. 5119.)

FOR SALE, an old-established SEED, NURSERY, and FLORIST'S BUSINESS, in present owner's hands twelve years; occupying a central and prominent position in a busy market town. House and Shop, four Greenhouses, and two acres of Ground. Small Premium required. Incoming by valuation.

Particulars of Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

**To Nurserymen and Florists.**

TO BE LET, or SOLD, a NURSERY, facing Peckham Rye. For particulars, apply at Friern Nursery, Peckham Rye, S.E.

**To Fruiterers and Market Gardeners.**

TO BE LET on Lease, or SOLD, 30 ACRES of LAND, recently planted with the best kinds of Market Fruit Trees, Apples, Pears, Plums, Cherries, Nuts, Gooseberries, and Currants. Distance 28 miles from London, on the Great Western Railway, and half a mile from a station.

Further particulars to be had from GEORGE DAVISON, Brampton House, Marlow, Bucks.

SUNNINGDALE NURSERY, Direction of, see *Gardeners' Chronicle*, February 26, 1881.

**Economy in Gardening.**

TO PURCHASERS OF LARGE QUANTITIES: Asylums, Unions, Hotels, and Public Institutions.

SUTTON AND SONS are prepared to place Purchasers of large quantities on favourable terms. Apply, stating quantities required, to SUTTON AND SONS, the Queen's Seedsmen, Reading.

**To the Trade.**

FOR SALE, a few Bushels of WILLIAM I., STANDARD, and SHAH PEAS. Also a few Tons of MAGNUM BONUM and SCHOOLMASTER POTATOS. For particulars apply to F. AND C. MYATT, Offenham, Evesham.

**Seed Potatos.**

SCHOOLMASTER.—This celebrated Potato, grown from Seed supplied direct from Messrs. Webb & Co., to be had at 10s. per bushel of 80 lb. Apply to Mr. POYSER, Stapenhill, Burton-on-Trent.

**Why give more than 9s. per Cwt, for**

MAGNUM BONUM POTATOS, when a splendid sample, true, can be obtained at that price? Bags gratis; terms cash.

The EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

CABBAGE PLANTS.—Very fine stocks of Robieson's Champion, Rainham, Enfield Market, and Red Pickling, in any quantity. Apply to Mr. T. DAVIES, Tangley, Guildford, Surrey.

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade. Bardney Manor, Lincoln.

**Special.—Seed Potatos.—Special.**

WOOD AND INGRAM have to offer fine samples of the following varieties—Price list post-free on application:—Climax, Early Rose, Hammersmith Kidney, Myatt's Prolific, Rector of Woodstock, Snowflake, Schoolmaster, The Queen, Covent Garden Perfection, Beauty of Hebron, Diplock's Early, Porter's Excelsior, and Suttons' Magnum Bonum.

The Nurseries, Huntingdon.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.

Knap Hill Nursery, Woking, Surrey.

LILIUM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz.; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

QUICK, cheap, 100,000, about 2 to 4 feet, 18s. to 20s. per 1000; smaller size, from 10s. to 15s. per 1000. W. GROVE, St. Owens Nursery, Hereford.

POTATOS.—Magnum Bonum (Seed). True sound sample. Special low offer on application. HY. MEYERS, Market Gardener, Twickenham, W.

CURRANT TREES.—Black, 3-yr. old, strong stuff, £3 10s. per 1000. HY. MEYERS, Market Gardener, Twickenham, W.

AMERICAN TUBEROSES, PEARL.—Small sample. We have still a few thousands of the above to offer, at a very low figure. HOWCROFT AND WATKINS, Covent Garden, W.C.

PALMS for DECORATION.—Twelve large and graceful Palms for 42s. Fine, strong, clean, well-grown plants, in 5-inch pots, fit for table or any decoration, including Euterpe edulis, Latania, Corypha, Areca, &c., in pairs or all distinct. Packages and extra Ferns gratis, to compensate for carriage any distance, for cash with order. J. H. LEY, Royal Nursery, Croydon.

CARNATIONS, PICOTEES, PANSIES, PINKS, fine healthy plants, best named varieties. S. HARTLEY, Headingley Nursery, Leeds.

**To the Trade.**

CUPRESSUS LAWSONIANA LUTEA.—Fine healthy young plants, 6 to 9 inches, 30s. per 100; 9 to 12 inches, 50s. per 100; 12 to 18 inches, 100s. per 100; 18 to 24 inches, 210s. per 100. MAURICE YOUNG, Milford Nurseries, near Godalming.

TWELVE HARDY EXOTIC and BRITISH FERNS, 10s. 6d.—Many being dormant, this is the best time to purchase, no injury being received by young fronds. Osmundas from America, Polysticbums and Athyriums from Japan, Aspleniums from Jersey, &c. Strong plants for garden, rockery and other purposes. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, West Croydon.

WILLIAMS' for GARDEN and FLOWER SEEDS and HORTICULTURAL SUNDRIES.

WILLIAMS' NURSERIES are at all times worthy of a visit from all lovers of plants.

WILLIAMS' PLANT HOUSES are constructed both for convenience and comfort, and Parties about Constructing and Furnishing Conservatories, Stoves, &c., will do well to pay a visit to these Nurseries, where any advice will be gladly given.

WILLIAMS' for all kinds of FLOWERING STOVE and GREENHOUSE PLANTS. Specimens a speciality.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

**Fruit Trees, &c.**

WILLIAM FLETCHER begs to announce that his new Descriptive CATALOGUE is now ready, and may be had, post-free, on application.
Ottershaw Nurseries, Chertsey.

**Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.**

MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

**Special Offer.**

GARAWAY AND CO. offer:—
ABIES NORDMANNIANA, perfect specimens, 3 to 4 feet, 30s. per dozen.
TREE BOX, 1½ to 2 feet, 18s. per 100.
CEANOTHUS DENTATUS, in pots, 6s. per dozen.
CHESTNUT, Scarlet Horse, 6 to 8 feet, 9s. per dozen; 8 to 10 feet, 12s. per dozen.
ELMS, Chichester, 8 to 10 feet, 75s. per 100.
English, 8 to 10 feet, 75s. per 100.
PINUS CEMBRA, 2 to 3 feet, 6s. per dozen; 3 to 4 feet, 8s. per dozen.
THORNS, double Crimson and single Scarlet, standards, 9s. per dozen.
THUYA VERVAENEANA, good golden variegated, 1½ to 2 feet, 9s. per dozen; 2 to 2½ feet, 12s. per dozen.
YEWS, English, extra fine specimens, 4 to 5 feet, 24s. per dozen; 5 to 6 feet, 36s. per dozen.
FLOWERING SHRUBS—Deutzias, Guelder Roses, Lilacs in variety, Philadelphus, Ribes, Weigelas, fine plants, 3s. per dozen, 20s. per 100.
CURRANTS, Red and Black, 10s. per 100.
FILBERTS, all best sorts, strong transplanted layers, 3s. per dozen, 20s. per 100.
PEARS, pyramids, fine, 6 to 8 feet, 30s. per dozen.
PLUMS, pyramid, fine, 6 to 8 feet, 18s. per dozen.
GARAWAY AND CO., Durdham Down, Clifton, Bristol.

FOR SALE, 20,000 Black CURRANT TREES (excellent sorts and abundant bearers); also a large quantity of the choicest PEAR, APPLE, CHERRY, PERSHORE PLUM, DAMSON, and other Fruit Trees, ready worked. About 10,000 good strong APPLE QUICK, and 2000 capital HAWTHORN QUICK, and a large quantity of LARCH and SPRUCE TREES, all ready for planting-out.
Apply, THE CAGE, Market Street, Tenbury.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881. Extra strong SEAKALE, 2s. 6d. per dozen.
RICHARD SMITH AND CO., Nurserymen, Worcester.

MAGNUM BONUM POTATO.—Good size, dry condition, being free from frost or disease; and the genuine stock being grown from Seed purchased of Messrs. Sutton & Sons. 1 cwt. sample (Bag gratis) sent carriage paid to any Railway Station in England or Wales, on receipt of Address and Cheque or Post-office Order for 9s. Also MYATT'S ASHLEAF, 9s.; or EARLY ROSE, 7s. per cwt. Carriage paid. Cheaper by the ton.
J. T. SMITH, Potato Merchant, Wisbech, Cambs.

CABBAGE PLANTS, very strong autumn-sown Early Enfield, Rainham, Robinson's, Drumhead, Russell's (true) Thousand-head, &c., at 3s. 6d. per 1000 (1200), 35s. per 10,000 (12,000).
N.B. Plants warranted free from club-root, grown on strong soil from best seed stocks. Low quotations for very large quantities. Descriptive LIST and testimonials on application.
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

WORMLEIGHTON'S SEEDLING.—This splendid new variety of Potato obtained the First Prize, as the best Seedling Potato not in Commerce, at the Great International Potato Show, held at the Crystal Palace, in September last. Price 2s. 6d. per pound, 7 lb. 15s. 100 other choice kinds in stock.
DANIELS BROS., The Queen's Seedsmen, Norwich.

EVERGREEN HEDGES, in great variety, very cheap.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Cheap Offer of Fruit and Other Trees, SHRUBS, HERBACEOUS and SPRING BEDDING PLANTS.**

T. L. MAYOS, having to give up two portions of his Nurseries this Spring, offers the above at 25 per cent. off Catalogue Prices for Cash. Orders will be executed in rotation until stock is sold. CATALOGUES Free.
Apply, Highfield Nurseries, Hereford.

W. B. ROWE AND CO. (Limited) have to offer:—
PEARS, Horizontal Trained, Fruiting.
" Standard, good.
YEWS, English, 2 to 3 feet.
PRIVET, Oval-leaved.
" Common, 2-yr. struck.
ASPARAGUS, 1-yr.
HOLLIES, Seeding, fine.
STRAWBERRY PLANTS.
FIR, Spruce, 1½ to 5 feet.
Barbourne Nurseries, Worcester.

# ARTHUR VEITCH MEMORIAL

A Fund, to be called the "ARTHUR VEITCH MEMORIAL FUND," the proceeds to be dispensed through the GARDENERS' ROYAL BENEVOLENT INSTITUTION, for the benefit of aged and infirm GARDENERS, or their WIDOWS.

This movement having met with the warm approval of the leading Horticulturists in the United Kingdom, the Committee beg to direct the attention of Intending Subscribers to the List of Hon. Collectors for the Fund advertised in the *Gardeners' Chronicle* of February 5.

Subscriptions (not to exceed One Guinea from Head, or Half a Guinea from Under Gardeners) are respectfully solicited from all classes of Horticulturists.

The Fund will be open Three Months, and when closed each Donor will receive a Subscription List, showing the amount given by each Subscriber.

**Hon. Treasurer.** J. ROBERTS, The Gardens, Gunnersbury Park, Acton, W.

**Hon. Secretaries.** W. WILDSMITH, Heckfield Gardens, Winchfield, Hants.
J. HUDSON, The Gardens, Gunnersbury House, Acton, W.
J. AUSTEN, The Gardens, Ashton Court, Bristol.

**Pelargoniums—Pelargoniums.**

JAS. HOLDER AND SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties, 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

**To the Trade.**
MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.
Seed Growing Establishment, Wisbech.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

LAPAGERIAS.
WHITE, extra strong, 42s. each; do., 31s. 6d. each; smaller, 21s. each
RUBRUM, strong, 10s. 6d. each.
ROSEA, strong, 7s. 6d. each.
Price to the Trade on application.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

**To the Trade.**

R. AND A. MORRISON beg to call the attention of the Trade to our Advertisement below, and to assure them that our stock of LARCH and SCOTCH FIR, of which we always make a specialty, is this season very large and very fine. Our LARCH are very healthy, not a speck of bug being on them last summer; of 2-yr. Seedlings we can offer 1,000,000; of 1-yr. 1-yr. upwards of 1,200,000; and of the sizes from 12 to 30 inches, as advertised, we have upwards of 1,500,000 still to offer. Our Scotch FIR are guaranteed true native Highland Scotch Pine, grown from seed specially collected for us in the forests in the North of Scotland and taken out in our own kilns in the nursery. Of the different sizes advertised we have still to offer upwards of 3,000,000.
Arrangements may be made for paying carriage to Carlisle.

**Special Trade Offer.**

R. AND A. MORRISON, The Nurseries, Elgin, beg to offer the following:—
LARCH, 2-yr., fine, 4s.; 1-yr., 1-yr., very fine, 6s.; 12 to 18 inches, 12s. 6d.; 18 to 24 inches, 17s. 6d.; 18 to 30 inches, 20s. per 1000.
FIR, Scotch (Native), 1-yr., 1-yr., 6s. 6d.; 2-yr., 1-yr., 7s. 6d.; 1-yr., 2-yr., very fine, 8s. 6d.; 2-yr., 2-yr., 12s. 6d. per 1000.
PINE, Austrian, Laricio, and montana, 2-yr., 1-yr., 7s. 6d.; 2-yr., 2-yr., 10s. per 1000.
ALDER, transplanted, 18 to 24 inches, 10s. 6d. per 1000.
ELM, Wych, 2-yr., 2s. 6d. per 1000.
MAPLE, Norway, 2-yr., 1-yr., very fine, 10s. 6d. per 1000.
POPLARS, argentea, fine, 18 to 24 inches, 21s.; 24 to 36 inches, 30s. per 1000. Balsam, 18 to 24 inches, 10s. 6d.; 24 to 36 inches, 15s. 6d.; 3 to 4 feet, 21s. per 1000. Black Italian and White Egyptian same sizes and same prices.

**Webb's Prize Cob Filberts.**

MR. COOPER having succeeded to the whole of the late Mr. Webb's valuable stock of Prize Cob Filbert Trees, is prepared to supply them in small or large quantities, and solicits early orders.
Calcot Gardens, near Reading, Berks.

**Twelfth Edition.**
"WEBB'S PRIZE COB FILBERTS, AND HOW TO GROW THEM."
This Pamphlet will be forwarded to any one sending Two Postage Stamps to
Mr. COOPER, Calcot Gardens, near Reading, Berks.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possesing either a Garden, Greenhouse, Stove, &c.
Near 6000 species and varieties of plants are included in this List of eighty to ninety pages. No illustrations are given, nor any exaggerated descriptions to induce purchasers to buy varieties, which on proving they generally find so woefully disappointing. Special attention is given to the undermentioned classes, and purchasers selecting from our Catalogue may feel assured that our firm possesses larger collections of the finest sorts:—
CHRYSANTHEMUMS, GERANIUMS, FUCHSIAS, and other Soft-wooded Plants for Garden or Greenhouse.
DAHLIAS, PANSIES, PYRETHRUMS, CARNATIONS, and other Florists' Flowers.
HERBACEOUS and ALPINE PLANTS, many hundreds of the finest and most useful varieties.
BEDDING PLANTS, all the varieties required for any style of Bedding.
SPRING FLOWERING PLANTS, the most reliable sorts, in thousands of strong plants.
STOVE and GREENHOUSE PLANTS, Flowering and Ornamental Foliage varieties, various sizes from quite young plants to quarter specimens, to suit various classes of purchasers.
The prices and plants need only to be compared with those of other firms, to prove that in no instance can buyers of plants who study both price and quality be supplied more advantageously than by ourselves.
The undernamed Collections are all of the finest sorts, and as varied in colour as possible, fine for exhibition or home decoration, and as certain to be satisfactory to purchasers as collections can be. All are our selection.

| | Per doz.—s. | d. |
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| Abutilons, in variety .. | 3 | 0 |
| Achimenes, in variety .. | 3 | 0 |
| Ageratums, small plants, per 100, 5s. .. .. | 1 | 0 |
| Ageratums, in pots, per 100, 15s. .. .. | 2 | 6 |
| Antirrhinums .. .. | 3 | 6 |
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| Other sorts .. .. | 3 | 0 |
| Bouvardias, 4s. to .. | 6 | 0 |
| Caladiums .. .. | 9 | 0 |
| Calceolaria Golden Gem (not in pots) per 100, 5s. .. .. .. | 1 | 0 |
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| Carnations and Picotees, 12 plants .. .. | 7 | 0 |
| 12 pairs .. .. | 12 | 0 |
| Chrysanthemums, in great variety, per 100, 15s. .. .. | 3 | 0 |
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| Coleus .. .. .. | 3 | 0 |
| Dactylis elegantissima, per 100, 6s. .. .. | 1 | 0 |
| Dahlias, per 100, 20s. .. | 3 | 6 |
| Epiphyllum .. .. | 9 | 0 |
| Ferns, Stove and Greenhouse, 6s. to .. .. | 9 | 0 |
| Fuchsias, per 100, 15s. .. | 3 | 0 |
| Gardenia florida .. | 6 | 0 |
| Greenhouse Plants .. | 9 | 0 |
| Geranium, Variegated .. | 3 | 6 |
| Geranium, Double .. | 3 | 0 |
| Geraniums for Bedding | 3 | 0 |
| Geraniums for pot culture, 3s. to .. .. | 6 | 0 |
| Gladiolus, splendid seedlings, per 100, 20s. .. | 3 | 0 |
| Gladiolus Breuchleyensis, per 100, 6s. .. | 1 | 0 |
| Gloxinias, 6s. and .. | 9 | 0 |
| Hardy Climbing Plants, in great variety, 6s. .. | 9 | 0 |
| Hollyhocks, Seedlings .. | 4 | 0 |
| Heliantbemums .. .. | 2 | 6 |
| Herbaceous Plants, per 100, 20s. .. .. | 3 | 0 |
| Heliotropes .. .. | 2 | 6 |
| Hepaticas .. .. | 4 | 0 |
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| Pansies, Bedding, about 20,000 to select from, per 100, 12s. .. .. | 2 | 0 |
| Phloxes, per 100, 25s. .. | 3 | 6 |
| Pelargoniums, Show, Fancy, and French, 6s. to .. .. .. | 9 | 0 |
| Pinks, per 100, 25s. .. | 3 | 6 |
| Potentillas, Double .. | 6 | 0 |
| Polyanthus, Seedlings, per 100, 5s. .. .. | 1 | 0 |
| Polyanthus, named sorts (see Catalogue). | | |
| Primroses, Double, 4s. to .. .. .. | 9 | 0 |
| Primroses, old Double Velvet, 1s. 6d. each. | | |
| Primroses, Single, assorted colours .. | 2 | 0 |
| Pyrethrums, Double .. | 6 | 0 |
| Rock Plants, per 100, 15s. | 3 | 0 |
| Salvias .. .. .. | 3 | 0 |
| Saxifrages .. .. | 3 | 0 |
| Sedums .. .. .. | 3 | 0 |
| Sedum acre aurea, elegans, and glaucum, per 100, 8s. .. .. | 1 | 6 |
| Stove Plants, 6s. to .. | 9 | 0 |
| Succulents, 4s. to .. | 6 | 0 |
| Tropæolums .. .. | 3 | 0 |
| Violas (immense stock of best sorts), per 100, 8s. to 12s. .. .. .. | 2 | 0 |
| Violets, sweet .. .. | 3 | 0 |
| Strawberry Runners (our collection containing varieties), per 100, 2s. 6d. | | |

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.
W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

**Surplus Nursery Stock.**
SPECIAL OFFER.—PRICES ON APPLICATION.

WOOD AND INGRAM beg to offer the following at Clearance prices:—Black Naples CURRANTS. GOOSEBERRIES, AUCUBAS, THUYA ELEGANTISSIMA, ELLWANGERIANA, GIGANTEA, &c.: BEECH, CUPRESSUS LAWSONIANA, HAZEL, LARCH, 4 to 5 feet: POPLARS, MIRABOLAN PLUM, PRIVET, RED CEDARS, WELLINGTONIAS, WHITETHORN, 1-yr. transplanted; Common and Irish YEWS, &c.
The Nurseries, Huntingdon, and St. Neots.

CHEAP and GOOD.
The usual discount to the Trade.
VINES, good planting canes of Black Hamburgh, Buckland Sweetwater, and Lady Downe's, 3s. each.
MORELLO CHERRIES, dwarf-trained, 2s. 6d. each.
AUCUBA JAPONICA, 2½ feet, very bushy, 15s. per dozen.
CEDRUS DEODARA, splendid specimens, 4 to 4½ feet, 36s. per dozen.
THUYA AUREA, 2½ feet, well furnished, dense specimens, 5s. each.
THUYA GIGANTEA, 5 feet, 30s. per dozen.
COTONEASTER MICROPHYLLA, fine, 5s. per dozen.
CHESTNUT, Horse, 9 to 10 feet, stems 8 inches in diameter 1 foot from the ground, 20s. per dozen.
PRIVET, oval leaf, 1½ to 2 feet, 50s. per 1000.
SPRUCE, fine, well furnished with good roots, 3½ feet, 16s. per 100.
The EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

SPECIAL OFFER
SURPLUS NURSERY STOCK.
SNOWBERRIES, 2 to 3 feet, 20s. per 1000.
Fine Standard Scarlet CHESTNUTS, 60s. per 100.
" " LIMES, 50s. to 100s. per 100.
" " Black Italian POPLARS, 20s. per 100.
The above are clean grown and well rooted.
THOMAS PERKINS AND SONS, 34, Drapery, Northampton

**To the Trade.—PAMPAS PLUMES.**

CORRY, SOPER, FOWLER AND CO. (Limited), 18, Finsbury Street, E.C., invite buyers to inspect their Stock, just imported, of excellent quality and condition. Prices and samples on application.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 3½ feet.
SCOTCH.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted.
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

**New Pompon Chrysanthemum.**

SHAW'S GOLDEN MADAME MARTHE is the finest yellow Pompon in the World, and will be grown by everybody, shown by everybody, and admired by everybody. Plants, 1s. each; post free in box, 1s. 3d. Twelve cuttings of the best varieties of CHRYSANTHEMUMS for exhibition, including one plant of Golden Madame Marthe, 3s., post-free.
SHAW'S Valley Nurseries, Knostrop, Leeds.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

FLOWER SEEDS in PENNY PACKETS.—One hundred of the most showy, popular, and beautiful varieties, including finest double ASTER and Ten-week STOCK, Scarlet LINUM, MIGNONETTE, NEMOPHILA, SWEET PEAS, CONVOLVULUS, Dwarf NASTURTIUMS, CLARKIA, COLLINSIA, CALLIOPSIS, &c., post-free, 8s. 50 packets, including as above, post-free, 4s. 2d.; 25 ditto, 2s. 2d.
Each packet contains sufficient seed for making two or three nice patches. Excellent for distribution amongst cottagers or children. All the varieties are easy of cultivation.
DANIELS BROS., The Queen's Seedsmen, Norwich.

**To the Trade.**

ACER NEGUNDO.—Stocks, fine, 3 to 4 feet, 4s. per 100; 4 to 5 feet, 6s. per 100, or 40s. per 1000; 7 to 8 feet, straight, 8s. per 100, 60s. per 1000.
THORN QUICK, transplanted, fine, 2½ to 3 feet, 20s. per 1000.
W. C. SLOCOCK, Goldsworth "Old" Nursery, Woking.

ADIANTUM WILLIAMSII, and Choice CALADIUMS.—We offer fine healthy Plants of this beautiful new Adiantum, in 4½ inch pots, at 3s. 6d. to 5s. each. Smaller, 30s. per dozen. Also some extra large bulbs of CALADIUMS, choice varieties. Particulars and prices on application.
F. & A. DICKSON & SONS, The "Upton" Nurseries, Chester.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
Descriptive Price LIST on application.
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GLOIRE DE DIJON ROSES.—By the 100 or 1000. Fine plants on the Seedling Brier. Price on application.
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ONION SEED, White or Brown Port Onion Seed, new and of excellent quality, at special low price. Apply to
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400,000 FIR, 2-yr., 1-yr., native Scotch.
500,000 FIR, 2-yr., 2-yr., ditto.
500,000 LARCH, 2-yr., 1-yr.
Price (now less than quoted in our Trade List) on application. The ground on which the 2-yr., 1-yr., Scotch Fir stands being required for building purposes, they will be offered cheap.
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A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.
Strong HOLLY, 9 to 12 inches high, 12s. per 100.
Strong HAWTHORN QUICK, 25s. to 30s. per 1000.
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GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, short jointed and well ripened: Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.
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CHARLES B. SAUNDERS, NURSERYMAN, &c., Jersey, respectfully solicits orders for:—
CAMELLIA STOCKS, strong, well-rooted stuff, 20s. to 30s. per 100.
OAKS, Evergreen, 4 to 6 feet, grown in pots, 18s. per dozen.
EUONYMUS, Golden and Green, 6, 12, to 18 inches, 10s. to 25s. per 100.
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GUERNSEY ELMS, fine straight stuff, 40s. to 100s. per 100.
PHORMIUM TENAX, or New Zealand Flax, 12s. to 18s. per dozen.

FOR PRESENT SOWING—POST-FREE.

*☞ In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.*

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| | Per Packet.—s. d. | s. d. |
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| **AURICULA**, Daniels' Prize Alpine .. .. .. | | 1 0 |
| **BEGONIA**, Tuberous-rooted, choicest mixed .. | 1 6 | & 2 6 |
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| ,, perpetual double, from named flowers .. | 2 6 | ,, 5 0 |

*From* Mr. PETER SINCLAIR, *Greenock.*
"You will observe by accompanying report of Greenock Autumn Flower Show competition that I carried off Two First Prizes for Carnations raised from your Seeds."

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| **CALCEOLARIA**, Daniels' Superb Prize ..1s. 6d. | 2 6 | ,, 5 0 |
| ,, new dwarf, spotted, fine .. .. .. | 1 6 | ,, 2 6 |

*From* Rev. Dr. THOMAS SMITH, *Edinburgh.*
"I have had a splendid crop of seedling Calceolarias from your Seed. Some of the flowers were the most beautiful I ever saw."

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*From* Mr. M. MOODY, Gardener to J. Rendall, Esq., *Wootton.*
"I must tell you the Cinerarias, the Seed of which I received from you last year, are now in bloom, and the admiration of every one; many of them are considerably larger than a crown piece."

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| **CYCLAMEN PERSICUM**, beautiful varieties, mixed .. .. .. .. .. .. | 1 6 | ,, 2 6 |
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*From* W. MARSHALL, Esq., F.R.S., *Dublin.*
"Every Seed of the two packets of Pansy you sent me grew, and I have now a magnificent bloom of the finest Pansies in the neighbourhood."

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| ,, Daniels' choicest mixed .. ..1s. 6d. | 2 6 | ,, 5 0 |
| ,, Fern-leaved, very choice .. .. .. .. | | 1 6 |
| ,, Superb double-flowered, mixed .. .. | 2 6 | ,, 5 0 |

*From* M. H. VOSS, Esq., *Streatham.*
"The Primula Seed you sent me last year gained my Gardener First Prize at the Brixton Hill Show. The Plants now in bloom far surpass your Catalogue Illustrations."

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| **PRIMROSE**, choicest mixed, from a fine collection of brilliant varieties .. .. .. .. | | 2 6 |
| **POLYANTHUS**, finest gold-laced.. .. .. .. | | 1 0 |
| **SWEET WILLIAM**, Daniels' superb strain .. .. | | 1 0 |

RASPBERRY CANES and STRAWBERRY PLANTS.
For Sale, in large or small quantities, the undermentioned very best varieties:—

| RASPBERRIES. | STRAWBERRIES. |
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| Carter's Prolific. | President. |
| Northumberland Fillbasket. | Sir Joseph Paxton. |
| Red Antwerp. | Aigburth. |
| Semper Fidelis. | Elton Pine. |
| Fastolf. | Eleanor. |

Apply to JOSIAH H. BATH, Manor Farm North Cray, Kent.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
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**Gold Medal Begonias.**

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 1s. and 2s. 6d. each. All first quality. The Trade supplied.
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JOHNSTON'S DOWNSHIRES.—We can now supply this fine variety, 3s. 6d. per peck, or 10s. 6d. per bushel. 100 other choice kinds in stock.
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FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

WHITE ELEPHANT.—A choice new American Potato, of very great promise, raised from the same seed-ball as the Beauty of Hebron, which it resembles in many respects, but more productive; in fact, we may claim that the White Elephant not only possesses the unexcelled qualities of the Beauty of Hebron, but also the wonderful productiveness of the old California of twenty years ago. Price 1s. 3d. per pound, 7 lb. 7s. 100 other choice kinds in stock.
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LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
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SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
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KING NOBLE or EARLY GOLDEN SHAW; the best early Potato of its class, being as early as the true old Ashleaf, and as fine a flavour, but produces four to six times the quantity. Dwarf and compact habit. First-class for early work. Per peck, 4s.; per bushel, 14s. 100 other choice kinds in stock.
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APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
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ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
,, Golden, many thousands, 3, 4, 5 to 10 feet high.
,, Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
,, laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
,, Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
,, Golden Queen, 4, 5, 6 to 10 feet high.
,, Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
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LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
,, DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
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RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
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H. LANE AND SON, having many Acres of the following, can offer them very cheap; all well transplanted, and such as cannot fail to give satisfaction. An inspection is solicited :—

ABIES ORIENTALIS, 3 to 7 feet, fine.
" DOUGLASII, 7 to 12 feet.
" MORINDA, 8 to 10 feet.
CEDRUS DEODARA, 3 to 9 feet, a very large stock, extra fine.
CRYPTOMERIA ELEGANS, 2 to 7 feet, very fine.
CUPRESSUS LAWSONIANA, 3 to 15 feet.
" " ERECTA VIRIDIS, very fine, in large quantities.
PICEA GRANDIS, 16 to 20 feet.
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" NOBILIS, 3 to 12 feet, fine.
" NORDMANIANA, 3 to 12 feet, very fine.
" PINSAPO, 2 to 7 feet.
RETINOSPORAS, in variety, 1 to 7 feet, very fine.
YEW, English, 3 to 6 feet.
" variegated, 2 to 6 feet, very large, stock fine.
" Irish, 3 to 9 feet.
THUYA GIGANTEA, 5 to 10 feet.
" LOBBII, 4 to 18 feet.
" OCCIDENTALIS, 3 to 12 feet.
" SIBERIAN, 3 to 6 feet.
THUYOPSIS BOREALIS, 3 to 18 feet.
" DOLABATA, with leaders, 2 to 4 feet.
WELLINGTONIA GIGANTEA, 2 to 12 feet.
LAURELS, Standard Portugal, 4½ to 7 feet stems, very fine.
Standard Ornamental Trees, Chestnuts, Limes, Planes, Thorns, Poplars, Mountain Ash, &c., Evergreen Shrubs, Aucubas, Berberis, Box, Cotoneaster, Hollies, Laurels, Rhododendrons, in great variety, well set with bloom-buds. Deciduous Shrubs in great variety, Forest Trees, &c., Standard and Dwarf-trained Cherries, very fine; Pyramid Apples, Pears and Plums; Standard Damsons.
CATALOGUE and particulars on application.
The Nurseries, Berkhamsted, Herts.

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**A Special Offer of**

TRANSPLANTED FOREST TREES
QUICKWOOD, LARCH, &c., viz. :—
500,000 LARCH .. .. .. 1 to 3 feet.
500,000 QUICKWOOD .. .. 1 to 3 feet.
200,000 SPRUCE .. .. .. 1 to 3 feet.
A liberal offer for arge quanities.
FRANCIS BELL, Church Hill, Easingwold.

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**Special Spring List, No. 50.**

THE NEW PLANT AND BULB COMPANY beg respectfully to invite attention to the above. CONTENTS :—Beautiful BULBOUS and OTHER PLANTS suitable for Present Planting for Summer and Autumn Flowering, in Open Ground, or Conservatory Decoration, &c. Post-free on application.
Lion Walk, Colchester.

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TWELVE ORCHIDS, Valuable Winter-flowering Sorts, 21s. — The cheapest collection ever offered. All well established plants of Epidendrums, Odontoglossums, Oncidiums, Cypripediums, Dendrobiums, and other free-flowering and beautiful sorts, in 4-inch and 5-inch pots, strong, and well grown. Will not require repotting for a year. Packages gratis for cash. (Double size, extra strong, 42s per dozen.)
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**COLOURED ILLUSTRATED**
**PENNY SEED PACKETS.**

In answer to many enquiries, we beg to say we do not Sell these by Retail.

*Samples and Special Prices to the Trade on application.*

**HOWCROFT & WATKINS, Covent Garden, W.C.**

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**NEW POTATOS.**

FOR SALE, about 1000 new, cross-bred, hitherto disease-proof varieties; all of first quality, being the selected best of 30,000.
Terms and particulars on application to
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**FRESH EUCALYPTUS SEEDS.**

The *Gardeners' Chronicle*, No. 350 (1880), says, on Eucalyptus at Chiswick :—" From this bed one might make a selection of ornamental leaved plants of no ordinary character that could be planted out-of-doors in summer, and utilised within doors in autumn and winter." Should be sown now.
A selection of fifteen finest kinds, 21s., 10s. 6d., and 5s. 6d.; single species, 2s. 6d. and 1s. 6d. per packet, post-free.
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**SPECIAL OFFER TO THE TRADE.**

CONIFERÆ Half a Foot high.
**£5 per 1000.**
Equal Quantities of each of the following sorts :—

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| CUPRESSUS Lawsoniana fol. arg. var. | RETINOSPORA filifera |
| " " fol. aureo var. | " squarrosa, Veitch |
| " " pyramidalis alba | THUYA Ellwangeriana |
| | " Vervaeneana |
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**A. M. C. JONGKINDT CONINCK,**
**Tottenham Nurseries,**
DEDEMSVAART near ZWOLLE, NETHERLANDS.

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**Strawberries! Strawberries!**

All the Leading Kinds, Guaranteed True to Name, in Pots and from Ground.

*List of Sorts and Prices on application to*

**CRANSTON'S NURSERY & SEED CO.**
**(LIMITED),**
KING'S ACRE, near HEREFORD.

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ORCHIDS.—The largest stock in Europe. Thousands of these beautiful Plants to select from, at 10s. 6d., 15s., and 21s. each, at
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

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GUINEA COLLECTION of GERANIUMS for Bedding or Pot Culture :—12 Charley Casbon, free bloomer, dwarf habit; 12 Rev. J. Atkinson, very dark, large scarlet; 12 Pretender, splendid scarlet, shaded violet; 12 G. H. Wagner, double, purple crimson; 12 Flower of Spring, 12 Happy Thought. All strong well-rooted Plants, in 3-inch pots. The lot, package free, for 21s. ROLLISSON'S TELEGRAPH CUCUMBER PLANTS, 9d. each, 8s. per dozen.
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BEAUTY of NORFOLK.—Choice new Seedling Potato, of extra fine quality. This may be described as a late Beauty of Hebron, being of the same habit of growth and quality, but more robust, and ripens a fortnight later, is a good disease resister, and first-class for Exhibition. Per pound, 1s.; 7 lb., 6s.; 14 lb., 10s. 6d. 100 other choicest kinds in stock.
DANIELS BROS., Seedsmen to H.R.H. the Prince of Wales, Norwich.

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THE MOST SUPERB ROSES that money can buy.
Dwarfs, very strong and healthy, 12s. per dozen, 75s. per 100.
Descriptive Price LIST on application.
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H. AND F. SHARPE have very fine samples of Green and White Windsor, Monarch Longpod, Green and White Longpod BEANS, to dispose of at very reasonable prices, either picked or unpicked. Samples on application.
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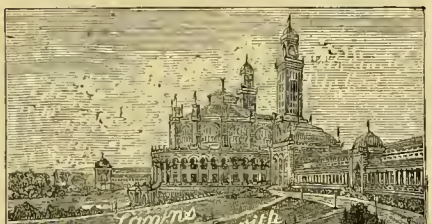


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Specially prepared for the above purposes.

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Containing full information as to their formation and improvement,
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SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.

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AZALEA INDICA, with buds.—A large stock of the above still on hand, which can be supplied at a very moderate price.
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VERBENAS.—Strong, well-rooted Cuttings, entirely free from disease—Scarlet, Purple, White, and other first-rate varieties—5s. per 100, 45s. 1000.
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**Special Offer of Magnum Bonum**

SEED POTATOS (Suttons' var., true). 40 Tons free on Rail at Castle Donington or Ashby, at £7 per Ton, from 10 cwt. upwards.
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LARCH (Transplanted).—30,000 excellent trees, 1½ to 2½ feet. Cheap offer.—Sample and price, apply to JOSEPH COYSH, The Nurseries, Llanelly, Carmarthenshire.

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**30,000 Finest**

SHOW and FANCY PANSIES in Cultivation, in over 300 most beautiful and distinct varieties, to dispose of at 20s. to 25s. per 100. Also most superb collections of all the newest and best ANTIRRHINUMS, PENTSTEMONS, PHLOXES, VIOLAS, MIMULUS, &c., of which priced Catalogue for 1881 of 53 pages—which should be in the hands of all growers of these popular flowers—will be sent on application.—J. FORBES, Buccleuch Nurseries, Hawick, N.B.

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**Extra Strong Vines.**

FRANCIS & ARTHUR DICKSON & SONS offer as above, splendid well ripened, short-jointed Canes, both Fruiting and Planting sizes, raised without bottom-heat, and thoroughly clean and healthy. Priced LIST, including all the best varieties, on application.
The "UPTON" Nurseries—Chester.

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**Special Offer.**

FREDK. GEE begs to offer, for cash, the undermentioned superior Bedfordshire grown SEEDS—POTATOS, CABBAGE, and other PLANTS, ROOTS, &c. Although the late severe weather has made sad havoc amongst various Plants, &c.—in many instances half of them being killed—F. GEE has a large quantity of fine Plants left, and will supply them at the following reasonable prices, for early orders accompanied with cash.
All the Standard varieties of CABBAGE, grown from his far-famed stocks, at 3s. per 1000 (of 1200); Red Picklers, fine, at 5s. per 1000. [7s. 6d. per 1000.
LETTUCE Plants, Hardy Green and others (scarce), 1s. per 100,
SAVOY, Large Drumhead, and finest BRUSSELS SPROUTS, at 3s. per 1000.
PRICKLY COMFREY, true Caucasian, crown sets, 2s. 6d. per 100, 20s. per 1000.

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**POTATOS.**

Fine samples, grown on new, light, and heavy land; can be highly recommended to those who require a change of seed:—

| | Per Peck of 14 lb. | Per Bush. of 56 lb. | Per Cwt. | Per Ton. |
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| | s. d. | s. d. | s. d. | £ s. |
| Early Ashleaf Improved, fine stock .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Early Myatt's Prolific, splendid sample .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Early and Late Rose, splendid sample, great croppers .. .. .. .. .. | 1 0 | 3 0 | 5 6 | 5 0 |
| New Burbank Seedling, and Washington, fine kidneys, great croppers; stock now limited .. .. .. .. .. .. | 2 0 | 7 0 | 12 0 | 11 0 |
| Beauty of Hebron (true), splendid cropper, fine quality; stock now left very limited .. | 2 0 | 7 0 | 12 0 | 11 0 |
| Golden Shaw (true), early; scarce .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Climax and Peerless, very productive, and good quality .. .. .. .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Snowflake, splendid quality, scarce, fine sample .. .. .. .. .. .. | 1 6 | 5 6 | 10 0 | 9 0 |
| Rector of Woodstock, fine stock, much recommended .. .. .. .. .. .. | 2 0 | 7 0 | 13 0 | 12 0 |
| Model, fine, much recommended .. .. | 1 6 | 5 0 | 9 6 | 9 0 |
| Schoolmaster (true), extra fine, quality not to be surpassed .. .. .. .. | 2 6 | 9 0 | 16 0 | 15 0 |
| Paterson's Victoria (true): finest white Regents | 1 6 | 5 0 | 9 0 | 8 0 |
| Magnum Bonum (Sutton's true).—An extra selected stock of this valuable variety, splendid seed size, clean sample. Undoubtedly the best disease-resister and heaviest cropper in cultivation .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Scotch Champion (true), very fine. An extraordinarily productive and wonderful disease-resisting variety, of fine quality .. | 1 3 | 4 0 | 7 0 | 6 0 |

Bags to hold 2 or 3 bushels charged 6d. each; other packages lowest prices. Special prices to very large buyers.
Many other kinds can be supplied cheap and good.
Cheap Early SPRING FLOWERING ROOTS, such as DAISIES, WALLFLOWERS, PYRETHRUMS, CARNATIONS, PICOTEES, &c. See CATALOGUE.
HERB ROOTS, SAGE and THYME, very fine plants; also RHUBARB for planting; and ASPARAGUS PLANTS. See General CATALOGUE of all kinds of superior Bedfordshire-grown Seeds, Plants, and Roots, on application to
FREDK. GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

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**Rare and Valuable Orchids.**

J. H. LEY, Royal Nursery, Croydon, can supply very cheaply as under, in fine established plants :—

| | Each. |
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| AERIDES LINDLEYANUM .. .. .. .. | 7 6 |
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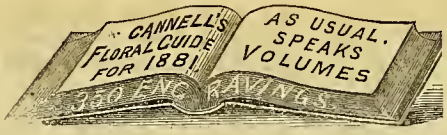


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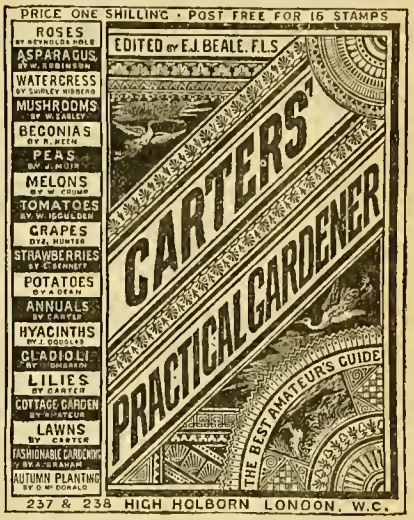


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# Gardeners' Chronicle.

*SATURDAY, MARCH* 12, 1881.

## OUT-OF-DOOR GRAPES.

LIKE many of your readers, I have long taken a deep interest in this question. There can be no doubt that Grapes sufficiently good to make fair wine were very generally grown in England only a few centuries ago; it is almost equally certain that our climate has improved, not deteriorated, since then—in East Anglia especially this has certainly been the case. The drainage of mere and fen has exerted a powerful ameliorating influence on the climate, and yet good wine was grown around such cathedrals as Bury, Ely, and many more, with inland seas almost sweeping up to their very gates. We are always told that the Grapes were sour and the wine worthless. Of this, however, we have no proof; no one can call up the spirits of those who enjoyed or revelled in these old English wines from the vasty deep of the long-forgotten past and cross-examine them. Were this possible I think their testimony would be in favour of the fair quality of the Grapes and the good quality of the wine.

Evidence, indirect and direct, may be advanced in confirmation of this view. The indirect evidences to the quality of the English wines were pretty strong. Those who first made and drank them were mostly foreigners; the monks came from Italy or France mostly. These ecclesiastics were used to good wines in their own countries, and we have no records handed down to us of any complaints against those manufactured from English-grown Grapes.

Many of the English monks and friars had also been either educated, travelled or lived abroad. In Italy, France, Spain, and other countries they drank of the wines of these countries, and yet when they settled in England they seemed pretty well content with their own. At all events, vineyards hugged the walls of the monasteries in all directions, and Vine fields or vineyards of considerable extent were as closely associated with religious houses as gardens for the culture of other fruits and vegetables. Nay, the vineyard took the lead of all other forms of cultivation, and a considerable business seems to have been done in the importation and cultivation of Grape Vines before much or any attention was devoted to any other branch of horticulture. But we have direct proofs of the fair quality of the ancient Vines. This is of two sorts—the records of the ancient chroniclers, and the quality of English-made wines of the present day. The first is of two sorts—the praises of those who drank the wines, and the popular accusations of drunkenness brought against ecclesiastics. The force of the latter will be acknowledged when it is borne in mind that English-made wines, and neither port nor sherry, beer nor spirits, were the popular drink of the ancients — abbots, monks, and friars, priests, or cardinals. It is not needful to express my opinion as to the truth of such charges. The fact that they were made suffices to prove the potency of the English-made wines, and as they were not brandied in those days their strength measures

the sweetness—that is, the saccharine quality or spirit-forming power of the old English Grapes [aided by the addition of sugar].

Modern English Grapes also vindicate the fair quality of those grown, eaten and drunk in the olden times. I have eaten first-class Hamburghs, Esperione, Frontignan, Sweetwater, and Muscadine grown in the open air in Bury St. Edmunds; I have also eaten very fair Muscat of Alexandria. As for the Chasselas de Fontainebleau, Miller's Burgundy, the Claret, Black Chester, and others, they ripen perfectly throughout most of East Anglia in the average of seasons, and with ordinary or special care.

The reason why they do indifferently lies in the culture or rather the want of it, and not in the climate. Where the roots and tops of the Vines have rational treatment the fruit ripens as already stated. The fact is, the culture of out-of-door Grapes is going backwards year by year. Nor is the reason far to seek. Out-of-door Grapes have been unfairly pitted against those grown under glass. Nor is this all, or the worst. The best of the latter have been compared with the worst of the former. And the consequence has been the rooting-out of out-of-door Grapes from most large gardens. Hence, unless in a few exceptional cases, the culture of Grapes in the open air has fallen into the hands of cottagers, the majority of whom treat the Vines in the worst possible manner. The roots are starved, the tops overcrowded and overcropped in the most reckless way. Still in good seasons immense quantities of Grapes are sufficiently ripened to make a good stock of home-made wine in many a cottage and farmhouse that no one knows or hears much about, and horticulturists write and speak as if Vines were badly grown in the open air in England. Now and then writers, such as Mr. Pettigrew, "F. W. B.," Mr. Fenn, and others, direct attention to the subject, and then it is quietly allowed to drop. Some years ago I described in your pages St. Peter's Vineyard in Bury St. Edmunds: this is the largest and the best. Unfortunately, in some respects, the present proprietor has glassed over most of the finest Vines; but I have seen as fine or better Grapes without the glass than I have seen since, and the father of the present proprietor made wines that commanded more than a local reputation. Visitors at the great horticultural shows some years ago were made familiar with the sight or taste of Mr. Fenn's Vines grown at Woodstock within hail of his wonderful Potatos of world-wide fame. Perhaps that accomplished horticulturist will, with his usual promptitude and generosity, give us anew his experience in Grape growing in the open air, and the quality of his Vines.

I confess I am most interested in the former; for I believe could more of our cottagers be enabled to sit under their own Vine and eat sweet Grapes to their bread, as many of the labouring classes do in France and Italy, the new habit and pleasures would do something, perhaps much, to lure them from the public-house, and even home-made wine is a more sober beverage than fiery ale, muddling beer, and maddening spirits. *D. T. Fish.*

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Preservation of Fungi.—Mr. English, of Epping, whose specimens we have often had the opportunity of admiring, is about to publish a manual for the preservation of the larger fungi (Hymenomycetes) in their natural condition. Also a new process for the preservation of wild flowers, by means of which the foliage and flowers retain their natural colour, with the petals, stamens and pistil in perfect condition, so that they exhibit all the freshness of recently gathered flowers. The manuscript is ready for publication when a sufficient number of subscribers are obtained, to whom the manual will be supplied at the reduced price of 5*s*. Names should be forwarded to James L. English, naturalist, Epping, Essex.

## New Garden Plants.

Pescatorea Dormaniana, *n. sp.**

So far as can be judged from a single flower this is to be regarded rather as a new species than as a variety. It is much in the way of Pescatorea Klabochorum and Lehmanni, having the same investment of acuminate papillæ over the lip. Yet the sagittate base of the column and the very characteristic callus at the base of the lip appear to distinguish it well, there being a continuous row of angles on the posterior margin of the side laciniæ such as I have not seen before. The three prolonged connate median keels are very peculiar too. The whole flower is narrower, and hence very elegant in its appearance. A chaste beauty it is. The flower is white with some light sulphur on the crest and, as I believe, on the ends of the sepals, though those organs were a little injured by a chill. It was sent by Mr. Charles Dorman, The Firs, Lewin Park, Sydenham, whose name it justly bears. Mr. F. Sander informs me it is a discovery of the late Francis Klaboch. *H. G. Rchb. f.*

Cypripedium conchiferum, *nov. hybr. art.* (Pearcei × Roezlii).

An elegant plant. Leaves narrow, linear, rather long, broader than in Cypripedium Pearcei, much narrower than in so-called C. Roezlii. The straight peduncle bears half a dozen—perhaps more—flowers. Bracts triangular, nearly equal to the naked ovaries. The flower has an oblong, triangular dorsal wavy sepal, with eleven to fifteen nerves, which are coloured green at the base, brown elsewhere. The connate pair of sepals, of the same colour, form an oblong, boat-shaped, broad, blunt body, strongly inclined to and nearly equal to the elegant lip. The petals hang down, are twisted, green at the base, with purple borders, nearly totally brownish-purple at the top, where there are some short hairs, as occur scattered on the outside and margin of the sepals. The lip is very curious. It is of a light olive-green ochre, white at its predominant parts, the fine inflexed side lobes, which form two shell-like plats, notched deeply outside, finely spotted and freckled with brown, and covered at the top with shining green warts. The sac itself is apiculate at its central border, and well rounded. Staminode transverse, acute, with brownish-black velvet on the hinder-side.

The general appearance is that of a giant Cypripedium Pearcei, with some attributes of colour, breadth of petals, leaves, and extension of bracts as in the so-called C. Roezlii. All the colours are very ethereal, and the plant will only be appreciated by gentlemen of refined taste. (It might be admired by Professor Oliver!) It was raised at Mr. Bowring's garden, Forest Farm, Windsor Forest. This gentleman was so kind as to bestow on me a living plant, which grew here very easily under M. Donat's management in a rather warm stove. It has been in flower since December till now (middle of February), and is very recommendable, according to Professor Oliver's and my taste. *H. G. Rchb. f.*

Odontoglossum Wilckeanum varians, *nov. var.*

The genuine Odontoglossum Wilckeanum has lately appeared in some places. To begin with Mons. Massange de Louvrex, of Château de Baillonville, that lucky collector, has forwarded me a most glorious inflorescence of a much finer specimen than the type was. Such a fine object, well-dried, and fixed on good, stiff, white, old-fashioned Dutch hand-paper, is a far better memorial than a single, wretched, broken flower arriving in a crushed wooden box of Swedish "Säkerkets-Tandstickors," taking half-an-hour before the reconstruction of the fragments can be reasonably perfected. Then came flowers from Mr. Calvert, 2, Brook Road, Wood Green, London, and from Mr. Edward Cooper, gardener to the Right Hon. J. Chamberlain, Highbury, Moor Green, Moseley, Birmingham. Before that came a grand inflorescence from Mr. William Lee, Downside, Leatherhead. This gentleman most distinctly speaks of it as "a true crispum in appearance of bulb." This was also the case in the original plant, while Mr. Calvert's plant verges more in those organs to Odontoglossum luteo-purpureum. Now there is in the same box what I regard a fresh variety of this, very like it, but with fully white ground colour on arrival, and no doubt also when leaving Mr. William Lee, as this excellent Orchidist distinctly states it to have had a yellowish tinge when it first opened; and now, after I have conserved the flower nearly a fortnight at my side, it is light sulphur-coloured.

I must state, that it is a great responsibily to name such hybrids, as a candid botanist must shrink from the arbitrary judging quite unavoidable in such matters. It is disgusting to have to pose as a would-be Pythias, when one would prefer to confess one's ignorance; yet garden botany permits no procrastination. I may state now that I have changed my views as to the limits of O. hebraicum and Coradinei, and of O. Andersonianum, lobatum, and Ruckerianum.

As to this O. Wilckeanum I have always recognised it easily by the high-toothed petals of Odontoglossum crispum Alexandræ, combined with many toothed anterior keels of lip, and a very thin texture. I do not rely on the circumscription of the lip, as this is of great variability in both supposed parents. *H. G. Rchb. f.*

Odontoglossum cirrhosum (*Lind.*) gemmatum *nov. var.*

This is quite like a large-flowered variety of Klabochorum, yet it has a very great charm, when one looks nearer to it. There are groups of splendid mauve or purple stains at the base of the petals in great numbers, and a few such ornaments at the base of the sepals. I had this fine thing first from Mr. W. Bull, and immediately afterwards from Mr. William Lee, Downside, Leatherhead, who would appear to have an exceptionally fine collection of Odontoglossums. *H. G. Rchb. f.*

* *Pescatorea Dormaniana*, n. sp.—Aff. Pescatoreæ Lehmanni et Klabochorum; sepalis cuneato-oblongis apiculatis; tepalis subæqualibus magis dilatatis, labelli laciniis lateralibus triangulis, mediana producta oblonga marginibus omnibus revolutis papillis filiformibus acuminatis tecta, cristis 17, medianis 3 connatis porrectis, externis in lateribus posticos laciniatum lateralibus angulatis; columna basi sagittata.

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## COLONIAL NOTES.

The Introduction and Cultivation of Liberian Coffee in Ceylon.—Seed of this new or Liberian species of Coffee was first sent out to Ceylon by Mr. John Gordon, of London, as early as 1866, to Mr. Massey in Kandy, who was unsuccessful in germinating a seed. Another consignment was was sent by Mr. Tottenham to Mr. Massey in 1872, which he was successful in rearing, and commenced to plant up an estate in Matale, but through commercial failures the estate has been since neglected.

The late Mr. L. St. George Carey in 1872 introduced plants in Wardian cases direct from Liberia, which failed to succeed in Pussellawa, were after planted on Mallsawa estate, Galagedara, Koomgalla district, 12 miles from Kandy, about 1500 feet above the sea level. There they have proved a great success, growing into fine healthy trees, and at three years old were from 6 to 8 feet high, and blossoming. The last visit I paid that estate (three years ago) the trees were a perfect picture to look at, covered with berries, and bearing at the rate of 6 cwt. per acre.

The first of this species was grown in Kew Gardens in 1872, and the year following plants were sent out to all the Coffee-growing countries. Dr. Thwaites in that year received plants from Kew, which succeeded fairly at Peradeniya, and were bearing at three years old. But much attention was not given to the cultivation of Liberian Coffee until 1875, when the late Mr. G. A. Cruwell paid a visit to Liberia, and furnished the *Ceylon Observer* with a valuable report on its cultivation. Mr. Cruwell, in company with Mr. Forbes Laurie, arranged for a large importation of seed, when they were soon followed by other planters.

In 1876 the Government made a special grant, on equitable terms, of 100 acres of land near Polgahawela in the North-Western Province, about 40 miles from Colombo, to Messrs. Cruwell, Laurie, and Agar, for the purpose of experimenting with Liberian coffee.

That land, now "Liberia Estate," has been fully planted up. Mr. Laurie has since purchased more land adjoining, and opened a large acreage: he is to be congratulated on the great success of his experiment. The estate has for its southern boundary the Colombo Kandy Railway, where travellers can view for themselves, and admire the beautiful healthy trees, with large dark green Laurel-like leaves and bright red berries covering every branch, as they are at present. Several importations of seed have been made, and since the first planted trees commenced to bear the cultivation has considerably extended over all parts of the low country. Its success is proved at Kalutura and in Matale North, where the trees are vigorous and prolific. There are about 3000 acres under cultivation, but before the year is over we expect to double that extent. In Ceylon we have not considered the climate and soil best suited for the Coffea arabica, but have in a haphazard manner planted it everywhere—departed from the Coffee zone altogether. Our style of cultivation, continually taking seed from the same stock, has been the means of degenerating the species—so much that the trees will only crop under very favourable circumstances. The system of the trees being so weak-

ened they are more liable to diseases, an instance in proof from the way the leaf disease, Hemileia vastatrix, has attacked our Coffee in the last few years, and in some cases almost killed it. However, it is with pleasure I record the strong vigorous habit of the Liberian Coffee as being more liable to stand against leaf disease, and that the day is not far distant when the natives will cultivate it, as they did the "arabica" in years gone by. It is a gross feeder, with strong roots, and when planted in rows 8 feet by 8, in a few years covers that space. It will grow in almost any soil, but loves heat and moisture. It is very hardy, easily raised from seed, does not require shade, but grows best in the open.

Doubts have been cast on the quality of the berry, consumers who have given it a trial declaring it to be very bitter and inferior to the ordinary Arabian kind, but I am certain this can be removed by proper cultivation and preparation. The demand for seed in the island being so great we have not shipped any coffee to the London market except a small parcel, sold in the American market, which fetched 93*s.* per hundredweight. The Liberian Coffee and the Jak tree, Artocarpus integrifolia, are so similar in growth when young that a stranger is often mistaken as to the trees. *J. Alexander, Feb.* 10.

## CUCUMBER DISEASE.

One form of Cucumber disease—that form where the roots of the plant (and sometimes even the stem and leaves) are covered with nodular swellings—is caused by the presence within the tissues of the plant of innumerable minute worms. The disease is generally most manifest in the roots of mature plants, but it sometimes appears on the youngest possible seedlings. The disease is also common in the Melon, and in many other plants. The worms are termed nematoid, or thread-like, and they belong to the genus Anguillula, so named from the eel-like shape of its members.

During past years many references have been made to this curious affection of Cucumber and Melon plants, and many gardeners have written to say they have been unable to find the "worms" spoken of by Mr. Berkeley and myself. Disregarding the careful statement of size, various gardeners have sent up packages of garden worms and "lobs" of all sorts and sizes; others have been good enough to send up bottles and cans of water from brooks and wells, or have forwarded bottles for examination and report of the rich juice which flows from dung-heaps. Many erroneous ideas have arisen from careless reading, and from a difficulty of appreciating the very small size of the "worms" in question.

To make the subject quite clear to every reader, the head of a pin is here engraved (a medium-sized or rather small pin), enlarged 32 diameters (fig. 61). On the top of the pin may be seen a large sweeping semicircle; this line represents an exceedingly small drop of water, such as might lodge on a pin's head. Within this semicircular drop may be seen a number of the Cucumber worms sporting about, and at the bottom several eggs from which such worms emerge; the three eggs to the left show three worms just creeping out. The pests are no doubt introduced to the plants by the earth and water. Some years ago I tried many experiments with dilute solutions of permanganate of potassium; this when applied to Cucumber and Melon beds destroyed every trace of the "worms," and in no way injured the plants. The material is cheap, and in the Cucumber disease easily applied. Further experiments are no doubt desirable.

Some younger gardeners may consider the Cucumber worm a very small thing, but to older men, and to microscopists, this "worm" is a really big fellow. Suppose the eggs are taken and compared with the fungus of the Potato disease, by no means one of the smallest fungi; now eighteen of the large conidia, or acrospores, of the fungus could easily find room within one of these eggs; each of the acrospores might contain eight zoospores; so that 144 Potato disease spores, each moving with two tails, might conveniently nestle inside one of the eggs of the Cucumber worm. If the zoospores were free at least 300 could swim into one Cucumber egg.

A zoospore of the Potato disease, if drawn to the same scale as the eggs of the Cucumber worm in the accompanying engraving, would be represented by a dot so small that if it could be engraved it would be almost invisible. *W. G. S.*

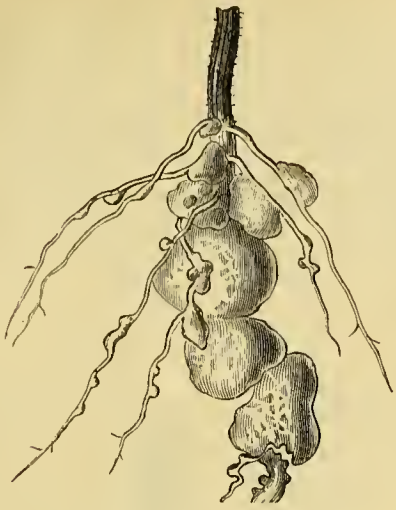

Fig. 60.—Nodules on Cucumber Root.

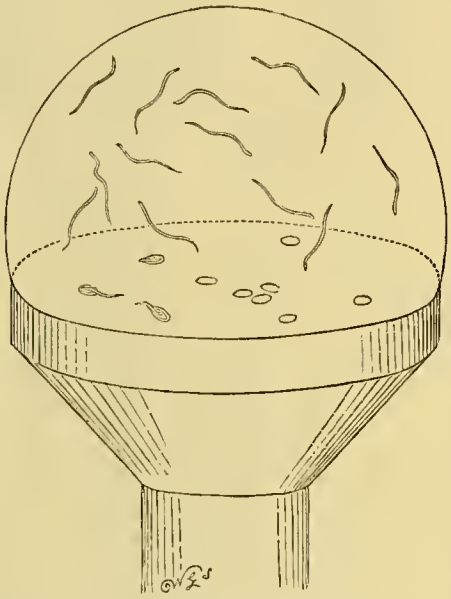

Fig. 61.—The "worms," or "eels," of the Cucumber disease, in a drop of water, on a pin's head. (Enlarged 32 diameters.)

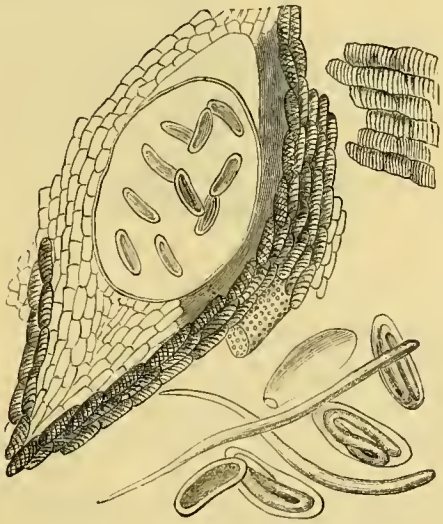

Fig. 62.—Section of nodule on Cucumber root: magn.

## NEW GARDEN FERNS.

Pleopeltis picta, *sp. n.*

Fronds subcoriaceous, pinnatifid (? three-lobed), glabrous, tapering at the base into the smooth stipes; terminal lobe oblong, rounded at the apex, slightly narrowed at the base (5 inches long by 1 inch broad), the edges slightly undulated, entire; lateral lobes somewhat smaller, of the same form, and confluent with the wedge-shaped base; veins reticulated, with free veinlets, the principal ones issuing from the dark purplish-brown costa of a similar hue, and forming dark coloured curving lines over the dorsal surface, with about two series of large oblong areoles enclosed by the bolder coloured veins, these being filled up by smaller reticulations, frequently, but not always, enclosing free veinlets; another series of smaller areoles exterior to the larger ones extend to the edge, which is marginate; sori not seen; rhizome creeping, clothed with black lanceolate scales. Hab., South Sea Islands.

This is a freely creeping polypodiaceous Fern, closely allied to Pleopeltis Billardieri, but differing, amongst other points, in the rounded apices of the lobes, in their undulated margins, and in their venation. It was imported by Mr. B. S. Williams from the South Sea Islands, but has not yet borne fructification, so that the name here given must be considered as provisional for trade purposes. It is a free-growing stove Fern, with a fast-creeping rhizome as thick as a goose-quill, thickly covered with dark purplish-brown ovate acuminate scales. The stipes and fronds are quite glabrous, the former an inch or two in length. The fronds (the largest we have seen) are altogether about 8 inches high, three-lobed, that is, with a terminal lobe and two widely divergent side lobes very little smaller — these lobes all being oblong-obtuse, with the apex very bluntly rounded, the base of the fronds distinctly cuneate, and the margin gently puckered, producing a neat undulation. The dark brown costa and principal veins, which are very apparent on the dorsal surface, give it a pretty reticulated appearance, and have suggested the specific name. The present is probably only the immature condition of the plant, which is, however, of neat habit, and well adapted for cultivation in baskets or on blocks, or for covering ornamental rockwork in a warm Fern-house. *T. Moore.*

Pleopeltis Xiphias, *sp. n.*

Fronds subcoriaceous, glabrous, elliptic-oblong or somewhat obovate, caudato-cuspidate, narrowed below to the point of attachment; veins pinnate, reticulated, with a series of primary larger areoles enclosed by the stouter veins, the marginal ones roundish, hexagonal, all including a series of finer reticulations, with the ultimate veinules free and thickened at the end; marginal veinlets mostly united in a series of arcs, with a free branch directed inwards; sori round, medium-sized, compital, dotted over nearly the whole back of the frond, from the costal to the submarginal areoles, apparently scattered without order, but four thinly-furnished lines may be traced in each of the spaces between the primary veins, the base and apex being terile; rhizome stoutish, creeping, clothed with subulate brownish scales. Hab., South Pacific Isles.

The simple-fronded Ferns are in a general way less highly esteemed than those with much-divided fronds; they are, however, very useful as contrasting with those of a more feathery character, and many of them are strikingly handsome in their *tout ensemble*, either from their form or colour or the peculiarities of their venation and fructification. The species now before us is especially interesting for its form, its fronds ending in a suddenly narrowed, longish tail-like cusp, and being of considerable size and well furnished with sori, they are also attractive on that account. The plant has a creeping rhizome about as thick as a stout goose-quill, and clothed with scattered subulate brownish scales. From this spring up the simple entire fronds, which exceed 1 foot in length, and are 4 inches across in the widest part, the apex provided with a slender cusp of 2 inches in length, and the base narrowing downwards with a slight wing extending to the very base of the frond, close to the point of attachment to the rhizome, so that the elliptic-oblong fronds become slightly obovate. They are firm but not leathery in texture, and are arched and somewhat undulated at the edge, which is otherwise entire. The caudate apex and about one-third of the base of the frond are sterile, but the rest of the under-surface is dotted over

pretty equally with medium-sized round sori, which, though apparently irregular in reality, form thinly furnished lines, four in number, between the primary veins, the lines becoming lost towards the margin. The venation is strongly marked and closely reticulated, the ultimate areoles containing free veinlets, with thickened apices. The primary veins issuing from the costa are about half an inch apart, and form a series of oblong costal areoles, these being followed by about two roundish hexagonal principal areoles, then by a row of smaller roundish ones, the marginal veins being mostly united in a series of arcs, each furnished with a free veinlet pointed inwards.

This interesting Fern was introduced a year or two since by Mr. W. Bull, of Chelsea, from one of the islands of the South Pacific. The specific name refers to the outline of the fronds, which resembles the figure of the sword-fish; that of the genus being adopted as the oldest of those applied to members of this particular group of reticulate-veined Polypodies. *T. Moore.*

## NEW INVENTIONS.

Weeks' Hydro-caloric Coil.—A week or two ago we were invited to inspect a new apparatus, devised by Messrs. Weeks & Co., to secure the constant admission into buildings of any quantity of warm pure air. The apparatus, which in appearance is like an ordinary hot-water coil, except that the pipes are vertical, consists of an upper and lower iron water chamber with vertical pipes each 2 inches in diameter passing between them. Through the centre of each hot-water pipe runs an air pipe 1 inch in diameter, open at the two ends so as to admit cold air from the outside to warm it as it passes through the hot-water tubes, and to allow it to pass in a warmed and purified condition into the interior of the house or room. At the top the air pipes are continued about 1½ inch into the chamber, B (fig. 63), the open top of which is covered by an ornamental iron grating, C. The lower box or chamber, A, is connected by a zinc tube or other channel with the external air. It also has flaps or doors, D D, for opening into the house or room.

The effect of this arrangement is, that when the apparatus is in operation, the heated external surface of the coil (or part seen) heats the air of the room in the ordinary way; but while this is going on, the air in the small inner pipe becomes rapidly hot, and naturally rises quickly into the chamber B, and thence through the grating C into the house, drawing in its course, as we have said, a constant current of fresh air from the outside, which in its turn passes through the coil, and becomes warm, before entering the room. The following is a table showing the amount of air this coil will bring in and the temperature:—

| Temperature of water in Apparatus. | No. of cubic feet of fresh warm air drawn in per minute. | Temperature at which the air is admitted into the house. |
|---|---|---|
| 120° | 15 | 90° |
| 128° | 19½ | 98° |
| 136° | 20½ | 109° |
| 142° | 21½ | 114° |
| 144° | 22½ | 116° |
| 148° | 23 | 117° |

By means of the chamber B the air can be admitted dry or rendered moist at pleasure. If dry air is desired, chamber B is left dry; if moist, a small quantity of water is poured in, sufficient to come up nearly to the top of the air pipe (see section), and this water, being in contact with the top of the hot-water coil, becomes warm and gives off a gentle moisture.

This coil is likely to prove serviceable in hothouses of all kinds, particularly forcing houses and vineries, as it enables them to be thoroughly ventilated, and permeated with a current of pure moist vapour at any desired temperature in the most inclement weather, without opening lights and sashes as is necessary under the ordinary arrangements.

It may also be used as a fumigator, for destroying insects, &c. By burning the substance with the fumes of which the air is to be impregnated at the mouth of the air-channel the building may be rapidly and thoroughly charged with any substance that may be necessary.

In the same manner the plants may be fed with ammonia or other vapour that may be desired.

It can be fixed to any existing apparatus, in fact, a good mode of increasing an apparatus of deficient power would be to insert one or more of these coils as might be found necessary. This could be done with very little trouble, and only slight alteration to the existing work. It is self acting, requires no valves, and no attention; but so long as the circulation continues it must, perforce, perform its work in an efficient manner.

The utility of this coil is not confined to horticultural structures, for it is well adapted for schools, churches, hospitals, prisons, halls, staircases—in fact, all classes of buildings, whether public or domestic. It is likely to be particularly valuable for hospitals and sick rooms, for (as before explained) it not only induces a constant change of air, but enables them to be thoroughly disinfected at pleasure.

It may be mentioned that the doors or flaps marked D D in conjunction with another flap at the mouth of the air channel, enable the warmth to be got up very rapidly in a cold room, thus:—The flap admitting the air from the outside is closed, and the doors, D D, opened. The result is that the air of the apartment is drawn in at the doors, D D, and passed through the coil, and this process goes on until the whole of the air in the apartment is warmed, when the flap at the mouth of the channel is again opened, and the flaps D D closed. Used in this manner, the coil is much more powerful than an ordinary coil of the same size. We give an illustration showing the manner of fixing the hydro-caloric coil in forcing houses.

On the occasion when we saw the apparatus at work, the air outside had a temperature of 50°; it was filtered by passing through cotton wool, and it was passed in the manner described through the hot-water pipes, the water in which was at a temperature of 172°. In the course of a few minutes the temperature of the air as it emerged from the open tubes in the house was raised to 132°—a rise of 82° in about ten minutes—the air being, as we have said, not only heated, but purified in its course. We were struck not only with its efficiency for the purposes of ventilation and heating, for which it is specially designed, but also with the possibilities it affords in the way of supplying plants with gaseous food by means of their leaves, and also as to its value in hospitals and sick rooms.

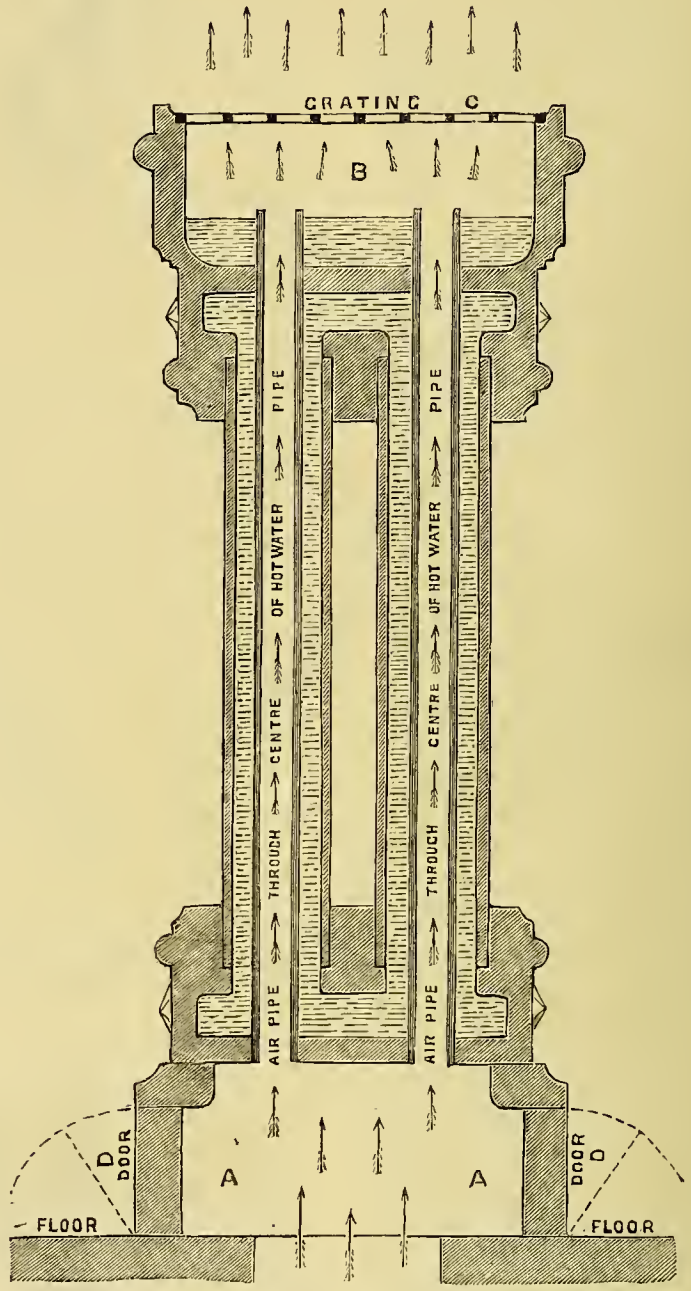


Fig. 63.—Section of Weeks' Hydro-caloric Coil and Ventilator.

## JUVENILE FORMS OF CONIFERS.

It has long been known that many of the elegant little Conifers referred to Retinispora,* Cupressus, &c., are "juvenile," "primordial," "sterile," or "larval," states of species having quite different foliage in the flowering or adult state, and some of them have been traced to their proper species, as by Mr. Syme in the *Gardeners' Chronicle*, vol. v., 1876. Mr. W. Hochstetter, Superintendent of the Royal Gardens at Tubingen, contributes an interesting article on this subject to Regel's *Gartenflora* for December, 1880. The author claims to have verified by experiment what other observers had already recorded on more or less trustworthy evidence; and we reproduce the substance of his paper with some remarks of our own. He says the so-called species of Retinispora of gardens † are, without exception, primordial forms of seedling plants of various species of Chamæcyparis, Biota, and Thuya. It may incidentally be mentioned that Bentham and Hooker (*Genera Plantarum*, iii., p. 427) regard the species referred to these names as constituting one genus, for which they adopt the name and spelling "Thuya." These primordial forms have become fixed or permanent by propagation from cuttings; but they retain their beauty for a few years only, varying according to the external conditions, and then die off without fruiting. They are, however, easily propagated by means of cuttings—that is to say, cuttings from the decaying plants root freely and replace the parent. The terminal shoot of a seedling, still in the juvenile condition with linear spreading leaves, will develope as a cutting into the adult fruiting condition, but the lateral ones will not, according to our author's experience. The artificial fixing has been effected by propagation from cuttings of what appeared like sports from the seed-bearing parent, but which in reality were the ordinary juvenile or sterile states. It is perhaps better to use the term sterile to designate this condition, because old plants often produce barren branches bearing only linear spreading leaves, whilst the fruit-bearing branches of the same plant bear only scale-like appressed leaves. Several of these sterile states of conifers were introduced direct from Japanese gardens, and others have originated in European and North American gardens. Hochstetter proposes the following names for those fixed sterile varieties whose parentage has been ascertained, which he publishes, together with their synonyms as he understands them:—

1. *Chamæcyparis pisifera*, var. *squarrosa*: syn. Retinospora squarrosa, Veitch; R. squarrosa, Sieb. and Zucc. *non* Hort.; C. squarrosa, Endl.; C. squarrosa Veitchii; R. squarrosa glauca; R. leptoclada, Zucc.; R. squarrosa var. leptoclada, Endl.; Cupressus squarrosa, Laws.

C. pisifera plumosa, varieties aurea and argentea, Hochstetter regards as the fixed advanced condition of C. pisifera, intermediate between the juvenile and adult conditions.

We are not satisfied that R. squarrosa of Siebold and Zuccarini is correctly referred here, because they figure it in fruit with spreading leaves.

2. *Chamæcyparis sphæroidea*, var. *ericoides*; syn. Retinospora ericoides, Zucc., *non* Hort.; Frenela ericoides, Hort.; C. ericoides, Carr.; Juniperus ericoides, Nols.; Widdringtonia ericoides, Knight; Cupressus ericoides, Hort.

C. sphæroidea var. andelyensis, Carr., is the fixed advanced form of C. sphæroidea, and has the following synonym: Retinospora leptoclada, Hort., *non* Zucc.

3. *Biota orientalis*, var. *decussata*; syn. Retinospora juniperoides, Carr.; R. rigida, Hort.; R. squarrosa, Hort., *non* Sieb. and Zucc.; R. flavescens, Hort.; C. decussata, Hort.; Juniperus glauca, Hort.

B. meldensis is the advanced form, and has the following synonyms: Retinospora meldensis, Hort.; Biota meldensis, Laws.; Thuya hybrida, Hort.; T meldensis, Hort.

4. *Thuya occidentalis*, var. *ericoides*; syn. Retinospora dubia, Carr.; R. glaucescens, Hochst.; R. ericoides, Hort., *non* Zucc.; R. juniperoides, Hort., *non* Carr.; T. ericoides, Hort.; T. Devriesiana, Hort.

T. Ellwangeriana is the advanced form of this species, and has also been referred to Retinospora.

Mr. Hochstetter has likewise succeeded in fixing the juvenile form of Pinus Pinea and P. canariensis by cuttings. They form "incomparably beautiful" bushes, with spirally arranged solitary needles. He further states that the fixed juvenile form of Cupressus funebris is often sold as Frenela. *W. B. H.*

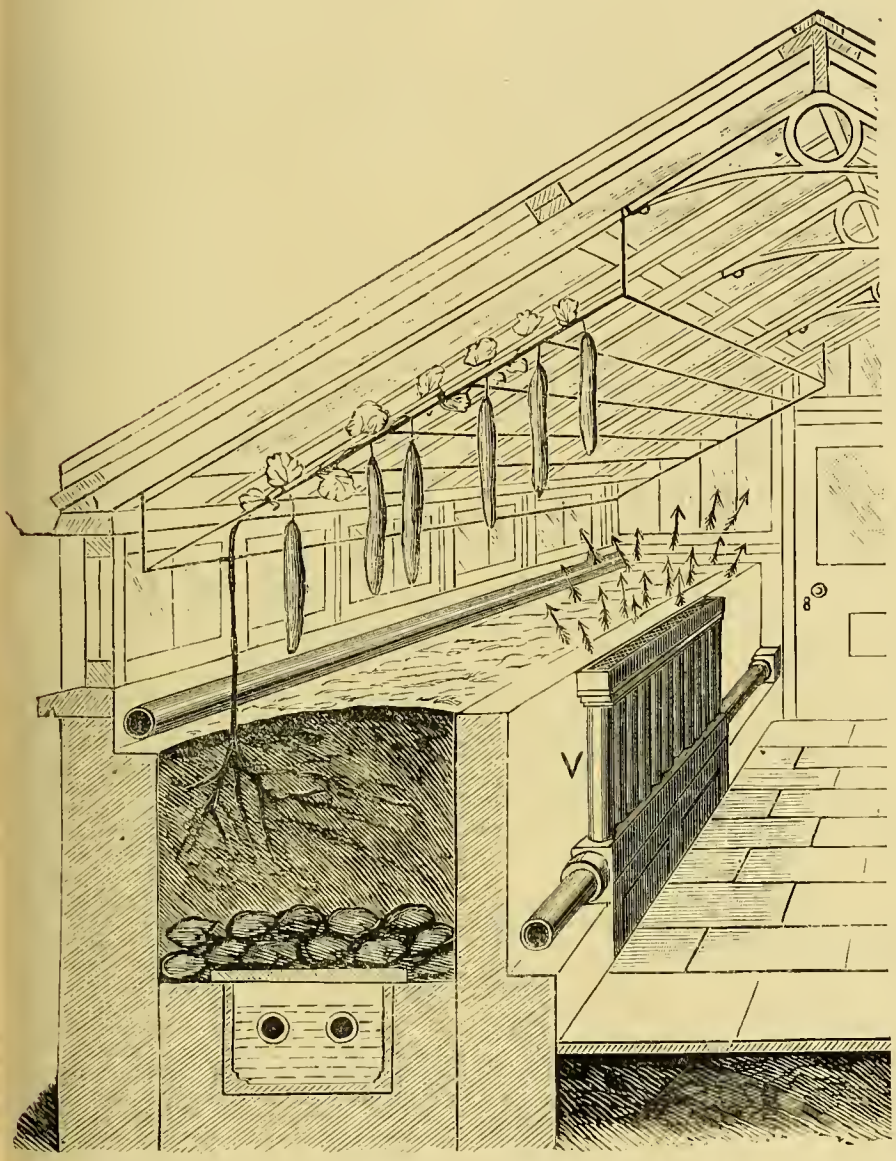

Fig. 64.—Section of Forcing-House, showing Weeks' Hydro-Caloric Coil and Ventilator.

* Retinispora is the spelling of the name adopted by the founders, Siebold and Zuccarini, *Flora Japonica*, ii., p. 36, t. 121—123, though in all the books to which we have referred, except the first edition of Gordon's *Pinetum*, and in Hochstetter's paper which we here epitomise, it is spelled Retinospora.

† This would not, of course, include R. obtusa and R. pisifera, which are very distinct species.

## PLANT PORTRAITS.

Acer platanoides var. Buntzleri, *Monatsschrift d. ver. z. Beford. d. Gartenb.* 1880, t. 5.—A variety of the Norway Maple, with fine golden variegated leaves.

Anoplophytum geminiflorum, E. Morr., *Belgique Horticole*, t. xi.—This is the Tillandsia rubida of Lindley, in *Bot. Reg.*, 1842, t. 63. A Brazilian Bromeliad of tufted habit; leaves broad at the base, tapering gradually into a very long point; flowers in spicate cymes, dense, rose-coloured.

Anthurium Andréanum, Lind., *Florist*, t. 517.—A good coloured figure of this highly remarkable and brilliant novelty. See *Gard. Chron.* 1880, vol. xiii., p. 497.

Bilbergia Bakeri, E. Morren, *Belgique Horticole*, t. 8.—This is the plant described by Mr. Baker as B. palescens in *Bot. Mag.* 1878, t. 6342, but not of Karl Koch.

Camellia Baroness de Bleichröder, *Illust. Hortic.*, t. 378.—Flowers white, with imbricate lanceolate or oblong petals, slashed with crimson. Hort. Linden.

Colax Puydtii, Lind. et André, *Illust. Hortic.*, t. 369.—Very like C. jugosus, but with oblong obtuse, not cuneiform petals, lateral lobes of the lip obtuse elongate, with a channelled column. Brazil. Hort Linden.

Dahlia coccinea, *Florist*, t. 519.—The variety figured, named Scarlet Dwarf, is a low bushy-habited scarlet variety raised in the Botanic Garden, Chelsea, and sent out by Mr. Cannell.

Double Cineraria Thomas Lloyd, *Floral Magazine*, t. 412.—One of the finest double Cinerarias yet shown; colour deep purple.

Dracæna Mrs. Wills, *Floral Magazine*, t. 409.—A variety of dwarf compact habit, with broad ovate acute leaves, blotched and margined with white, the younger leaves almost wholly white.

Fuchsia penduliflora, *Floral Magazine*, t. 411.—A handsome form with large lanceolate leaves and drooping corymbs of long tubular crimson-scarlet flowers. Shown by Mr. Cannell.

Gooseberries, *Florist*, t. 520.—1, Transparent; 2, Ringer; 3, Rover; 4, Leveller. Four varieties recommended for cultivation on account of their qualities as table fruit, as well as for their distinctness in colour and general character.

## Orchid Notes.

Work in the Houses.—In treating upon the cultivation of Orchids I cannot but be sensible of the fact that some may feel in a measure that the directions given are not such as they would desire, and with the means at their command the advice given cannot be acted upon, and so at last they are left pretty much to their own resources and experience, endeavouring in a general way to improve upon the directions given as may be most acceptable to them, and easiest for them to carry out. Where Orchids are grown in limited numbers, and the whole of the plants are expected to succeed and flower in one house only, as we even now see attempted in some cases, it is a matter of certainty that, instead of an ever-varying charm and pleasure attending the labour expended upon them, the results cannot be other than those that bring disappointment and failure. This state of things cannot justly be laid against those who have the plants under their charge, and who are expected to grow them under conditions which are antagonistic to their well-being. To succeed well with any class of plants, the conditions under which they are cultivated should be in accordance with our knowledge of their requirements; and if this is the case with plants generally, it is especially so in the case of Orchids; and the more this fact is kept in view and acted upon the greater the success that will follow the careful labour and attention bestowed upon them. No doubt a multiplicity of glass erections necessitates greater attention, and entails extra labour; but so strange are some Orchids to manage successfully, that merely altering the position of a plant in a house, or moving it into another compartment just 3° or 4° cooler or warmer, may be the means of infusing new strength and vigour, and giving it again a new lease of life. These truths admitted, coupled with the fact that the greater part of the most showy and free-blooming species and varieties are now comparatively cheap, and can be obtained in greater numbers than formerly was the case, there is good reason for devoting at least three or four different divisions to their culture. If a large collection is to be managed well it will require that number; while, as the collection becomes more varied and embraces a greater number of genera and species, other additions must be made to the number of houses—of course bearing in mind the class of plant for which such additions are specially intended. So much now-a-days are the cooler sections grown and increased that many of the East Indian plants are almost entirely neglected, and it is not unusual to find this latter class continually being reduced to make room for fresh additions of the cooler growing species. By all means add to the number of the Masdevallias, and increase the stock of the Odontoglossums, but do not let it be at the expense of the Aerides, Vandas and Saccolabiums. In private collections, where these plants are grown only to be admired, let the taste comprise the whole family — not necessarily the minute objects of botanical interest only, but all the fine forms, whether Dendrobiums, Aerides, Vandas, Cypripediums, Lælias, Oncidiums, or the many other genera that will readily come to the remembrance of the reader. Such a collection strikes me at once as being grown for pleasure, for personal gratification and interesting study; where, however, only a few forms are grown, and these the most showy, other considerations quickly enter the mind of the beholder, which on further inspection become more certain and evident.

The shading of the houses must now be looked over, and the greater part of it fixed in its place. Some houses may, perhaps, be so situated that they will not require the blinds to be used just yet; where, however, houses are so built that from 11 A.M. till 2 P.M. the sun's rays fall direct upon them, it is better even now that the blinds should be run down, and the plants being shaded, the atmosphere will be kept moistened, and less air will be needed. The plants will thus be less likely to suffer than would be the case if they were exposed to the strong sunlight when it bursts through, and an extra quantity of air admitted to prevent the house getting, as it certainly would do, too hot. Let all blinds on the top outside be so fixed that they can easily be drawn up when not in use, and see also that when they are fixed along the top ridge they do not in any way interfere with the top ventilators. *W. Swan, Fallowfield.*

Dendrobium Ainsworthii and D. splendidissimum.

Whatever botanical distinction there may be between these two hybrid Dendrobiums, it is now certain that, in a gardener's point of view, they are one and the same thing. Up till this year D. splendidissimum was certainly a much finer thing than D. Ainsworthii: briefly it might have been termed a gigantic D. Ainsworthii. It has not fallen off in the least, but D. Ainsworthii, having now got over the weakening process of rapid propagation, is getting much stronger every year, and has this year bloomed in every respect up to the splendidissimum standard. Indeed no other than a botanist could distinguish them apart. D. splendidissimum was raised by Messrs. Veitch & Sons, who believed the parents to be D. nobile and D. macrophyllum Huttonii. Although the hybrid is, as regards the bloom, very like the last-named plant, I think its habit far too strong to have any of the blood of D. macrophyllum Huttonii in it. Presuming that the two plants in question are identical, great credit is due to the Messrs. Veitch for having grown their plant so well, and for having been the first to show what a really magnificent Orchid D. Ainsworthii is. Mr. Mitchell, the raiser of the last-named plant, must, I should imagine, be very proud to see how well his plant stands the best of all tests—that of time. Like Cattleya exoniensis, this Dendrobium will, I feel sure, get dearer the more it becomes known. Of small plants there may be plenty at a low rate, but strong plants with nobile-like growths will be dear to buy for some few years yet. D. Ainsworthii and its very rare roseum variety are excellent companions to D. nobile, which is saying a very great deal. All three flourish under the same treatment. Exactly the same may be said of D. splendidissimum, let the parents be what they may. *J. C. Spyers, Burford Lodge, Dorking.*

Tophia lanceolata.

This lovely little gem was first described by the late Dr. R. Wight. It is almost bulbless, one-leaved, and bears a curious inflorescence, an almost one-sided panicle, lasting and producing flowers for different years, as was first observed by Dr. Jerdon. These flowers are very small, white, much like those of a Polystachya, with a purple line on each lateral sepal, a purple top and purple angles to the column. A very great inflorescence may produce a splendid effect. From all I have seen, no one is comparable to that grand one Dr. Wallace favoured me with. The introduction can only succeed quite accidentally, and the plant might not be obtained by purchase by amateurs at all. I was very surprised to get a fresh inflorescence from Mr. Bull. It was grown by Mr. John C. Bowring, Forest Farm, Windsor Forest. It is only found in the Deccan and Ceylon. *H. G. Rchb. f.*

Orchids in Flower.

The fine group of Orchids shown by Mr. B. S. Williams at South Kensington on Tuesday, and which gained a Gold Medal for the exhibitor, consisted of the following species and varieties:—Cattleya Trianæ, and its varieties Rougerii and delicata; and C. Warscewiczii delicata; Cœlogyne ocellata, Cymbidium eburneum, Cypripedium Boxallii, concolor, Harrisianum, Swanianum, venustum, villosum, and Warnerii; Dendrobium Farmerii aureum, Findleyanum, Freemanni, and luteolum; Dendrochilum glumaceum, Lælia anceps, Lycaste Skinneri, Masdevallia ignea, Oncidium pubes, sarcodes, and sphacelatum; Odontoglossum Alexandræ, Alexandræ roseum, Alexandræ flaveolum, Cervantesii, Chestertoni ×, cirrhosum, cristatum, Pescatorei, Rossii majus, and tripudians; and Phaius grandifolius. Other collections are mentioned in the report of the Society.

## Notices of Books.

**Echoes from the Counties.** London: Bradbury, Agnew & Co. 1880.

We are glad to welcome a book which is not quite like other books of the same class. One of its merits—and it possesses several—is novelty of treatment. A writer of country books published a few weeks since a lengthy disquisition on the "The Bill-hook." His is the analytic method, which demands from his admirers two hours' reading, including nods and naps, about nothing in the world but a bill-hook. Sir Charles Bell wrote on the hand at very great length no doubt; Bishop Berkeley wrote on tar-water, and Mr. Carlyle said with truth, "I hold that no subject is ever completely exhausted." Let all this be admitted, and the fact still remains that such a subject as a bill-hook—an undiluted bill-hook—may be easily overdone, and that books about the country may be too much spun out. Town people may imagine that microscopic treatment and minute analysis, and the elaborate subdivision which splits a bill-hook into many parts, are proofs of a writer's wondrous knowledge. There are several books about the country which are read and admired by townfolk only, and it is one of the merits of *Echoes from the Counties* that the reverse of this may be predicted of it. The writer's sympathies are in the country, and he will attract readers in the country; on the other hand he might have had more urban readers if he had imparted to his pages a little more of the flavour of condescension which cockney authors usually display when they honour the rural districts.

The book is the better perhaps for being full of what may be called small faults and little follies. It is truly named *Echoes from the Counties*, for it consists of echoes only. Instead of jotting down each page or chapter of incidents and experiences when they happened, the author allowed the time to slip, and then unburdened his memory in the present volume, weaving into his narrative, we suspect, much material which is not exactly home-spun. The book is no doubt partly compiled from other sources than the writer's own personal experience. It is, for all that, a thoroughly honest book, and the glamour of talent and warmth of heart frequently appear in its pages; but it is, on the whole, not so fresh in style nor so full of flavour of the fields as another volume may be which we hope the same author will one day write—a real book written of the country and from the country, instead of "echoes" only.

Another fault in this interesting and clever book, in addition to its vagueness and the uncertain and confused sound of some of the "echoes," is the writer's youthfulness, or want of knowledge of agricultural questions. He leans strongly to the liberal side—better wages, better education for labourers, &c., and that is our side, too; but leaning to the right side is not enough to enable a writer to influence the only persons whom he can influence usefully—those who disagree with him. To do that he must write with precision and exactness, which the author of the "Echoes" seems incapable of doing for want of knowledge of country affairs. Rightly has he called his book *Echoes from the Counties*. Another defect, and the greatest, perhaps, as some might think, though for ourselves we were much enchanted with the scheme, is the communistic arrangement which he recommends as a solution for the present agricultural difficulty. He has borrowed his plan apparently from several sources—from Russia and Old England, and partly from a fervid imagination. May he never be disenchanted! If we have advised any sacrifice on his part—descent from cloudland, patient study of his subject, and residence in the country upon *terra firmâ*—we have done unkindly. Sometimes "ignorance is bliss." If he can believe in his patriarchal "yeoman" at "the Grange," and his industrious plot-men, partly farm labourers, partly "ceorls"—for he revives the old Saxon term—let him stay where he is, in cloudland, far from what to him would be a discouraging encounter with the facts of life and with those passions of men in which the social state must ever be partly founded, and which may any day overturn your imaginary yeoman, and set in his place your imaginary "ceorl," by reason of the latter's superior energy and strong will.

The description of the author's "model farm" and parish (p. 314), with the Grange and the ceorls' plots and the "Common Hall, standing in a recreation ground, where folk-mote should be held, at which all questions respecting prices of commodities and labour should be decided," is inimitable. Oh, that it could be realised in this nether world. Bless the book that has recorded it!

**The Evolutionist at Large.** By Grant Allen. Chatto & Windus.

Twenty-two short but excellent chapters on natural history, as seen from an Evolutionist's point of view. It is not so long since such a book would have been looked on askance by certain worthy folk as dangerous in its title if not in its tendencies. Few, however, we imagine, can now peruse these attractive pages

without feeling persuaded that the reiterated evidence of continuous intelligent design and purpose in the works of Nature, such as they illustrate, must lead to higher and deeper conceptions than the more arbitrary—we were about to say capricious—statements of a quarter of a century ago. Be this as it may, the intelligent reader will get nothing but delight from these pages. Without being in any sense didactic essays they will convey to him notions of the why and wherefore of common things which will at once invest them with an interest and a beauty of which perchance he had no conception before. It is not that we accept all the writer's statements as correct, or his inferences as conclusive, but his method is good and his manner excellent. Here and there, in his desire to avoid technicalities, he becomes ambiguous, as at p. 42, where, in speaking of the order Ranunculaceæ, he speaks of it within the compass of three lines as a "tribe," a "family," and a "race." As one main object of evolution is to illustrate the orderly genealogical sequence and correct relationships of living creatures, such a loose mode of expressing degrees of relationship would lead to endless confusion—much as if one were to make use of the words nation, county, and parish, to signify one and the same thing.

# Garden Operations.

## PLANT HOUSES.

Stoves.—Now that Palms in almost endless variety and in such large numbers are grown by the leading nurserymen, it is an easy matter to select the most suitable sorts for any given place. It is a good time now to increase the stock. Those only should be selected which have the most robust habit and which give indications of free growth. It is better to purchase small plants (unless immediate effect is required), thereby making use of them, first for the dinner-table, and afterwards for grouping in a general collection, or doing service in the conservatory during the summer months. The slender growing sorts are always the most serviceable for decorative purposes. Cocos Weddelliana (Leopoldinia pulchra) is an accepted favourite, so are Areca lutescens and Geonoma gracilis. Among taller growing kinds Cocos plumosa and C. Romanzoffiana are beautiful plants, so are Chamædorea glaucifolia and C. graminifolia, especially the first named. These are useful in all stages of their growth, and especially adapted for growing in small pots, in which, with occasional sprinkling on the surface of the soil of some Standen's manure they may be kept in good health for several years. This manure is about the best that can be used for Palms in general, imparting to them that deep green colour which is a sure indication of healthy growth. A good compost for Palms may be made of about equal proportions of good fibrous peat and turfy loam, with the addition of a little bone-dust or half-inch bones, and sufficient sand to keep the soil open. Small plants obtained from the nursery should be examined and repotted if necessary, and they will soon render good service in many ways. Early sown seeds of Gloxinia will now be giving plants fit to handle for pricking off, either into pans or small pots; the seedlings should on no account be allowed to become drawn before this operation is performed. Where Achimenes are grown, now would be a good time to start them. It is better to shake them out carefully, and replace them in fresh soil before growth commences, thereby preserving the young shoots from injury. They are best started into growth in shallow pans, transferring them to pots afterwards. Where opportunity occurs to grow them in hanging baskets, the same should be got in readiness for them before the young shoots commence to grow freely. Alocasias are oftentimes inclined at this season of the year to throw up flower-spikes; when these have got long enough to handle they should be pulled out, which is better than cutting them off, as by the latter process the part remaining is apt to decay and give trouble. After flowering they will soon commence to throw up young leaves, which should be carefully regulated in order to prevent overcrowding. If any require potting, this should be done at once, keeping the bulbs and soil well elevated above the pot, which should be crocked more than half way up. They thrive well in good turfy peat, with a liberal mixture of sphagnum moss and bits of charcoal. It will be well, now that the sun's rays have more power, to arrange the plants in the stove, so that those which require the most shade can be accommodated without detriment to those which succeed best in the full sunlight at this season.

Greenhouse.—Seed should now be sown for an early batch of Primula sinensis for autumn blooming, also of Gomphrena purpurea, which will render good service during the summer for the conservatory. Cuttings of Salvias and Libonias ought now to be struck, in order to get good plants by the autumn. Libonias do not always succeed well in the neighbourhood of London, but in the purer air of the country they are most ornamental for decorative purposes. Cuttings already rooted of Bouvardias and tree Carnations should be potted on without delay to obtain good plants. The flowering kinds of Acacias will now be making a good display; they soon become a prey to white-scale. Where this pest is troublesome the plants should be taken in hand directly they are out of flower, using an insecticide, as previously recommended. Watch closely the watering of specimen plants, especially those now rapidly advancing to the blooming stage, such as Aphelexis, Darwinias, and the hard-wooded Ericas. If allowed to suffer for want of water now, the flowers will be but imperfectly developed, thereby causing disappointment. When cold easterly winds prevail, see that the plants in this structure are not exposed to its ill effects, but ventilate very cautiously at such times.

Conservatory.—Where climbers are grown—and no such structure should be without them—they should be looked over at once, thinning them out where necessary, and regulating the growth of others before they commence to grow vigorously. Where insects prevail in these, extreme measures will often have to be resorted to, which will entail far less trouble in the end, and be the means of getting rid of a constant source of annoyance to the cultivator. *Jas. Hudson, Gunnersbury House Gardens, Acton.*

## HARDY FRUIT GARDEN.

By this time the pruning will be completed, and any forking in of manure unfinished should be attended to at once; all borders should be left in a tidy state, and all trimming, staking, mulching of freshly planted trees, and labelling done. Where Gooseberry bushes were much infested with caterpillars during last season, it will be well to remove 2 or 3 inches of the surface soil, if so much can be removed without injury to the roots, and replace with fresh, which can be made a means of affording great additional vigour to the bushes, if a rich compost be used, besides removing quantities of the pupa of the sawfly lying in the soil. A good use can be made of the removed soil by applying it as a covering to a fire of garden rubbish, thus insuring the destruction of the chrysalises. Fruit trees generally are well set with fruit buds, which the continued cold weather tends to keep back; we may, therefore, look hopefully forward if we have but a late and steady spring. Where insecticides have been used to destroy scale on Plums and Cherries, or for American blight on Apples, it will be well to look the trees carefully over before growth commences, and where any doubt may exist as to the thoroughness of the clearance retouch with mineral oil at once.

Grafting of Pears and Apples may now be proceeded with. Rind grafting is the best of the various modes of performing the operation on large limbs or boles, and where smaller stocks have to be operated upon the whip form may be depended on as being as good as, if not better than, any other style. Young stocks for orchard Apple trees are not usually worked in private gardens, but if such are required to be done it will be advantageous if Crab stocks have been provided, as this is a stock of which the extent of vigour is known, whereas seedling Apples may be either gross growers or too weak for standard trees. For garden purposes dwarfing stocks are best for Apples and Pears, although in the case of the latter there are some exceptions, such shy growers as Léon le Clerc thriving but indifferently on the Quince. A tree here, many years planted, of this variety worked on the Quince cannot be induced to grow freely by any treatment, and continues quite a pigmy. As the grafting, tying, and claying of dwarfs are completed, draw soil over the union to keep the clay moist; and for others moss carefully, tying it securely, as birds are apt to carry it off for nest-making if at all loose. If large Apple trees of inferior varieties have been headed back it will afford an opportunity for the quicker establishment of a supply of good sorts that have but recently come under notice, than the planting of young trees of the kinds required. Of those quickly forcing themselves to the front by their good qualities and equally fine appearance may be mentioned Ecklinville Seedling amongst culinary sorts, and Worcester Pearmain of those suited for dessert. If grafting wax is preferred to the clay and cowdung recommended to be got in readiness in a previous Calendar, a good mixture can be made by simmering over a slow fire equal parts of resin, tallow, and beeswax. It has the advantage of not cracking, and certainly is not injurious to the bark of tender scions, which cannot be said of all grafting wax. Where there are any blanks in wall or espalier Apple or Pear trees they can be effectually filled by inserting rind grafts where branches are required, and for this purpose the above recommended grafting wax will be found more useful than clay, as being more easily applied to such positions. Seedlings should be grafted upon dwarfing stocks, or preferably upon the limbs of bearing trees, in order to test their worth as soon as possible. If any seeds of fruit trees that have been sown and covered with glass to ward off the attacks of mice are starting, they will now require attention and the glass to be removed or tilted. *R. Crossling, St. Fagans, Cardiff.*

## FRUIT HOUSES.

Vines.—During the present mild weather Vines will make good progress, and where early Grapes are thinned and swelling a few degrees of higher temperature, 68° at nights, rising the temperature early in the day to 80°, will benefit them. Give air at 75°, and increase it as the temperature rises. Close early and allow the temperature to rise to 90° with bright sunshine, falling to 75° at 6 o'clock P.M. Examine the borders, and if dry water well with weak manure or guano-water at 85°. As succession houses come into bloom keep the atmosphere drier until the flowers are set, and then treat them as advised in previous Calendars. Late varieties and also Muscat of Alexandria, started about the middle of February, will now be breaking freely, and the temperature can be steadily increased from 60° to 70° at night, with a rise of 10° by day. Keep the rods well syringed twice daily until the bunches show, then discontinue the syringing overhead; but continue to well damp paths, walls, and borders several times daily, closing the houses early to make the most use of the solar heat. Any late keeping varieties not started before March 1 (and they should be all started by that time) will now be moving and can be kept at 60° at night, with a rise of 10° by day. Late houses of Black Hamburgh, for use from October to January, had better now have the ventilators and doors open day and night to keep them cool; they will then keep strong by the end of April, and if any late frosts occur then they will want a little fire-heat to keep them safe after they have broke and are on the move. Grapes hanging in the fruit-room will require care to keep them plump and prevent them from damping, open the top ventilators constantly in mild weather, and keep the atmosphere as dry as possible, filling up the bottles with soft water on bright days. Pot Vines swelling their fruit will now require plentiful supplies of tepid manure-water, and if the pots are plunged in decayed dung and leaves the roots will go through the pots and derive great benefit from it. Cut-backs not strong enough to fruit this year, if broken a few inches long, had better be repotted, using good turfy loam, bones and charcoal, shaking off all the old soil from them, and placing them in a strong moist heat to make an early growth. *Joshua Atkins, Lockinge Gardens, Wantage.*

### Pines.

The present is a good time to store loam for the season's supply. As good loam is indispensable, and very often a scarce commodity, I will describe a plan carried out here. The long grass is cut short with a scythe, and then with a plough a furrow is taken out about 10 inches wide and 2 inches deep. The furrows should be about 6 feet from each other; and when the loam is taken out, fill in with rich garden soil; and as this is carted from the garden load back with new-cut loam. In filling the furrows, let the soil be a little higher than the sides; this will allow for sinking, and in a few months' time the roots from the sides will soon run through the new soil, making the whole green again. By this system the ground is not made poor, but the pasturage is renewed by fresh rich soil. This way of procuring good loam entails a little more labour than cutting all from one place; but all proprietors will not allow the deer park or rich meadows to be cut up unless some well-devised compensating system is carried out to make the broken ground good in the shortest time. In choosing the loam only take the best, which should be full of durable fibre, as only this portion is used for potting. Let the loam be cut in dry, frosty weather, and before storing let it be exposed for a few sharp frosty nights, which kills the wireworms. A second batch of Queens, Smooth Cayennes, and Charlotte Rothschilds may now be started to succeed the early lot, which will be showing fruit. If the plants have had good management they will readily show fruit, but it is seldom all do so at one time, but this insures a longer succession. Fruiting plants should have every facility given them for making rapid growths. Syringe them about the axils of the leaves, and close the houses early in the afternoon, when the temperature may rise to 85°. Keep the night temperature still at 70°, owing to the cold nights still prevailing. If much water is standing in the axils of the leaves stop syringing for a day or two, but keep the atmosphere humid by damping paths, walls, &c. If the first batch of plants have not been put into fruiting-pots, this should be completed without delay. Keep the bottom-heat steady at 90°. If the new made-up beds get too hot lift the pots, which will allow the rank heat to escape. Spasmodic bottom-heat is at all times injurious, and only tends to produce flabby roots, which under the slightest adverse circumstances soon die. *D. Wilson, Castle Hill, Devon.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | Mar. 14 | Sale of Lilium auratum Bulbs, from Japan, at Stevens' Rooms.<br>Sale of Established Orchids and Lily Bulbs, at the Auction Mart, by Protheroe & Morris. |
| Tuesday, | Mar. 15 | Floral Exhibition, in the Town Hall, Manchester.<br>Sale of Greenhouse Plants, Roses, &c., at the City Auction Rooms, by Protheroe & Morris. |
| Wednesday, | Mar. 16 | Sale of Imported Orchids, at Stevens' Rooms. |
| Thursday, | Mar. 17 | Sale of Roses, Shrubs, &c., and Established Orchids, at Stevens' Rooms.<br>Meeting of Linnean Society, at 8 P.M. |
| Saturday, | Mar. 19 | Sale of Roses, Fruit Trees, Plants and Bulbs, at Stevens' Rooms. |

The Proper Planting and After-treatment of Large Trees in their new quarters is as important to their ultimate well-doing as their careful preparation and removal. The soil and site should if possible be equal or superior to that from which they came. Planters are often very much fettered in the choice of a site, and that which taste selects may frequently possess the worst soil. Fortunately the latter is generally capable of improvement, and if not, it may be removed bodily to make way for better. It is a good practice to dig out the holes for the roots a year or so before the trees are planted. These may vary from 3 to 12 or more feet in diameter, and from 18 inches to 4 feet deep according to the size of the trees to be planted. The soil should be thrown right out about two spits deep round the hole, leaving about 1 foot or more of good in its bottom. During the summer the earth in and out of the holes should be kept free from weeds, and frequently forked up, and fully exposed to the sun and air. Such treatment will sweeten and mellow it, and thus prepare it for becoming far better food for the roots. But should the soil not be good this part of it should either be carted away or spread out thinly over the surface, and better soil brought to supply its place. It is almost a waste of labour to plant in clay, sand, gravel or other sterile or bare soils. Where such are found on the sites where artistic considerations demand the placing of the trees, it is best to boldly take the bull by the horns and cart it away at once, bringing some good mellow loam back in its place. But it is comparatively seldom that the soil formed is wholly or irredeemably bad. Mixed with a third or a half of other and better soil, or given a dressing of well rotted manure or leaves, with a few months aëration and cultivation it will mostly be brought into a condition fit for growing most kinds of trees.

In all cases such root holes should be made 18 inches or more wider than the ball of the transplanted tree is likely to be. This is of the utmost importance. Not a few of those who are careful to prepare and cultivate root runs for the coming trees make the holes too small. When the balls are inserted the fit is so close as to admit little or no fresh earth between it and the hard unmoved earth that forms a ring of rockbound hardness around it. Now it really matters far less what sort of soil is under than on either side of it, and yet not a few are prodigal of good stuff under the roots and give little or no growing soil to the right or the left of them. There can hardly be a greater mistake in the earth arrangements of newly transplanted trees. These, unless very young indeed, seldom make many more roots in a vertical direction ; the roots have, in fact, under proper culture, such as that already described, run to the outside of the hole. There they will be found in crowds, each with its fibrils ready to strike root at once into new soil. But supposing the ball is dropped into a root hole just large enough to receive it, the roots are checked in their growth against sterile soil within a few months of the time of planting, and the top growth is stunted in consequence ; but by leaving a foot or a yard all round the young roots shoot into the best possible soil at once, and a satisfactory start is made. A good start is more than half the victory in the case of transplanted trees of great age or size. By making the holes early and well preparing their sides, their area is virtually enlarged 6 inches or 1 foot all round by the mellowing influence of time and the atmosphere. Under the combined effects of these the sides of the holes crumble down, and harsh sterile soils are sweetened and enriched.

In the actual planting of large trees three points demand special attention—the position of the top, the height of the bole or stem, and the disposition of the roots. It is a common practice with many planters to turn trees round in transplanting them. For example, the north side of the tree is placed south, the south north, and so on. No practice could be more unphilosophical or dangerous. The excuse made for the turning round of trees in transplanting is that all sides may be made alike, hence the attempt to make the thinnest side as vigorous and strong as the best by exposing it to the sun, the great strengthener and consolidator of vegetable life. The attempt, however, fails. The fact is, the sun is admitted to the wrong side of leaves and stems by the turning of the trees round, and well nigh scorches both instead of strengthening either. Large trees should always be faced in the same direction as that in which they stood before moving, if a speedy and healthy growth is expected.

The bole should never on any pretence be inserted deeper or raised higher than it was before planting. Thousands of trees have failed to grow to any good purpose, or have died outright, through want of attention to this trifling matter ; for probably the most sensitive and tender part of the whole tree is that border-land between root-stock and stem — the natural earth or base-line of the bole. So important is it neither to bury deeper nor unduly expose the root-crown of trees, that in all cases where moss or other rubbish may have overlain this line before transplanting, some damp moss or other litter should be again used after transplantation to cover the base of the stem to the same height. A slight excess of such covering does little harm, whereas a single inch of stem exposed that had been previously covered perhaps for years may cause the death of the tree. Many transplanters of large trees seem to imagine that the stems need no sort of care and less attention. They are looked upon as mere pipes to convey fluids from the roots to the tops, or *vice versâ;* hence they may be turned round, exposed instead of shaded, &c., with entire impunity. There can hardly be a more serious mistake. The whole of the outer portions of the stem is full of life, and as such is almost sensitively alive to every change of position and condition ; hence, in all cases where large deciduous trees have been removed from more sheltered into open spaces, or their tops have been considerably lightened or thinned, the whole of the bole, and even the chief branches, should be wound round with haybands to keep off the direct rays of the sun from the bark. In dry weather the bands should be soaked with the garden engine at least twice a day, to prevent any loss of the vital fluids of the tree by evaporation through the bark. These precautions are the more necessary with isolated trees in exposed localities. No doubt they involve trouble, but such careful attention has saved scores of newly transplanted trees that would have perished without them; and if it is worth while going to the greater expense of transplanting large trees, it is surely worth while to adopt every possible precaution in order to save their lives and re-establish their healthy growth as soon as possible. The roots, as a rule, have been far better cared for than either the tops or the boles. The earth under them should be made firm, and the depth of the ball carefully measured before it is placed, as a tree that has to be taken out again after it is once placed may be said to be half ruined in the planting. The roots should be carefully examined, all wounded or bruised ones being cut off with a sharp knife. The sides should be filled in and made moderately firm as the work proceeds, a few wooden rammers being most useful for this purpose. Where roots protrude round the ball each should be placed in its own place, neither above nor below it. This is important, as each root or series of roots will thus have a run of earth all to itself, instead of being crowded up with others. When finished form a basin all round the roots by heaping up the spare soil 6 inches high on the solid ground outside the diameter of the holes. Then flood the whole of the roots' home with a barrel or two of water, till the earth runs smooth and no fault-hole or hollow place remains. As soon as the water subsides, sprinkle the surface with an inch or so of dry earth, and cover this 4 inches thick with litter, moss, or rough leaf-mould, or cocoa-fibre refuse. This will render the whole frost-proof, and well-nigh drought-proof.

One thing more is necessary—to steady the tops and roots of the tree. It is obvious that if allowed to be swayed by the wind, many fresh formed roots would be snapped off, and the tree might even be blown over. There are three general methods of preventing this—staking the top, staking the ball, and steadying the tree by leverage. The first is only fit for small trees, and is so simple and common as to need no explanation ; the second is useful for trees of moderate size : three stakes are driven in at equal distances, in the solid earth, beyond the holes dug for the roots of the trees, strong beltings are then placed from one to the other, right across different sections of the ball ; these are nailed firmly down to the posts and the ball, and consequently the roots immovably fixed to the spot. Fixing trees by leverage is best for those of large size. The levers may be connected by strong cords, wires, chains, or bars of iron ; they are best placed as a triangle, proceeding from a considerable height—say 10 feet up the stem or bole, and a sure holdfast 10 or 15 feet distant from the tree. The higher the ties are up the bole, and the further the ground end from the tree, the stronger are these sorts of holdfasts ; if firmly fixed in the ground to posts or hooks, and of sufficient length and strength, such supports will hold anything.

In any sort of tying every care should be taken not to abrade the bark, the simplest preservative being a closely wound hay-band under the iron clasp or other contrivance used to ensure the strength and stability of the bole end of leverage or other ties. The advantage of fixing the bole of trees over their roots is obvious. Fix the roots firmly as we may the swaying top must agitate, loosen and snap them more or less. Rigidly hold fast the top in one position, and the roots become from henceforth immovable of necessity. In any case perfect fixity of tenure to the roots until they have grown sufficiently to establish themselves in the new soil sufficiently to resist disturbance from wind and storm, is essential to success in the transplantation of large trees.

—— Odontoglossum odoratum.—The finest specimen of this handsome and fragrant New Grenadan Orchid that has come under our notice was the one belonging to M. Sparke, Esq., Charlewood House, Huyton, Liverpool, which his gardener, Mr. Sherwin, exhibited at Manchester last April, and again at South Kensington on May 11 ; and of which we now give an illustration (fig. 65). The plant bore four branching panicles of its brown-blotched, golden-yellow flowers. At Manchester Mr. Sherwin received a First-class Cultural Certificate for it, and a Cultural Commendation at South Kensington, and it was greatly admired at both places. The species is described in our volume for 1870, p. 104.

—— M. LINDEN'S INTRODUCTIONS.—In the current number of the *Illustration Horticole* M. LINDEN commences the enumeration of all the plants introduced by him or his collectors since 1845. M. LINDEN himself, it will be remembered, travelled for ten years in the forests of South and Central America when travelling was not so common an affair as it is now. The list begins with Palms, alphabetically arranged, and comprises no less than 228 species.

—— THE CHINESE ARBOR-VITÆ.—It appears from the *Monatsschrift* of the Berlin Horticultural Society that this is one of the most serviceable trees in Central Asia. Herr KOOPMAN, writing from Margelan, in Turkestan, reports a specimen whose trunk about 18 inches from the ground measured 4.64 metres, the height of the stem to the lowest branch 1.85 metre; the head of the tree measured 11.5 metres through, and the total height was 12.6 metres (a metre = 3 feet 4 inches about).

—— THE MANGEL-FLY.—Mr. E. A. FITCH, in a recent number of the *Entomologist*, has described the insect whose grub has lately been so injurious to Mangel leaves, into which it mines and eats out the substance. It is a fly called by CURTIS Anthomya betæ, and is not usually so destructive as it proved to be last year.

—— APPLES AND PEARS.—M. CARRIÈRE gives in a recent number of the *Revue Horticole* figures of an Apple which produces on the same tree and even from the same spur fruits, some of which have the true depressed-globose form of the Apple, while others are Pear-shaped. The tree grows near Rouen, and was inspected by M. CARRIÈRE himself. It is stated that it was only in shape that the fruits varied, the taste and perfume being in all cases that of the Apple.

—— WHAT'S IN A NAME?—A good deal apparently, for in a German periodical we find a Petunia called "Inimitable nana, compacta, grandiflora." We are glad to hear that this is inimitable, for it is certainly not worthy of imitation.

—— ORDINARY AND EXTRAORDINARY TITHE RENTS.—At the monthly meeting of the London Farmers' Club, held on Monday, Mr. THOMAS AVELING, of Rochester, read a paper, which fully entered into the history of the tithe question. Mr. AVELING commended to the notice of his hearers the Bill which Mr. CHAMBERLAIN had now before Parliament to remedy some of the injustice inflicted upon the farmer.

FIG. 65.—ODONTOGLOSSUM ODORATUM. (SEE P. 336.)

He urged that the 80th section of the Commutation Act should be made compulsory in all cases. It provided "that the tenant shall be entitled to deduct the amount of rent-charge from the rent payable by him to his landlord," and if this were made compulsory, the landlords, being well represented in Parliament, would then make arrangements for the redemption of the rent-charge upon some just basis. Mr. Aveling stated that the ordinary and extraordinary tithe-charges together amounted in many cases to the value of a second rent, and taking into consideration the enormous foreign importations of Hops, fruit, and market-garden produce, and the unremunerative prices at present ruling for all descriptions of corn, he urged that the extraordinary rent-charge should be at once redeemed, into the details of which proposal he entered at length.

—— Dr. Lucas.—It is proposed to celebrate the fiftieth anniversary of the commencement of Dr. Lucas' gardening career. The friends of the venerable German pomologist are requested to communicate with M. Eugen Ulmer, of Stuttgardt.

—— The Phylloxera Laws.—The existing laws regulating the introduction of plants into various countries are thus summarised in the annual report of the Syndical Chamber of Nurserymen at Ghent for 1880:—

"Introduction of living plants is wholly forbidden in Italy, Spain, Turkey, Roumania, Algeria, Cape of Good Hope.

"Introduction of livingplants is permitted as usual, except in the case of Vines, which are prohibited—Germany.

"Introduction of living plants packed as usual, is permitted, but with a certificate of origin, in Switzerland, and a similar certificate attested by a Consul in Austria-Hungary.

"Introduction under ordinary conditions if provided with a consular certificate, *visted*, is allowed in Portugal and its colonies."

—— The Meteorological Society.—At the ordinary meeting of this Society, to be held at 25, Great George Street, Westminster, on Wednesday, the 16th inst., at 7 P.M., there will be an exhibition of instruments, consisting of various kinds of hygrometers and of such new instruments as have been brought out since January 1, 1880. During the evening the President will give a historical sketch of the different classes of hygrometers, and will also describe such forms as are exhibited.

—— Fungus on Apple Pips.—We gave an account in this journal, January 29, 1881, with a figure, of a curious production on the pips of a Newtown Pippin, in which the apices of the threads were covered with short echinulate processes. Mr. Broome, in specimens communicated to him, found the whole of the threads echinulate, which accords very remarkably with those of a fossil fungus figured in *Ann. Nat. Hist.*, October, 1869, by Messrs. Hancock and Atthey, from Black Shale of the Northumberland coalfield. This appears from the analysis to be allied to the hypogæous genus Endogone, but the point of interest in the present case is that the threads contain spores, both in the globose swellings and through their whole length. The globose bodies are, however, without external processes, though the threads themselves are echinulate. *M. J. B.*

The Firm of Samuel Finney & Co.—We understand that the old established firm of Samuel Finney & Co., seed merchants, Newcastle-on-Tyne, have arranged with Mr. R. G. Forth, of Bristol, to enter as partner into their business. The title of the firm remains the same.

—— Summer Cloud.—Mr. Elliott has sent us a packet of his Summer Cloud, which he is now issuing in the form of a powder, to be dissolved in boiling water at the rate of six ounces of the former to half a pint of water. As a shading mixture "Summer Cloud" needs no praise now; it has proved itself to be a good article.

—— "Nice" Flowers. — Lovers of pleasure would seem to have a nice time of it at Nice, when the carnival madness is on, and fools rush on to perpetrate follies that in this staid and practical country would provoke on the one hand blushes and on the other stern censures. But whilst the follies of men may not be our concern, it is not possible to avoid protesting against the ignoble part that flowers, beautiful flowers, are made to play in these carnivalistic excesses. "After a few turns up and down the promenade, in order that people might have time to admire the lovely bouquets, the fun began in earnest, and before long waxed fast and furious. I got literally pelted with Roses and Violets. Every one became a child for the time." Poor Roses, and poor Violets! to be produced in such abundance in a country where they are made to serve the ignoble uses to which in our days of darkness we used to put rotten eggs and half bricks, although doubtless with less of *malice prepense*. No doubt a blow in the eye from a bunch of Roses is better than one from a rotten egg, and the hard knocks from Violet bouquets may well be endured, especially when thrown by the hand of some "Nice" maiden; and if you are deft of catch, and can return with interest the shower of floral missiles, no doubt the fun soon becomes "fast and furious." But Roses and Violets are fragile as well as beautiful, and but a little of such harsh usage must suffice to make them wrecks. Even after this scrimmage, this fast and furious fun, is over, and the roysterers have become sobered, what a spectacle must the streets present of myriads of once sweet and beautiful flowers trampled under foot, beaten to pieces, or grimy with dust and dirt, now no longer fitly decorating the form of human beauty, but the prey of the street scavenger. To what ignoble uses may the most beautiful products of earth be put! We may be no better than our neighbours, but at least it is something holier and more elevating, both for us and for the flowers, that we prefer to make them instruments of joy and sweetness to our hospital sick and imprisoned invalids.

—— Double Cineraria, Mrs. Thomas Lloyd.—Mr. Greenfield has sent us from the Priory Gardens, Warwick, some very fine blooms of this double Cineraria, which was certificated last year, and which has passed into the hands of Messrs. Veitch for distribution. The largest flower measured 2 inches in diameter, and others measured 1¾ inch—perfect globes of regal purple florets. Evidently the variety improves under generous cultivation.

—— Nerine Fothergilli. — It seems strange that this fine autumn-blooming plant is not more generally cultivated. At Hatfield it is an especial favourite. Nothing can be more simple than the treatment it requires to induce it to bloom as freely as a Vallota. About the middle of May, when the growth is finished, Mr. Norman turns the plants out-of-doors on one of the Vine borders in the full sun; here they remain until the middle of July without any water at all being given. At this time they are taken into a cool house and watered; they then begin to move. After the flowering is over they are treated in common with ordinary greenhouse stock, receiving water regularly, so as to keep the soil in a moderately moist state till the growth is again finished in spring, the resting process being then repeated.

—— Strawberries at Hatfield.—Strawberry forcing on an extensive scale is carried out here. Black Prince is used for the earliest crop. This year it has been all fire work, for up to the end of February we have not had many hours sunshine since the commencement of the year. The first dish was gathered on the last day of February. The crop is a really good one; the fruit as large and plentiful as would be a creditable performance if ripe a month later. Vicomtesse Héricart de Thury is grown to succeed Black Prince, followed by President, Sir J. Paxton, and Sir C. Napier. Five thousand are forced.

—— Effects of the Winter on Green Crops.—Every day has been making more apparent the fearful mischief produced amongst the garden and field green crops by the hard weather of January. Many breadths that shortly after the frost and snow had gone, looked fairly well, have since then utterly collapsed, and are now dead. It is difficult to find over hundreds of acres of winter greens a green leaf, as even autumn-planted Cabbages that were buried in the snow, and looked safe enough, are browned and shrivelled. The best that can be looked for from these is that they will start and give some green sprouts; to expect that they will make Cabbages after the shock endured in the hard weather is to expect that which is most improbable. It seems doubtful whether even a coating of snow so poetically described as "Nature's own protecting covering of her creatures from the wintry blast," has in this case kept even laid white Broccoli from destruction. The iron of the frost has entered into the heart of the plants, and has slain its victims wholesale. Rarely have market fields shown a more deplorable aspect than now. The browned dead stumps are everywhere visible; and because of the frost at one time, the snow at another, and last the heavy rains, little can be done to turn the now useless green crops into the soil, and replace them by others that should now be growing. Where in ordinary seasons early Peas are well through the ground in large breadths, now very few indeed are got in. We have heard of a large breadth sown in October to stand the winter that were even several inches high under the snow; what the plants are like now it is easy enough to guess. In the face of such severities as they have had to endure no one can hope that they can be better or earlier than plants from seed sown now will produce. Not only are early sowings late, but by reason of the great hindrance to the preparation of the ground, all late sowings and croppings must be later also. After some three or four disastrous seasons market growers looked with hope and revived assurance to the season now coming. Its opening, however, has been very inauspicious, and a speedy change is needful to realise the promised good.

—— Rhododendrons.—Those noble Himalayan species, Falconeri and argenteum, are flowering beautifully at the present time in Messrs. Downie & Laird's Winter Garden, at Edinburgh. R. Falconeri has ten immense trusses, while the magnificent plant of R. argenteum has over fifty trusses of blossoms—a sight the like of which is seldom seen in Scotland, so difficult is it to get it to set its buds, which the heat of last summer and autumn seems to have enabled it to do effectually. R. Dalhousianum, which is not so early as either of the above, is also coming on. R. Duchess of Edinburgh has been very fine. This is almost a continuous bloomer, having been scarcely a day without flowers since last autumn.

—— The Syon Cedar.—It will doubtless interest all who noted our remarks as to the setting up of the wind-tossed Cedar of Lebanon at Syon, to learn that the work of fixing the stout cast-iron supports has been successfully accomplished. These supports are hollow, and about 8 inches in diameter; they are fixed to support three of the largest branches on the west side, their bases resting upon beds of concrete. In fixing, the hollowed or crutch-like caps were wedged with some soft wood that will in time decay, and thus allow the big branch stems to expand without injury. So well were the supports fixed that when the stays which had previously held the massive head in its place were removed, the branches at 20 feet from the stem did not deflect more than 1 inch, a drop which had been fully provided for.

—— Hardy Clematises. — The really hardy nature of the Clematis would seem to have been tested to the utmost during the winter, and they have come out of it bravely. It is thus something to know what things really are hardy and what are not. This remark applies specially to the spring-blooming kinds, the which, because of their early growth, have their wood well seasoned and hardened before the winter approaches. The autumn-blooming kinds may, in shady positions, be unable always to ripen their wood, but that is of less moment, seeing that it must be all cut away in the course of pruning. The adaptability of the Clematis for galvanised wire-work has also been shown. A plant of Miss Bateman, trained over some in a very exposed situation, has done well, and is now studded all over with buds that are making good growth.

—— A Two-seeded Acorn.—The ovary of any Oak is three-celled, with two ovules in each cell; but in the mature seed-vessel (acorn) we find, almost invariably, only one seed developed. The other five ovules are obliterated, and the walls of the cells pushed up to one side—a fact easily verified by an examination of the shell of the acorn. The ovary of the Hazel-nut is two-celled, with one ovule in each cell, and usually only one of these ovules developes into a seed, though it is by no means a rare circumstance to find two kernels, or seeds, in one nut. A two-seeded acorn may be almost equally common, but for obvious reasons we are not so familiar with

the inside of acorns as the inside of nuts. An instance, however, is recorded in the *American Naturalist* of a two-seeded acorn of Quercus Prinus, var. monticola, which was discovered through the seeds beginning to germinate in a drawer.

—— Botany of a City Square.—In a recent number of the *American Naturalist* we find an enumeration of the plants observed last year growing in Manhattan Square, New York. This square comprises a desolate and broken area of 18 acres on the west side of Central Park, at Seventy-seventh Street and Eighth Avenue. For sanitary and other reasons a pond and some excavations in the native rock were filled up, and one of the results was to introduce an array of luxuriant weeds that covered the entire surface last season. Mr. Gratacap was curious to ascertain the composition of the vagabond vegetation therein collected, and collected about 120 species, a large proportion being common European weeds, some of them attaining surprising dimensions.

—— A Phenological Chart.—Professor H. Hoffmann, who has long been known as a student of phenological phenomena, has a very elaborate table, illustrated by a coloured map, in Petermann's *Geographische Mittheilungen* for January. It deals with the April flowers of Giessen; and the map shows how many days before or after the various species come into blossom in numerous stations in Central Europe, deduced from the observations of many years. It is not pretended that it is, as a whole, anything more than an approximate comparative view of the condition of vegetation in April at the different stations.

—— Epping Forest Naturalists' Field Club. — The President's address shows that this new Society has made a good start, though the complaint is made that the working members are mostly outsiders. We notice, too, that the Club joins with others in protesting against the proposed railway from Chingford to High Beech. To our thinking there is some misapprehension in this matter. No one, we imagine, would wish to sacrifice a single yard of the forest so dearly bought, and every one would restrain the company from occupying a foot more than is absolutely necessary; but with that reservation surely the principle to act on in the case of a public forest is to secure, the greatest benefit for the greatest number consistently with the due preservation of the forest. But it will be said that weight in this case is of more moment than number, quality than quantity; in other words, that the interests of naturalists, archæologists, artists, should be preferred to that of noisy school children or rollicking pleasure-seekers. From our perambulations along the proposed course already recorded in these columns, we do not share in the apprehensions so plausibly set forth. Under due regulations there is room enough for all, without one class encroaching, more than is in any case inevitable, on any other. A railway that would offer a substitute for the "excursion vans," traversing as they must many a mile, would be a boon to the naturalist, as it would ensure quietude along the roads. The excursionists would in all probability not stray far from the attractions of the local inns and pleasure-gardens, and if they did so the first to welcome and instruct them should be the naturalists and the artists. It is their business not only to study, but to disseminate the truth, and to encourage any yearnings after the true and the beautiful. The Epping Forest Club might do worse work than organise popular lectures and excursions, expressly for the purpose of pointing out to less learned visitors the many attractions and points of interest of the Forest. Better do this by far than selfishly endeavour to exclude those who, most of any class, need the enjoyment and lack the culture which the study of Nature alone can give.

—— Distinguishing Deciduous Trees by their Young Leafless Branches. — Practical nurserymen are able to distinguish species, and even varieties of deciduous trees and shrubs, by differences in the bark often only appreciable after long observation. In many instances, however, the differences are great and easily described, and it would be very useful to include such characteristics in works on dendrology. In the *American Naturalist* for January, Professor Beal illustrates and describes what we may term the winter distinguishing characteristics of various species of Populus and Juglans.

—— The Newcastle-on-Tyne Horticultural Society.—This Society was established in 1824, and with the exception of the old Florists' Society at York is the oldest provincial Society we have. Hitherto the Society has held an exhibition of spring flowers in April, a summer show in July, and an autumn exhibition for Dahlias and other autumnal flowers, but many will regret to learn that there will be no autumn exhibition this year, owing to the great expense it entails, so that the North will be without a great display of Dahlias, &c., such as has been gathered together at Newcastle-on-Tyne. At the spring exhibition, April 6 and 7, £179 10s. is offered, including £25 for Auriculas and Polyanthuses, and £34 for Hyacinths and other bulbs. Not only are all classes of early-flowering stove and greenhouse plants provided for, but Hepaticas, Scillas, hardy Primulas, double and single Wallflowers, Stocks, &c., are encouraged. The sum of £353 is set aside for the summer exhibition in July next, and of this £190 is offered for plants, nearly £52 for fruit, £43 for cut Roses, and £43 for dinner-table decorations, epergnes, and bouquets, this class always forming an extensive and beautiful feature of the Newcastle exhibitions. We trust that the abandonment of the autumn exhibition is but temporary, for it will be a great loss to the florists of the North to be deprived of their autumnal treat. It is, however, a very hard task upon any committee to get together the necessary funds for carrying out three great exhibitions a year, and it is to be feared that the exhibitors themselves are not giving to the Society the spirited pecuniary help that is wanted. It must be a source of great regret to the committee to discontinue the autumn show, but they have their hands still very full, and deserve thanks for doing what they have and still wish to do.

—— Melbourne Exhibition.—We hear that the 1st prize for galvanised wire netting, at the Melbourne Exhibition, has been awarded to Messrs. J. B. Brown & Co., London. This is the eighth International 1st prize award won by this firm for their wire netting.

—— Scottish Pansy Society.—The thirty-seventh annual competition of this Society is announced to be held at 117, George Street, Edinburgh, on June 17.

—— The Weather.—General remarks on the weather during the week ending March 7, issued by the Meteorological Office, London :—The weather has been very dull and squally everywhere, with exceedingly heavy snow at all the more northerly stations, and much rain in the south and south-west. Lightning was seen at Nottingham on the 4th, and thunder occurred at Kelstern on the 7th. Temperature was about equal to the mean in "England, S." and "Ireland, S.," but below it in all other districts, the deficit being as much as 6° to 8° in Scotland and the north-east of England. The thermometer was lowest on the 1st and 2d, when it fell to 12° at Glenalmond, 16° at Churchstoke, and 17° at Shields; and in all districts the minima were below 25°. At the close of the period readings were much higher, a maximum of 62° being recorded at Nottingham, and of 58° or 59° in several other parts of England. The rainfall was more than the mean in all districts, the excess in nearly all places being very great. Bright sunshine was very little prevalent, the percentages varying from 8° in "Scotland, W." and 15° in "Scotland, N.," to 31° in "England, E." Depressions observed.—No. 1 was shown off the north-east coast of Scotland on the 1st; it was very shallow, and caused light westerly breezes in nearly all districts. No. 2 was much deeper, and advanced very slowly from the south-westward, accompanied by several small subsidiary disturbances. At the close of the period it had reached our north-east coasts, and become much less serious. It brought strong or heavy south-easterly gales to nearly all stations, and much rain, sleet, or snow. By the 7th, however, the wind was light on all except the southern coasts.

—— Garden Appointments.—Mr. Ben. Ashton, late Foreman with Mr. Milne, at Vale Royal, Cheshire, has been appointed Gardener and Manager to Lady Milton, Kirkham Abbey, York. — Mr. T. Glover, late Foreman at Ewell Castle, has been appointed Gardener to Sir Henry de Bathe, Woodend, Chichester.

# Home Correspondence.

**The Conifers at Dropmore.**—I have recently taken the dimensions of the three following trees, and being often asked for them by those who visit the grounds, I send them to you to be put on record :—Araucaria imbricata, height, 61 feet; diameter of branches, 33 feet, resting on the ground; girth of trunk, 3 feet up, 7 feet 3 inches. Cedrus Deodara, height, 64 feet; diameter of branches, 43 feet; girth of trunk, 8 feet 2 inches. Cryptomeria Lobbii, height 46 feet; diameter of branches, 15 feet 6 inches; girth, 3 feet 4 inches. A Deodars' trunk at 2 feet 6 inches rom the ground girths 10 feet 6½ inches, which is the largest here, but there are some still taller than the one given. There are no Conifers doing better than the Cedrus Deodara are here, growing more freely than the Cedar of Lebanon, and much more graceful in habit. Plant them high and dry, but not in low damp situations. *Philip Frost, Dropmore, March* 4.

**Slugs.**—If any of your readers cling fondly to the traditional belief that severe cold diminishes the supply of these garden pests, the experience of the past inclement season ought effectually to set the question at rest. A few days ago we had the third edition of winter, with 9° and 10° of frost, and a heavy fall of snow. Yesterday the last vestige of snow disappeared from my garden; and this morning, allured by a mild south-west wind, the slugs came up in great force from unknown depths below to feast upon some brewers' grains which the gardener had kindly provided for them. He captured about 1800 plump, well-conditioned specimens in the flower borders. I find no trap so effectual as grains, and the slugs must scent them from a considerable distance, for as many as fifty to seventy are sometimes found congregated under one bit of slate. How do these creatures subsist in the winter? They have no paws to suck, as bears are supposed to do, but I can certify by personal inspection that they re-appear in excellent condition, as well as with keen appetites. *G. H. W., St. Mary Church, Devon, March* 5.

**The Proposed Boiler Trial.**—In reply to Mr. D. T. Fish (p. 278) on my letters I wish to say that the standard of 50 feet of pipe to every foot of boiler surface directly acted on by fire is not my own, but I used it as I found it; some say 40 feet for all surface, including flues, which is decidedly wrong, as according to this theory the more flue-surface the greater the heating power of boiler. By flue-surface the fire-way in and over boiler is meant, excepting the actual fire-box. The quantity of water in a boiler would be no test, as I showed at p. 22 in reply to Mr. G. Deal's questions, and the mere length of pipe heated without a restriction on size of boiler would be manifestly improper even if the fuel to be burnt is limited. With reference to "G. T.'s" remarks I do not expect nor wish that boiler contests should be annual, like flower shows; but I do think there should be something of the kind every five years at most. I quite agree that "Experience gained by actual practice is the only reliable guide in the matter;" but if a gentleman pays £20 to £50 for a boiler, and finds after a year's experience that it is comparatively worthless, how is he to find out a better one? I would add to my former note on estimated power of boilers that on comparing lists of two rival makers of a certain well-known form that one gives 1600 feet for same size of boiler that the other says is to heat 800 feet only, 2150 feet for 1200 feet, and so on. These differences will explain half the failures attributed to boilers from time to time, as they are not confined to one form or maker; and also account for successes claimed by other boilers made by one firm only, in which case the patentee is careful to give a lower calculated power for his boiler than it will actually heat, because by so doing he gains renown as one of the few successful heating engineers. *Ben.*

**Potato Manures.**—There can be no question, I think, but that the use of rank animal manures is bad for Potatos; but from my own experience of them, and from what I have seen in cottage gardens, I know that most kinds require good feeding, as I always find that those who give the most liberal dressings invariably have the best crops, the only exceptions being when the summer happens to be cold and wet, and then those on poorer land escape disease better, and therefore have the advantage in being more sound. What Potatos like is plenty of vegetable matter in a decomposed state, and the finest yield I have ever seen has been from pastures, or out of soil from old banks fresh broken up, and from ground heavily dressed with manure from pigstyes which had been littered down principally with leaves to be trodden into muck. This when cleaned out was heaped up and turned till it became thoroughly rotten, in which state I am convinced that nothing better or more suitable as a stimulant for Potatos can be had, especially for soils that are light; but for those of a more stiff, holding

character, I should prefer horse manure, unless I could get leaf-mould in quantity, and even then a mixture of the two would be best. I see by "A. D.'s" remarks on Snowdrops that he is averse to soot, but if he will try it as a manurial agent for Potatos I think he will find it equal to any of the artificial mixtures he appears to be in favour of, and that he will be able to grow better and cleaner tubers with it at a far less cost. I know a man who has used nothing else on a piece of garden ground during the past fifteen years, and each season he has splendid Myatt's from the same plot that are always as clear as a bell in the skin. The way he applies the soot is to sow it in the drills over the sets, and then cover in, and as it keeps off wireworm and other grubs no gaps occur in the rows. I have tried guano and several other fertilisers, but their cost is so great that one gives something like 30*s*. for the return of £1, and unlike animal manures which last in the land a long time, the effect of the artificials is soon lost and their stimulating properties gone. *J. S.*

**Seedlings of Lilium Szovitzianum.**—Ours is a time of surprises, startling theories, new departures, evolution and all that, but I must confess, from the physiological standpoint, I was never more surprised than on reading Mr. Dod's statement in a recent number of the *Gardeners' Chronicle* to the effect, if I understand him rightly, that the seeds of the above-named Lily had entirely departed from the usual course of Nature, eschewed the ordinary process of germination and plant development, and, by a mysterious evolution, were improvised into *bonâ fide* scaly bulbs. Mr. Dod may probably be right, but if he is, and that true seeds can thus evolve themselves into bulbs, no one will be more surprised at this new departure of Dame Nature's than *Dublinensis*. [The bulb begins to be formed in the seedling plant. EDS.]

**Hyacinthus candicans.**—Your excellent wood. cut gives a good idea of the effect of a group of Hyacinthus candicans, which is a striking plant, and one that is sure to be largely grown in borders now that it is known to be hardy. I had two in pots last summer, which were quite a feature in the greenhouse with their towering spikes of white bell-shaped flowers, peering out above the heads of all others. It appears to me just the plant for the foreground of Rhododendron beds or other shrubs to associate with Lilies, Gladiolus, and other tall subjects of a kindred character, for the company of which its stately habit quite fits it. *J. S.*

—— In reply to your correspondent, "B." (p. 308), I beg to say that I planted bulbs of this plant last November, 3 inches deep, in an open border. They have withstood the late intense frost without the least injury, which further proves the plant to be hardy, for it is a well-known fact that the frost penetrated to a much greater depth. As regards "B.'s" statement of bulbs potted and stood in an unheated house being quite destroyed, I consider them to have been placed under very different circumstances, as a great many things classed as hardy, had they been potted and exposed to the full influence of light in an unheated house, would also have been found to be totally destroyed. *G. Hall, Tabley Gardens, Knutsford.*

**Seedling Verbenas.**—If a packet of seed, which has been saved from good varieties, is now sown in a pan and placed in a warm frame the seed will soon germinate, and in a month or five weeks from the time of sowing the young plants will be large enough for potting singly in small 60's or pricking-out in pans or boxes, when they should be again put in heat and kept close and shaded from the sun for a few days until the roots have taken hold of the soil. They should then be gradually hardened off and subsequently planted out as a mixed bed or border. It not unfrequently happens that such plants produce not only a very pleasing effect but also flowers fine in form and distinct in colour, which should be labelled and propagated at the proper time. In this way any amateur may raise his own stock of Verbenas and therefrom select habit of plants and form and colour of flowers for himself; and the fact that he has not any fixed idea as to what the result of sowing his packet of seed may be, renders the procedure all the more interesting to the mind. *H. W. W.*

**Economy in Fuel.**—There are one or two points of a practical nature in Mr. Makenzie's paper, at p. 233, which I should like to make a few remarks upon. After describing minutely the important points in connection with the draught in the chimney, he says:—"Some people make a mistake in thinking that the heat going up the chimney is lost and useless. This is not the case. We cannot want heat in the chimney. We might as well want the chimney itself, and great heat in the chimney is frequently the sign, not of waste, but of economical firing and perfect combustion." He further goes on to say:—"I have seen a saving of 50 per cent. easily accomplished by a powerful draught being established." If the writer had given us any instructions how to attain this end these lines would never have been penned. But he gives none, and we are therefore left to conclude that he advocates a "roaring fire" as the most economical. Now, after some twenty years' experience of stoking, I cannot agree with your correspondent on this point. No one will deny that a powerful draught is essential, but the question of waste or economy all depends on how it is used. It is true we cannot do without a certain amount of heat up our chimneys, but it should be reduced to a minimum by a judicious use of the damper. A powerful draught should only be used in getting up a bright fire, and in getting up heat—not in sustaining it. This I have proved to my own satisfaction. The damper, which Mr. Makenzie scarcely mentions, I consider one of the most important fittings of a boiler, and perhaps Mr. Makenzie may think I have got damper on the brain when I state that I use a damper in the chimney of the little room in which I now write. The accompanying figure (fig. 66) represents a section of my little fire-grate and chimney. The "register"—or whatever it is called—when a fire is burning usually lies back in the position shown at *a*, giving full play for a "powerful draught." When there is no fire it is pulled forward, stopping the draught altogether, and preventing the soot, &c., from blowing down into the room. I found difficulty in keeping this room comfortable in severe weather, and took to the use of the damper by placing the register in the position shown at *b*, and found that I could raise the temperature of the room from 8° to 10° warmer than with it in the ordinary way. I have made two trials since reading Mr. Makenzie's paper, with the following results:—First, the fire had been burning in the ordinary way four-and-a-half hours: placed register

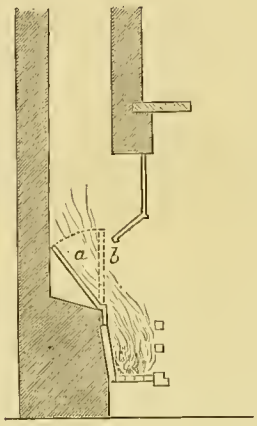


FIG. 66.—SECTION OF FIREPLACE, SHOWING REGULATION OF DRAUGHT.

in position *b*, and in 30 minutes the temperature had risen 5°. Second (made this evening), fire had been burning five hours. The temperature rose 9° in an hour after adjusting the plate as at *b*. Now any one can satisfy themselves as to the truth of this, and if the checking of the draught so affects the heating of a room, I contend that it must have a still greater effect on the heating of a boiler. I ask Mr. Makenzie to explain how it is I have gained this increase of temperature by modifying the very thing he contends is most essential to economise heating? And if he would leave all superfluous scientific matter out of the question he will be better understood by the majority of those interested. Again, we are told that "The admission of a small quantity of air at the furnace front, supplying the necessary oxygen to the gases rising off the banked-up fuel," &c. I understand from another paragraph that it is necessary for the oxygen to pass through the fire—which is right—and I cannot see any economy in having a current of cool oxygen—beg pardon, I mean air—passing over the top of the fire when banked up. I should say this would have a cooling effect on the boiler, and is an evil to be avoided. My practice is to shut the furnace door close, admit what air is necessary at the ash-pit door (they generally admit enough when closed), and regulate the damper to suit circumstances. *R. Inglis, Sussex.*

**Wallflowers in Pots.**—These are not grown so extensively for conservatory and house embellishment as they deserve to be. Common and old-fashioned as the Wallflowers undoubtedly are, their perfume is deliciously agreeable notwithstanding. More especially is this the case in the depth of winter, when the pleasant and searching odour from a few plants pervades the entire atmosphere of the house in which they are growing; the presence of which, moreover, seems to indicate and hasten, as it were, the approach of summer. To obtain plants for this purpose it will be only necessary to sow the seed in the ordinary way, and at the usual time (the middle or end of April), as in the case of raising plants for the spring garden. The seedlings, as soon as large enough to handle, should be pricked out 6 inches apart in 2 inches of fine sandy loam, under which, on a hard bottom, an inch of well-rotted dung should be placed. This will confine the roots to the prepared soil, and thereby cause the plants to make a shrubby growth. About the end of September the necessary number of the best and dwarfest plants should be carefully lifted with the soil adhering to their roots, and potted singly in 6-inch pots. *H. W. Ward.*

**The Camellias at Woolverstone.**—For the past two months these noble plants have been, and still are, a charming sight. As many as 600 flowers have been open at one time, giving Mr. Sheppard a grand return for his skill in managing them. They are from 12 to 15 feet in height, and it is pleasing to see how these beautiful plants thrive and flower in a cool conservatory with a winter temperature of from 40° to 45°. *D. M. C.*

**Galanthus Elwesii.**—I have bloomed some hundreds of this fine Snowdrop, received last autumn from Smyrna, and I have, since seeing the note on it, examined all the blooms, but cannot find one in which the white band is wanting; so I imagine the entirely green corolla is a very unusual irregularity. *D., Deal.*

**The Ready Method of Transplanting.**—With many thanks to the Editors for their description of the tree-lifter, which I first introduced to the notice of the public at p. 151, I hope they will allow me further to state that the fork A, illustrated on p. 308, should have been shown with the tines longer and more curved than they are represented in the engraving. I will merely state that these tines are from 24 to 26 inches in length; also, that in swaying the fork from side to side part of the handle penetrates the soil, so that with a powerful fork a tree with a ball 7 feet in diameter, and requiring three horses to draw it away, can be lifted. I will add that these forks are made of two sizes—*i.e.*, 40 lb. and 60 lb. I have given up the invention to Mr. Wedlake, of Hornchurch, who will be able to give any information about it that may be required. *Philodendron.*

**Mushrooms.**—I have found the most satisfactory results here this winter from beds where a temperature of 60° to 65° has been constantly kept up. From beds kept up to that heat we have been gathering since the beginning of December; the same beds continue to produce plenty of useful Mushrooms. I believe from observations that more failures arise through a low and damp temperature than from any other cause that I am acquainted with. By procuring good spawn and the manure for making the beds not too much decayed, the house or pits kept up to the above-named temperature, a supply of useful Mushrooms will be the result. *J. Jefferson, Worksop.*

**Spanish Chestnuts from Seed.**—Reading the article in the *Gardeners' Chronicle* of the 12th on Blair Drummond, I observe the measurement of a Spanish Chestnut raised from seed ripened in 1826. I measured some we have growing here raised from seeds ripened the same year, the largest of which are 6 feet 10 inches and 5 feet 10 inches respectively, which is rather less than the one at Blair Drummond, but ours have not been favourably situated, being surrounded by large old trees. I believe the Spanish Chestnut has never ripened seeds here since 1826. *Peter Whitton, Methven Castle, Perth.*

**Plant Labels.**—I hope the very liberal prize offered by Mr. Wilson for a good plant label will stimulate the inventive faculties of gardeners and others, and that we shall at length secure something on which to register the names of plants prominently and distinctly, and thus be saved from the annoyance of obliterated names that has too often followed from the use of the old easily made and quickly perishing label of wood. As our plant collections increase—and they are increasing rapidly—we feel the want of a fresh label more and more, and I trust that Mr. Wilson's example will be followed by others, and a second and third prize will be offered for meritorious inventions in plant labels. I have tried many kinds, and have suffered the disappointment that has doubtless attended the efforts of the donor of the prize in his search for a permanent and readily made label. Wood, paint, and pencil must be abjured for all but temporary purposes. Zinc and indelible ink, which seemed to offer some advantages, have disappointed me. Terra-cotta has crumbled under the powers of frost and wet; even iron corrodes, and good as it is for some purposes cannot readily be made use of. We want the medium that offers the facilities given by wood, paint, and pencil, and yet gives the durability of a record inscribed on iron—something that can be quickly fashioned and

inscribed, and when done will remain impervious to the action of weather—that will bear rough treatment—that a foot cannot crush, nor the wind nor frost remove, and with all this is not obtrusively large—no more conspicuous than the plant it names. Then we want distinctive labels for the various cultivated plants, small and neat for pot plants, strong for shrubs and herbaceous plants, plain and easily read, and readily affixed for fruit trees; and one prize will scarcely include all these. Surely the authorities of botanic gardens might co-operate with Mr. G. F. Wilson in his laudable endeavour to secure a good plant label. *W. Ingram, Belvoir.*

Proliferous Kales.—Nothing can exceed the beauty of a group of variegated Kales for winter and spring bedding. The delicate colouring can only be appreciated after sharp frosts and a severe winter such as we have had. When dwarf Coniferæ and evergreens, if at all alive, present the very reverse of bright colours, a dingy brown being the most conspicuous of their hues, the variegated Kales can withstand the severest frost, and look all the brighter for it; while for variety, nothing can at all approach them. We have pure white, pink, green-laced white, and purple-laced and fringed pink, white and green; in fact, all conceivable shades and combinations can be observed in a well-arranged bed, and they are very easily grown. The seed simply requires to be sown in April or May in rather poor soil, and pricked out a good distance apart to encourage dwarf growth; the plants are bedded after the stuff is all cut down, taking care only to keep all the heads of equal height, and a tasteful man can arrange the blending of the colours, so as to make the beds look even brighter in winter and spring than in summer; for no severe rains or frosts can injure them, but only serve to heighten the beauty of their colouring. This is what can be done with the common or dwarf curled variegated Kales; but I wish to direct the attention of your readers to a variety of it which is not only curled but produces a crop of secondary leaflets on the leaves, rendering the effect still more beautiful, filling up the centre or midrib of each leaf, the whole resembling a large gracefully drooping ostrich feather—I mean Frisby's Crested Kale. Is not this the same Kale as was sent out by Messrs. Stuart & Mein, of Kelso, and exhibited before the Royal Horticultural Society at South Kensington, five years ago, under the name of Mein's Proliferous Green Curled Borecole? The latter was described at the time by Mr. J. Douglas thus: "At first sight, or seen from a distance, this looks like a good stock of Kale or 'Curly Greens,' as the vegetable is designated by the country folks in Scotland. On a nearer inspection, the whole upper leaves are thickly studded with beautifully curled secondary growths or leaflets; they grow so thickly on the ribs of the leaves as to quite conceal them when the plant is growing. I had one of the 'Greens' cooked, and it proved to be of excellent quality. As far as I am aware, this is a distinct vegetable, and as it was shown at South Kensington well worthy of culture." *Amateur.*

Broccoli and the Effects of the Weather on Vegetation.—It is sad to see the condition of these after the frost, and to think of the loss the country has sustained in having so much vegetable food spoiled, and that of such a wholesome character as Broccoli, which, where not laid over or otherwise protected, are a mass of rottenness, polluting the air around in a manner most offensive to the olfactory nerves. Where laid-in, however, it is cheering to find they have in a measure escaped, which shows the great advantage of the system, as it brings them to the ground line, and there the snow by covering prevents the frost acting on them in the way it does when their heads are exposed to the blasts, which knock down the outer leaves and expend their fury on the hearts, thus causing their destruction. The piercing wind of January 18 and 19 probably did more harm than the severe weather before or after, for when the air is still vegetation will stand a great amount of cold, but nothing, not even common Laurel or other shrubs of equal hardiness, have been able to bear up against those days of trial, as may be seen by the forlorn condition many are in. In some places they have been killed outright, and in most others sadly disfigured, and as to green garden crops of all kinds they will be very scarce and dear, and those who have them will be fortunate, and sure to reap a rich harvest when they send them to market. The Broccoli, as usual, that have escaped best about here are those of a hard-stemmed character, such as Cattell's Eclipse, while all of a more succulent soft nature have mostly collapsed. As the time of sowing will soon be here, it would be a guide to many if the various correspondents of the *Gardeners' Chronicle* would give their experiences, and state what sorts have stood best with them, and the treatment they have received that may have conduced to their hardiness, as much depends on this in fitting them to go through a winter. There is no doubt, I think, but that Broccoli are too highly cultivated, and that in the majority of seasons many are killed that would have escaped had they been planted in hard unbroken land, instead of the loose highly manured quarters many grow them in, where they have not sufficient room to let in light and air to harden the tissues. The heads under a less liberal root-run may not be so large, but that is of small import compared with the loss many have to put up with when Jack Frost comes and sweeps all the fat plants before him. There is much in the sowing, too, in preparing them, as when allowed to come and stand thick on the bed they soon get drawn and spoiled; but if sown thin and the plants pulled and pricked out as soon as large enough to handle, it is a great help in getting them sturdy and strong. *J. S.*

## Reports of Societies.

Royal Horticultural: *March* 8.—Sir Trevor Lawrence, Bart., M.P., in the chair. The Rev. G. Henslow commenced his lecture by calling attention to the differences between Heath (Erica) and Epacris, and pointed out how these two genera represent each other, the former having their headquarters at the Cape, the other in Australia. As other instances of "representative" plants he alluded to the Aloes of South Africa and the Agaves (or American Aloe) of Mexico, as also to the Cactuses of Mexico as representing Euphorbias of Africa; the interpretation being, that plants, though widely different in the structure of their flowers, and far apart, it may be, in their positions in the vegetable kingdom, yet assume an outward physiognomy closely resembling one another—

Fig. 67.—PHAIUS TUBERCULOSUS.

this being, it is supposed, in consequence of similar climatal conditions, which appear to modify their vegetative structures more powerfully than their reproductive. He then proceeded to describe the structure of Orchid flowers, with the view of detailing some of the more remarkable features of Orchids, there being a grand display by Sir Trevor Lawrence, Messrs. Veitch, and others. After describing the four floral whorls, calyx, corolla, stamens, and pistil, he alluded to the fact that Nature never binds herself down to a single method of carrying out an object, so that while the corolla is usually the organ most attractive to insects, the calyx may be so, as in the Christmas Rose, or the bracts, as in Anthurium, Tillandsia, Salvia, &c. He then proceeded to describe the chief features of a common Orchis, and pointed out the method of securing its fertilisation by bees, &c.; the methods adopted in Cattleya, Dendrobium, and lastly Coryanthes were described—the latter having a labellum shaped like a bucket, into which two horn-like glands continually secreted water. Large insects were attracted by sweet excrescences, and apparently became somewhat stupified by the food. They consequently pushed one another into the bucket. Their only means of escape was by crawling along the bottom and making their way out between the labellum and the "column" and anther, so that the first insect that escaped inevitably removed the pollen masses; but in order to fertilise the stigma it had to repeat the process in another flower, take another bath, and on escaping as before now rubbed the pollen against the stigma, and so fertilisation was secured. The lecturer also illustrated the principle of "compensation," which is of so frequent occurrence in Nature. It signifies that whenever one organ is enlarged another suffers, so that the latter may vanish altogether when the other takes its place. The Gueldres Rose illustrated the principle in flowers where the corollas of the barren flowers are enlarged, while the stamens and pistil disappear; and a plant of Xylophyllum illustrated it in the vegetative organs, for the flowering branches flatten out, and so assimilate and take on all the functions of leaves.

Scientific Committee.—Dr. Maxwell T. Masters, F.R.S., in the chair.

*Camellia Leaves.*—Mr. Worthington Smith reported that the Camellia leaves submitted to him at the last meeting were more or less affected with a species of Rhytisma. It may here be added that Rhytisma is a fungus occurring in thick leathery black patches on the surface of the leaves. The leaves of Maples, and specially of the Sycamore, are particularly subject to this disfigurement. The only remedy that can be suggested is to remove the Camellia leaves and burn them, so as to destroy the fungus and prevent its spreading.

*Gall on Wheat Straw.*—Mr. MacLachlan reported on the specimens from Russia submitted to him at a former meeting. The injury was apparently effected by one of the Chalcidæ, Eurytoma hordei. It was quite contrary to rule that such an insect should be otherwise than parasitic, nevertheless no dipterous insect was found.

*Plants Without Earth.*—Mr. Schofield called attention to some experiments carried out at Rouen by M. Dumesnil. The operation consists in taking up a plant about to flower, in removing all the earth from its roots, and then placing it in a substance (not indicated) at least as favourable to them as the soil, and infinitely less bulky. The experiment has been successful, a bed of 25 square metres having been planted, in the Solferino Garden at Rouen, in which the plants flowered as well as if they had been allowed to remain in the soil. Plants so grown can be placed in rooms, on balconies, on terraces—anywhere, in fact—and may be grouped in any way that may be desired. The author of the plan at present preserves silence as to his method of procedure.

*Narcissus Tazetta var. floribundus.*—Mr. W. G. Smith exhibited flowering specimens of this plant from Mr. W. Roberts, of Penzance. The specimens were gathered at St. Michael's Mount, Cornwall, where the plant is naturalised. It flowers there in January and February nearly at the same time as it blooms in the South of Europe, and three months before it flowers in the open air near London.

*Jew's Ears.*—Mr. W. G. Smith also exhibited specimens of the Jew's Ear, Hirneola Auricula-Judæ, gathered from semi-decayed Elder branches at Ely, by Mr. W. Marshal Fisher.

*Thelephora.*—Mr. Pascoe exhibited a pretty Brazilian species, probably belonging to this genus of fungi, resembling T. fastidiosa, but from the imperfect condition of the fungus nothing definite could be stated. It might be an aberrant form of some other member of the Auricularini.

*Plants Exhibited.*—Rev. H. Harpur-Crewe showed flowers of Galanthus Redoutei from the Cilician Taurus; of G. virescens, with the outer flower-segments greenish at the base; G. Shaylockii, with a double spathe; and G. lutescens, a form with a yellow ovary, found in an old farmhouse garden in Northumberland; also flowers of Narcissus minor and N. minimus. From Mr. Boscawen came flowers of Narcissus triandrus.

*Etoile d'Or Chrysanthemum.*—From Mr. Boscawen came leaves of this plant, mined by a dipterous larva, probably similar to, if not the same as the Chrysanthemum-fly. Mr. MacLachlan pointed out a means of distinguishing whether a mining larva of this kind was lepidopterous or dipterous. If the former the line of *débris* left by the insect is continuous, whereas it is interrupted and scattered in the case of the dipterous larva.

*Gnaur on Hazel.*—From Mr. Killick came a huge woody outgrowth from the stem of the Hazel. The origin of these masses is very obscure; they may be caused in the first instance by insect puncture or other injury. Repeated pruning may also perhaps set up the overgrowth. Very frequently there is a large formation of adventitious buds or roots at or near these outgrowths.

*Twisted Vine Stems, &c.*—Rev. G. Henslow showed two branches of a Vine, one of which had coiled spirally around the other, and become partly united to it by natural grafting. The same gentleman also showed leaves of the Portugal Laurel with the milky appearance due to the separation of the skin of the leaf from its substance. The cause of this disease is still unknown, but is evidently a serious matter in Plum orchards (see *Gardeners' Chronicle*, 464, vol. xiv.)

*Prolification in Foxglove.*—Dr. Masters showed a specimen of median prolification, from Dr. Bennett, of Sydney. Usually in cases of this kind in this particular flower the corolla becomes regular, but in the present instance the ordinary irregularity was preserved.

The First Spring Show of the Season was held in the large Conservatory, and attracted a good attendance, notwithstanding the extremely variable character of the weather. Orchids, Cyclamens, and Amaryllis in good numbers made a fine display,

which was much appreciated. Of the former, collections of great merit came from the nurseries of Mr. B. S. Williams and Messrs. Veitch, and from the garden of Sir Trevor Lawrence, Bart., M.P. Mr. Williams' group was especially fine, consisting of about eighty plants, representing three dozen species and varieties, a list of which we give in another column, and the Gold Medal awarded was well deserved. The Messrs. Veitch also received a Gold Medal for their large collection of Orchids, Amaryllis, and other plants. Amongst the first named were some nice varieties of Cattleya Trianæ, Dendrobium crassinode, with a fine spike; the little white Angræcum citratum, with half a dozen spikes; Epidendrum macrochilum album, the showy and useful Dendrobium Ainsworthii ×, and a host of Odontoglossums. The group of Amaryllis consisted of a considerable number of new seedlings of a varied and interesting character, the best of which were certificated. Admirably flowered examples of the Gueldres Rose, of Rhododendron Veitchii, Taylori, and Early Gem, and also of Cyclamens, made up of a fine bank of flowers. Sir Trevor Lawrence (Mr. Spyers, gr.) was awarded a Silver-gilt Flora Medal for his remarkably attractive display, which included, amongst others, a strong specimen of Cymbidium eburneum, with sixteen of its noble ivory-white blossoms; and for comparison therewith the spotted variety, Dayi; fine types of Odontoglossum Alexandræ, elegans, cirrhosum, Klabochorum, nevadense, Andersoni, Pescatorei, roseum, Rossii majus, triumphans, Roezlii, Hallii, pulchellum, Phalænopsis and constrictum, &c. To the General Horticultural Company a Silver Flora Medal was awarded for a pretty group of small fine-foliaged plants, in which were a considerable variety of new Crotons and Dracænas, Palms, Aralias, Ferns, and other choice subjects. The exhibitors of grand groups of Cyclamens were Mr. H. B. Smith, of Ealing Dean, Mr. Clarke, of Twickenham, and Mr. Edmonds, of Hayes, and each received the award of a Silver Banksian Medal; as also did Messrs. Osborn & Son, for a group of stove and greenhouse plants; while Mr. Aldous had a Bronze Banksian for a nicely put up collection of decorative plants. Mr. Barron sent up a capital group of forced flowering plants from Chiswick; and Messrs. William Paul & Son, of Waltham Cross, contributed ten boxes of cut blooms of Camellias, of unexceptionable quality and admirable variety. The pomological element consisted of a specially fine display of Apples and Pears, made up of some fifty-six dishes of the former, and seven of the latter, exhibited by Mr. Ford, gr. to W. E. Hubbard, Esq., Leonardslee, Horsham, who received, as the reward of his skill in preserving them so well, a Silver Banksian Medal.

Floral Committee.—Dr. Denny in the chair. First-class Certificates were awarded at this meeting to Messrs. Veitch & Sons, for Amaryllis Miss Alice Gair, a flower of noble proportions, fine form, and striking colour—a rich light scarlet shaded with crimson; for Amaryllis John Heal, the most perfect flower that has yet been exhibited, and quite remarkable for the breadth and smoothness of its petals, which are scarlet tipped with greenish-white; and for Amaryllis Royal Standard, crimson tipped with white. To Mr. B. S. Williams for Asplenium Baptistii, described at p. 235. To Sir Trevor Lawrence for Phaius tuberculosus (see fig. 67). This is stated to be a native of Madagascar, and is one of the most beautiful of its kind, reminding one, in the colour and markings of its flowers, of Alpinia nutans. The stem is slender and twisted, with oblong plicate leaves, about 1 foot in length. The plant exhibited had two erect flower-spikes, one with four, the other with six flowers. Each flower (see fig. 67) measured about 2 inches across, with ovate acute snow-white sepals; petals of similar form and colour. The lip is large, funnel-shaped below, its limb three-lobed, the two upper side lobes suborbicular, yellow, spotted with purple, and wavy at the margin, the lower central lobe roundish, rosy at the wavy margins, with a central crest of five yellow erect ridges standing in front of a tuft of yellow erect bristles at the base of the incurved white club-shaped column. The whole colouring and construction of the flower is admirably adapted for insect fertilisation. The coloured lip would attract them, the crests on the lip would guide them to their destination, the bristles would detain them and cause them in their struggles to remove the pollen from the downward curving column, and so insure fertilisation. As in other species of this genus, the flower when bruised assumes a bluish tint. To Mr. Tomkins, nurseryman, Birmingham, for Primula sinensis, The Queen, a Fern-leaved variety with remarkably large and boldly fringed flesh-tinted flowers of great substance—a great advance as a florists' flower, but whether it will go the way of the same raiser's Princess Louise or become a popular garden flower remains to be seen. To Mr. C. Edmonds, Hayes, for Cyclamen persicum Charming Bride and Miss Lilian Cox, both pure white flowers of large size and beautiful form; the former, however, in its more rounded petals, coming nearest to the florist's ideal. To Mr. J. James, Isleworth, for Cineraria Mr. H. Little, the singularly distinct and superb novelty of which we last year gave an illustration (p. 277, vol. xiii.); and to Mr. B. S. Williams, for the fine new Imantophyllum miniatum Martha Reimer, noted in our columns last week. Mr. Williams also received a Cultural Commendation for a plant of Actiniopteris radiata var. australis, a neat little Palm-like Fern, rarely seen in such good condition; and Mr. Masson, gr. to Dr. Alfred Meadows, Poyle Park, Colnbrook, received a similar award for half-a-dozen strongly-grown and well-flowered Cinerarias with gigantic blooms, which were very bright and clear in colour, and only wanting in form to make it a fine strain. Mr. B. S. Williams again showed his new Primula sinensis alba magnifica, and in better condition than at the last meeting, the fine spikes being thrown well up above the foliage. It proves to be a good continuous bloomer, and to last longer in a fresh condition than most of the varieties, while the individual blooms are unexceptionable in quality.

Fruit Committee.—Mr. Harry J. Veitch in the chair. The most interesting contribution brought before this body consisted of a number of fruiting shoots of Coffea arabica angustifolia, with quite a profusion of fine dark chestnut-red berries, which came from Sir George Macleay's garden at Pendell Court. Mr. Cox brought up from Redleaf some good Oranges and Lemons, and Mr. Sage had a fine lot of fruits of Musa Cavendishii, which he grows so well at Ashridge. Mr. J. Douglas exhibited a nice fruit of a new black-spined variety of Cucumber of good flavour, and capital samples of the Giant Zitteau Onion were shown by Mr. Strachan, Bulwick Park Gardens.

Alexandra Palace: *March* 5.—This was the first of a series of special shows, and proved to be a successful one. The flower of the day was the Camellia, of which Messrs. William Paul & Son, Waltham Cross, exhibited over 2000 blossoms, comprising 100 varieties. Messrs. Paul & Son also exhibited several plants laden with their various-coloured flowers, and these served well to illustrate the growth and habit of the plant. Some of the more conspicuous and meritorious varieties shown were the following:—alba plena, fimbriata, Montironi, Princess Charlotte, Ninfa Egeria, Benneyi, Marchioness of Exeter, Reine des Fleurs, L'Avenir, Sarah Frost, Beauty of Hornsey, Lady Hume's Blush, Commendatore Betti, imbricata, Jeffersoni, Halleyi, and eximia. Primula sinensis Waltham White, and a blue Primrose named Scott Wilson, were also exhibited from the same establishment.

## Obituary.

We have to record the death, on the 2d inst., at his residence, 3, York Terrace, Regent's Park, of Lieutenant William Andrews Nesfield, the eminent landscape gardener, aged eighty-eight years. The deceased gentleman, who was one of the few remaining officers who served in the Peninsular War, was the son of the late Rev. William Nesfield, Rector of Brancepeth, Durham. He joined the old 95th Regiment (now the Rifle Brigade) at San Sebastian, in the Peninsula, and was engaged in the operations in the Pyrenees, and present at the action of St. Jean de Luz. He afterwards exchanged into the 89th, then stationed in Canada, and was at the siege of Fort Erie and the defence of Chippewa. On the conclusion of the general peace he retired on half-pay. After leaving the Army his taste for painting led him to become one of the earliest members of the old Water Colour Society, of which he was for thirty years an active exhibiting member. Later in life he took up landscape gardening as a profession, which his education as an engineer at Woolwich and his talent as an artist (as quoted in Ruskin's *Modern Painters*) well qualified him to fulfil. In this capacity he was constantly consulted in the improvements and alterations of the London parks and Kew Gardens. He planned the Royal Horticultural Society's Gardens at Kensington, and there are few of the large parks and gardens of this country that do not owe something to his taste and skill.

—— We have also to record the death, on Feb. 25, at Elie, Fifeshire, of Mr. Robert Adamson, gardener from 1843 to 1874 at Balcarres, Colinsburgh, in the same county, his employers being first General Lindsay and subsequently Sir Coutts Lindsay, Bart., who made him a retiring allowance. Mr. Adamson, who was in his 70th year, began his career as a gardener at Springfield, near Cupar Fife, and subsequently came to England and spent several years at Claremont and other places. At Balcarres, famous as the dwelling-place of the authoress of the famous ballad, "Auld Robin Gray," he designed and laid out the terrace gardens, which are considered second only to those at Drummond Castle. He was one of the founders of the Largo Field Naturalists' Society, and the author of a little work on "The Cottage Garden," and several other essays.

—— The death is also recorded, as having taken place at Cheshunt on the 4th inst., of Mary, relict of the late Mr. George Paul, aged sixty. Mrs. Paul, who had been an invalid for the last five years, was widely known amongst horticulturists, and was a great lover of old-fashioned flowers, which she collected from all quarters and cultivated in her private garden.

—— Regular *habitués* of the Royal Horticultural Society's Gardens at South Kensington will hear with regret of the death, on February 27, aged 65, of William Addy, formerly a trooper in the 2d Life Guards, but for the last twenty years resident housekeeper in the service of the Society, and gatekeeper at the south-east entrance to the gardens, where his fidelity to his employers, and his civility to visitors, ensured him the good-will and respect of all.

## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, March 9, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mar. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 3 | 29.77 | −0.09 | 38.9 | 32.0 | 6.9 | 35.7 | − 4.8 | 27.8 | 71 | E. | 0.00 |
| 4 | 29.31 | −0.58 | 48.5 | 37.0 | 11.5 | 43.0 | + 2.5 | 39.5 | 97 | E. | 0.38 |
| 5 | 29.18 | −0.73 | 55.0 | 45.0 | 10.0 | 49.9 | + 9.4 | 46.7 | 88 | S.:S.W. | 0.75 |
| 6 | 29.28 | −0.65 | 56.0 | 47.2 | 8.8 | 51.5 | + 11.0 | 45.6 | 81 | S.W. | 0.01 |
| 7 | 29.14 | −0.80 | 57.0 | 47.0 | 10.0 | 51.3 | + 10.8 | 43.1 | 74 | S.W. | 0.05 |
| 8 | 29.58 | −0.35 | 50.5 | 41.0 | 9.5 | 44.1 | + 3.6 | 38.0 | 78 | W. | 0.10 |
| 9 | 29.74 | −0.20 | 52.5 | 39.5 | 13.0 | 47.3 | + 6.8 | 44.2 | 89 | S.W. | 0.10 |
| Mean | 29.42 | −0.49 | 51.2 | 41.2 | 10.0 | 46.1 | + 5.6 | 40.9 | 83 | S.W. | 1.39 |

March 3.—A dry, windy, painfully cold day. No sun visible. Black sky at night.
— 4.—Dull, wet, and very uncomfortable day. Black sky at night.
— 5.—Wet morning till 8 A.M. Warm day. Half an inch of rain fell between 5 P.M. and midnight.
— 6.—Deep blue sky in patches; sun shining frequently. Fine warm, windy day. Slight rain in the evening.
— 7.—Sun shining in the morning; overcast, dull, showers of rain afternoon; a gale of wind at night.
— 8.—Windy; squally, rain and fine alternately. Hail. Fine night, but sky, though free from cloud, was not bright.
— 9.—Thin, fine rain early morning; dull, cloudy, windy day generally; night overcast.

London: *Atmospheric Pressure.*—During the week ending March 5, in the vicinity of London, the reading of the barometer at the level of the sea decreased from 29.85 inches at the beginning of the week to 29.74 inches by the afternoon of the 28th; by midnight on the 2d the reading had increased to 30.28 inches; a rapid fall now took place, and at the end of the week the reading was 29.25 inches. The mean reading at the level of the sea was 29.82 inches, being 0.31 inch lower than last week, and 0.21 inch below the average for the week.

*Temperature.*—The highest temperature during the week was 55°, on the 5th, the next in order being 48°.5, on the 4th, and 42°, on the 2d. The lowest of the seven high day temperatures was 34°.5, on the 28th. The mean of the seven high day temperatures was 42°.8. The lowest temperature was 24°.2, on the 1st, the next lowest being 28°.2, on the 28th. The highest of the seven low night temperatures was 45°, on the 5th. The mean of the seven low night temperatures was 32°.8. The greatest range of temperature in one day was 16°.8, on the 1st, the next greatest being 11°.5, on the 4th; the least range was 6°.3, on the 28th; thus on two consecutive days—the 28th and the 1st—the range of temperature differed by more than 10°. The mean of the seven daily ranges was 10°.

The mean daily temperatures were 33°.8 on the 27th, 31°.1 on the 28th, 32°.5 on the 1st, 35°.9 on the 2d, 35°.7 on the 3d, 43° on the 4th, and 49°.9 on the 5th; on February 27 and March 1, 2, and 3 the mean temperatures were respectively 6°.1, 9°, 7°.8, 1°.5, and 4°.8 below their averages; on March 4 and 5 they were 2°.5 and 9°.4 above their averages.

The mean temperature for the week was 37°.4, being 2°.8 higher than last week, and 2°.9 below the average of the corresponding week for sixty years.

The highest reading of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, was 102°.5 on the 27th, the next highest in order being 94°, on the 1st, and 89°.2, on the 2d. The lowest reading was 49°, on the 4th, when it was only 0°.5 higher than the highest temperature on that day. The mean of the seven daily readings was 76°.6.

*Rain.* — Some fell on three days; the largest amount was 0.75 inch, on the 5th. The total fall for the week was 1.15 inch.

The weather for the first part of the week was on the whole comparatively fine, but in the middle it was windy, and rain fell in some part of the last two days.

England: *Temperature.*—During the week ending March 5 the highest temperatures were 56° at Cambridge, 55°.6 at Bristol, 55° at Blackheath, and 53° at Truro. The lowest of the high temperatures were 40° at both Norwich and Sunderland, 39° at both Hull and Leeds, and 38°.6 at Bradford. The mean from all stations was 46°.2.

The lowest temperatures were 17° at Hull, 18°.3 at Nottingham, 19° at Truro. At Brighton, Bristol, and Blackheath the temperature never fell below 24°. At Norwich and Birmingham the lowest temperatures were respectively 25° and 26°.6. The mean from all stations was 22°.3.

The range of temperature during the week was greatest at Truro and Cambridge, 34°, the next in order being 30°.8 at both Bristol and Blackheath, and 28°.3 at Plymouth. The least ranges were 16° at Hull, and 15° at both Norwich and Sunderland. The mean from all stations was 23°.9.

The mean of the seven high day temperatures was highest at Truro, 48°.6; the next in order being Plymouth, 44°.3; Bristol, 43°.7; Blackheath, 42°.8; and Cambridge, 42°.4; the mean was lowest at Bradford, 35°.9. The mean from all stations was 40°.1.

The mean of the seven low night temperatures was highest at Hull, 26°; the next in order being 27°.7 at both Wrottesley and Bradford, and 28°.1 at Sheffield. The mean was highest at both Truro and Brighton, 31°.8; Bristol, 31°.9; and Blackheath, 32°.8. The mean from all stations was 29°.7.

The mean daily range was greatest at Truro, 16°.8; the next in order being Plymouth, 13°.5; Cambridge, 12°.3; Bristol, 11°.8; and Birmingham, 11°.3; the least mean daily ranges were 8°.2 at Bradford, 8° at Sunderland, 7°.9 at Leeds, and 7°.1 at Norwich. The mean from all stations was 10°.4.

The mean temperature for the week was highest at Truro, 39°.3; the next in order being Blackheath, 37°.4; Bristol, 37°.2; and Plymouth, 36°.9; the mean was lowest at Bradford, 31°.1, and Hull, 30°.6. The mean from all stations was 34°.2.

*Rain.*—Some fell at all stations; the greatest quantities were registered at Sheffield, 2.32 inches; Truro, 2.10 inches; Brighton, 1.54 inch. The least fell was at Bristol, 0.57 inch. The mean from all stations was 1.39 inch, and the average number of days on which rain fell was six. *Snow* fell nearly everywhere at some time, and during the last two days of the week bad weather seems to have been experienced everywhere.

Scotland: *Temperature.*—During the week ending Saturday, March 5, the highest temperatures recorded were 46°.2, at Edinburgh, and 40° at both Aberdeen and Greenock. The lowest of the high temperatures was 35°, at Glasgow. The general mean was 38°.1.

The lowest temperature was 15°, at Edinburgh and Glasgow; the general mean was 18°.

The mean of the week was highest at Aberdeen, 31°.9; the next in order being Greenock, 31°.5; the mean was lowest at Glasgow, 26°.5. The general mean was 30°.2.

*Rain.*—The largest amount fell at Dundee, 1.55 inch, the next largest being at Greenock, 1.21 inch; at Glasgow no rain fell. The general mean was 0.67 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

Bougainvillea speciosa.—Will any of your correspondents who annually succeed in flowering the above in pots kindly give a detailed statement of the course of treatment they adopt? *J. Horsefield.*

Camellia alba. — A correspondent is desirous of obtaining, by purchase or exchange, some grafts of the old single white Camellia figured in the *Botanical Register*, t. 353. Can any of our readers say where they can be had?

South American Trees.—What are the names of the tree which attains to the greatest height, the tree which bears the largest fruit, and the tree which has the largest leaf, in South America? *H. P.*

## Answers to Correspondents.

Books: *E. W. Serpell. The Culture of Fruit Trees* from the French of M. du Breuil (Crosby Lockwood & Co.).

Camellia Propagation: *W. Mackay.* The stocks are not cut off, but only partially trimmed up, and the grafts put on the side of the stems; they are then put into close pits in the propagating house (not too hot), where they remain until the union is effected. For all such work grafting-wax is used, as being most expeditiously applied. When the graft has taken, the head of the stock is gradually removed.

Chamærops Fortunei: *G. M. G.* The two specimens at Heckfield have escaped unhurt, though they have had no protection. Your plant is probably not so old nor so well established as those at Heckfield, and consequently should be protected with mats on the approach of hard weather.

Coleus: *John Wright.* We should think woodlice are the cause of the mischief.

Currant Bud Disease: *J. L. Coupland.* The buds are infested with the Currant-bud mite. The only safe way of dealing with it is to burn all the infested trees.

Cyclamen: *J. H.* A part of the stem has lengthened instead of remaining short and round, so that the leaves and flowers are borne upon long branches. It is not a very uncommon occurrence.

Hyacinths: *G. W. Y.* The appearance presented is due to some check to growth—perhaps from cold or it may be from gas.

Lawns: *J. F. M.* At the present time, or during the next week or two.

Literature in the Seed Shop: *An Old Blue Apron.* If the seedsmen choose to enter upon the publishing business that is entirely a matter for their own discretion. No one has any right—and, we imagine, no one has any wish—to prevent them from so doing.

Monstrous Mushroom: *J. Lockyer.* By no means uncommon. We have several times given illustrations of similar specimens.

Names of Plants: *S. C. B.* Garden varieties of the Ghent Azalea, which we cannot undertake to identify. They were, besides, badly damaged in transit.—*D. P.* We cannot identify the Mosses without fruits. We should add also, that as Mosses are not of horticultural importance we do not make it a rule to name them.—*A.* 2, Viburnum Lantana; 3, the Cornelian Cherry (Cornus mas). We cannot undertake to name Conifers from the specimens sent without cones.—*Garden Boy.* 1, Probably Juniperus sinensis, but specimen not vigorous enough to determine; 2, Juniperus virginiana.—*K. N.* The Fern is Asplenium Fabianum. The Begonias next week. — *W. C. S.* 1, Masdevallia ignea; and, 2, Odontoglossum tripudians.—*Orchid.* Brassavola sp., not recognised.—*J. Wright.* We only recognise 2, Farfugium grande, and 3, Coronilla glauca, amongst the miserable scraps. No. 1 is a Mesembryanthemum, but without a flower it is impossible to say which species.

Odontoglossum crispum: *T. C. Cookson.* The variety is one of the finest and richest in the markings we have seen. The spotting is very bold and distinct, and, as you say, of "a bright good red, and not the common brick-red."

Primula sinensis: *L'Allegro.* The Primulas, though good, are not, we think, superior varieties. No. 1 is not equal to Waltham White, and of the same type; No. 2 appears to be of the same type as Princess Louise, and no better.

Window Conservatory: *Amateur.* You would do well to procure and read a little book on the subject, entitled *Domestic Floriculture* (Blackwood & Sons), by Burbidge, as to plants and their treatment. In the mean time we may say that the plants would be most manageable in pots, and, therefore, their position need not interfere with the heating arrangements. As the aspect is south it would want shading in hot summer weather, which is best effected by a blind made to roll up and down, so as to be used only when required.

## CATALOGUES RECEIVED.

Thomas S. Ware, Hale Farm Nurseries, Tottenham—Choice Hardy Perennials and Hardy Florists' Flowers.

Vilmorin-Andrieux & Co., 4, Quai de la Mégisserie, Paris—Seeds of Trees and Shrubs, &c.

Woolson & Co., Passaic, New Jersey, U.S.A.—Hardy Perennial Plants, Bulbs, Shrubs, Ferns, and Climbers.

John A. Bruce & Co., Hamilton, Canada — Flower, Vegetable, and Farm Seeds, &c.

Communications Received: — G. D.—A. O.—J. D. D.—H. H. (you did not enclose your name and address).—W. H.—W. F.—Walker & Co.—J. E. E.—J. G.—D. T. F.—J. C.—H. E.—J. D.—R. B. B.—G. W.—G. F. W.—J. T. B.—Alf. D.—R. M.—B. D.—A. H.—R. M.—G. B.

# Markets.

*COVENT GARDEN, March* 10.

Trade still keeps quiet, and supplies light; common vegetables making better prices. A few Strawberries have made their appearance, though somewhat later than usual. *James Webber, Wholesale Apple Market.*

Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 1 0– 2 0 |
| Grapes, per lb. | 3 0–12 0 | Strawberries, per oz. | 2 0– 2 6 |
| Lemons, per 100 | 4 0– 6 0 | | |

Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Garlic, per lb. | 1 0– .. |
| Asparag., Fr., bndl. | 25 0– .. | Herbs, per bunch | 0 2– 0 4 |
| — English, bund. | 8 0–14 0 | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Beans, French, p. lb. | 3 0– .. | — Cos, each | 0 4– 1 0 |
| — Broad, per lb. | 1 0– .. | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 5 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 4 0– .. | Parsley, per bunch | 0 4– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Radishes, per bun. | 0 2– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Rhubarb, per bund. | 1 0– .. |
| Chilis, per 100 | 3 0– .. | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 1 0– 2 0 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| | | Tomatos, per lb. | 0 9– 1 0 |

Potatos:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 45*s.* 6*d.* to 85*s.* 6*d.*; Belgian Kidneys, 35*s.* 9*d.* to 45*s.* per bag.

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 0 6– 1 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Bouvardias, per bun. | 1 0– 3 0 | Pelargoniums, 12 spr. | 1 6– 2 0 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Primula, double, per bunch | 1 0– 1 6 |
| Cyclamen, 12 blms. | 0 3– 0 6 | — single, 12 sprs. | 0 6– 1 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Roses (indoor), doz. | 3 0– 9 0 |
| Eucharis, per doz. | 4 0– 6 0 | — red French, doz. | 3 0– 4 0 |
| Euphorbia, 12 sprays | 1 0– 3 0 | Snowdrops, 12 bun. | 2 0– 4 0 |
| Gardenias, 12 blms. | 12 0–18 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Hyacinth, Roman, 12 sprays | 1 0– 2 0 | Tulips, 12 bunches | 10 0–15 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Violets, 12 bunches | 1 0– 2 0 |
| — red, 12 blooms | 1 0– 3 0 | — Neapolitan, Fr., per bunch | 3 0– 5 0 |
| Lilac, Fr., per bunch | 6 0– 8 0 | — Czar, Fr., bunch | 1 0– 1 6 |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | | |

Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ficus elasticus, each | 1 6– 7 6 |
| Begonias, per doz. | 6 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cineraria, per doz. | 10 0–12 0 | Genista, per doz. | 9 0–18 0 |
| Cyclamen, per doz. | 12 0–24 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cyperus, per dozen | 6 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Dracæna terminalis | 30 0–60 0 | Myrtles, per doz. | 6 0–12 0 |
| — viridis, per doz. | 12 0–24 0 | Palms in var., each | 2 6–21 0 |
| Epiphyllum, per doz. | 18 0–30 0 | Primula, single, per dozen | 5 0– 6 0 |
| Erica hyemalis | 9 0–18 0 | Scillas, 12 pots | 9 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Snowdrops, 12 pots | 6 0– 9 0 |
| Evergreens, in variety, per dozen | 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, 10 variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |

## SEEDS.

London: *March* 9.—The seed market to-day was thinly attended, with but little business doing. The backwardness of field work, as might be expected, delays the sowing demand. Inferior samples of red Clover are obtainable on somewhat easier terms; indeed, all descriptions of Clover are now unusually cheap. Lucerne, Timothy and Sainfoin continue scarce. Kœnisberg spring Tares must be noted 1*s.* 6*d.* per quarter dearer. The supply on the spot is reduced to very narrow compass, and owing to the Sound being still frozen, no fresh arrivals can be expected for some weeks. Bird seeds are unchanged. According to the Board of Trade Returns just published, the imports of Clover and grass seeds for last month were 51,515 cwt. against 51,715 for February, 1880. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## POTATOS.

From the Borough and Spitalfields markets reports we learn that supplies were good, and trade dull at the following quotations:—Scotch Regents, 90*s.* to 100*s.*; Essex, 86*s.*; Champions, 70*s.* to 80*s.*; Victorias, 80*s.* to 110*s.* per ton; Belgian kidneys, 4*s.*; German reds, 4*s.* to 5*s.* per bag. The imports into London last week were—4834 bags Antwerp, 10,416 bags Hamburg, 1150 bags Ostend, 1632 bags Boulogne, 2300 bags Ghent, 1960 bags Rotterdam, and 253 tons Roscoff.

## COALS.

The following are the prices current at market during the week:—Walls End Hetton, 18*s.* and 17*s.*; Hetton Lyons, 16*s.* 6*d.* and 15*s.* 6*d.*; Hawthorns, 16*s.* 9*d.* and 15*s.* 9*d.*; Lambton, 16*s.* 6*d.*; Wear, 15*s.* 6*d.*; South Hetton, 18*s.* and 17*s.*; Tunstall, 15*s.* 6*d.*; Radford Navigation, 17*s.* 6*d.*

**Government Stock.**—Consols closed on Monday at 99¼ to 98⅞ for delivery, and 99⅜ to 99½ for the account. The same figures were recorded at the close on Tuesday. The final quotations on Wednesday were, for delivery, 99½ to 99⅜, and 99⅜ to 99¾ for the account: the same figures were recorded at the close on Thursday.

**Verbenas, Tricolor, Scarlet and other**
PELARGONIUMS, &c.

WM. BADMAN, Cemetery Nursery, Gravesend, has posted his Spring LIST to the Trade; if any name has been omitted he will be pleased to forward a copy on application.
VERBENA, PURPLE KING, fine healthy stuff, full of cuttings, in single pots, 12s. per 100.
PELARGONIUMS, French and Forcing varieties, good plants from store pots, 6s. per 100.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.
EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

WILTSHIRE SNOWFLAKE.—A splendid new Seedling Potato, raised by Mr. Jas. Lye, Clyff Hall, Market Lavington; it obtained First-class Certificate at Devizes in November last, and reported by the Royal Horticultural Society as a most promising variety: *vide Gardeners' Chronicle*, November 20, 1880. Price 1s. per pound, 7 lb. 6s. 100 other choice kinds in stock.
DANIELS BROS., Seed Merchants, Norwich.

A. VAN GEERT, Continental Nurseries, Ghent, Belgium, will be pleased to forward his new SEED CATALOGUE, containing many rare and interesting items, Palms, Seeds, &c., to applicants. Still on hand, nice budding CAMELLIAS and AZALEAS, LILY of the VALLEY Clumps, IMANTOPHYLLUM MINIATUM and varieties, PALMS for decoration of all sizes, &c.

**New Roses for 1881.**
SURPLUS NURSERY STOCK.

LIST of NEW ROSES, and other Roses in Pots, now ready. Prices and Particulars of Surplus Nursery Stock, also now ready. Both sent gratis and post-free to applicants.
EWING AND CO., Eaton, Norwich.

**New Catalogue.**

WILLIAM BARRON AND SON'S New Descriptive CATALOGUE of Coniferæ, Hardy Ornamental Trees, and General Nursery Stock, may now be had on application. A personal inspection of their unrivalled Stock solicited. The Nurseries are three minutes' walk from the Borrowash Station on the Midland (Derby and Nottingham) Railway.
Elvaston Nurseries, Borrowash, Derby.

RASPBERRY CANES.—100,000 of the celebrated CARTER'S PROLIFIC to dispose of, at 30s. per 1000; samples of 100 for 4s., free in London, no change of rail. Also 100,000 FASTOLF, price 10s. per 1000; samples of 200 for 2s. 6d. free on rail, sent to any station in Great Britain. Payments to accompany order. Cheques crossed London and County Bank, Bromley. Money Orders on Knockholt. Apply to
A. AND E. BATH, Colgates Farm, Sevenoaks, Kent.

ON SALE, a Beautiful Specimen of ARAUCARIA GLAUCA. This plant (being 16 feet in height) has grown too high for its present house, and would make a splendid addition to a Botanical or Winter Garden. For further particulars apply to
THOMAS MORTON, Gardener, Summerville, Victoria Park, Manchester.

**Seed Potatos.**
SCHOOLMASTER and EARLY BIRD.

CHARLES TURNER has fine samples and pure stocks of the above two popular varieties. For full description, see Catalogue, now ready.
The Royal Nurseries, Slough.

W. H. ROGERS, Red Lodge Nursery, Southampton, can offer the following at low prices:—
PINUS AUSTRIACA, 1 to 4 feet.
" LARICIO (Corsican Pine), 1 to 1½ foot.
MAGNOLIA CONSPICUA, in pots.
RETINOSPORA PISIFERA AUREA, 1 to 3 feet.
" " ARGENTEA, 1 to 3 feet.
" LEPTOCLADA, 1 to 3 feet.
" ERICOIDES, 1 to 3 feet.
CEDARS, variegated white, 1 to 4 feet.
CUPRESSUS LAWSONIANA DENSA, 1 to 2 feet.
TAXUS ELEGANTISSIMA, perfect specimens.
ESCALONIA MACRANTHA, in pots.
" MONTEVIDENSIS, in pots.
CEANOTHUS DENTATUS, in pots.
SKIMMIA FRAGRANS, in pots.
ELÆAGNUS REFLEXA VARIEGATA, in pots.
JUNIPERUS PROSTRATA.
ABIES PUMILA.
SKIMMIA JAPONICA, berried.
COTONEASTER SIMONDSII.
MENZIESII POLIFOLIA ALBA and RUBRA.
AZALEAS, GHENT, splendid varieties.
RHODODENDRONS, choice named.
" magnificent standard, full of blooming buds.
N.B.—This is the best month for planting.

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LIMES, the best sort for avenue planting, splendid trees, 9 to 10 feet, 15s. per dozen, 100s. per 100; 8 to 9 feet, 12s. per dozen, 80s. per 100.
LIME Layers, well-rooted, 5 to 6 feet, 25s. per 100.
" white leaved, grafted, 8 to 10 feet, fine trees, 2s. each, 21s. per dozen.
SYCAMORE, Common, 9 to 10 feet, 9s. per dozen, 60s. per 100.
LABURNUMS, 8 to 10 feet, 12s. per dozen, 80s. per 100.
ELMS, of sorts, 6 to 8 feet, 35s. per 100.
HORSE CHESTNUTS, 8 to 9 feet, 9s. per dozen, 60s. per 100.
POPLARS, 10 to 12 feet, 12s. per dozen, 80s. per 100.
" Black Italian and Ontario.
WEEPING ASH, 8 to 10 feet, straight stems and good heads, 21s. to 24s. per dozen.
BEECH, Purple, grafted, 7 to 8 feet, 15s. per dozen, 100s. per 100.
WALNUTS, 8 to 10 feet, 12s. per dozen.
THORNS, Paul's new Double Scarlet, fine Standards, 12s. per dozen, 80s. per 100; Pyramids, 5 to 6 feet, bushy, 9s. per dozen, 60s. per 100.
COB NUTS and FILBERTS, from layers, 5 to 6 feet, strong, bushy plants, 9s. per dozen, 50s. per 100; 3 to 4 feet, 6s. per dozen, 35s. per 100.
KINMONT AND KIDD, Exotic Nursery, Canterbury.

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**True Selected Stocks, and Free from Disease.**

| | Per Peck. | Per Bush. | Per Cwt. | Per Ton. |
|---|---|---|---|---|
| | s. d. | s. d. | s. d. | £ s. d. |
| **Magnum Bonum** (Sutton's) .. | 2 6 | 7 6 | 12 6 | 10 0 0 |
| **Scotch Champion** .. .. .. | 2 0 | 7 0 | 11 0 | 8 10 0 |
| **Johnson's Downshire** .. .. | 3 0 | 10 6 | 17 6 | 15 0 0 |
| **Early Rose** .. .. .. .. .. | 2 0 | 7 0 | 11 0 | 8 10 0 |
| **Beauty of Hebron** .. .. .. | 3 6 | 12 6 | 20 0 | 17 10 0 |
| **Ashleaf Kidney** .. .. .. .. | 2 0 | 7 0 | 11 0 | 8 10 0 |

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THE QUEEN'S SEEDSMEN, NORWICH.

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*THOMAS S. WARE*

Has pleasure in announcing the present season's issue of this
CATALOGUE,
including CARNATIONS, PICOTEES and PINKS, NEW CHRYSANTHEMUMS, DELPHINIUMS, PYRETHRUMS, PENTSTEMONS, PHLOXES, PÆONIES, BEDDING PANSIES and VIOLAS, &c.
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Extra strong, on own roots, in 4½-in. pots.
GLOIRE DE DIJON, ISABELLA SPRUNT, &c.
Trade terms on application.
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TWO HUNDRED THOUSAND HERBACEOUS and ALPINE PLANTS, for Borders, Rockwork, &c. See Descriptive LIST, giving colour, height, time of flowering &c., free by post for one penny stamp.
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JERUSALEM ARTICHOKES and UNDERGROUND ONIONS.
Lowest price on application to
JAMES CARTER AND CO., 237 and 238, High Holborn, London, W.C.

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HENDER AND SONS, Nursery, Plymouth.

VIOLAS, 20,000 fine strong plants:—
" cornuta, white } 5s. per 100, 45s. per 1000.
" Queen of Blues, }
Cash only. Carriage and package free.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

CUCUMBER (Telegraph) PLANTS; Dwarf, Moss, Cabbage, and H.P. ROSES; also STRAWBERRY PLANTS. Wholesale and Retail.
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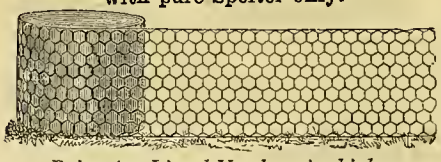

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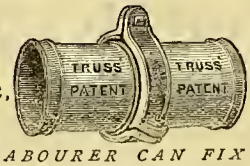


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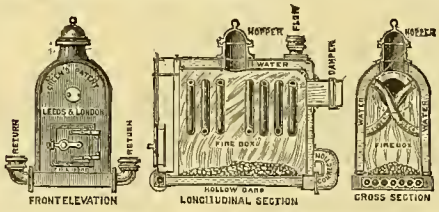


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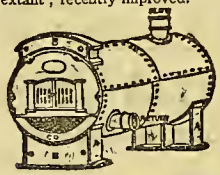

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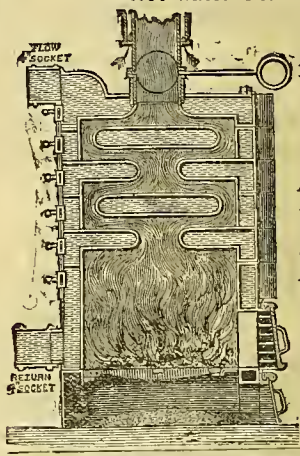


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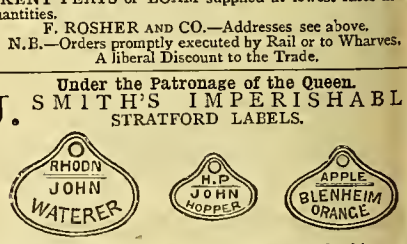


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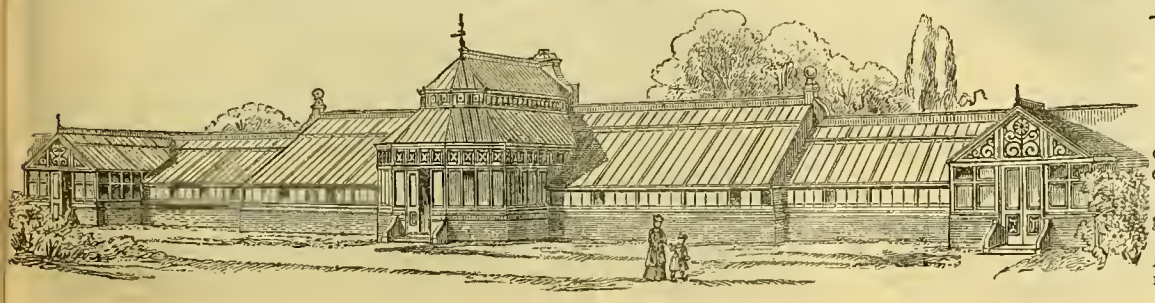

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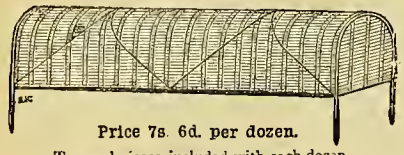

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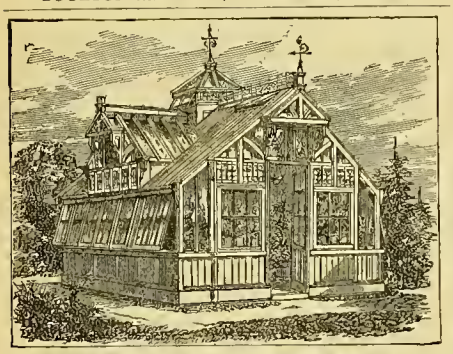

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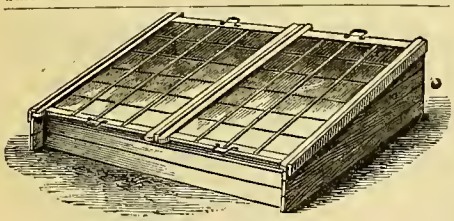

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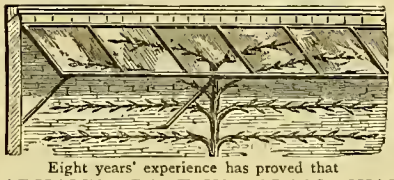

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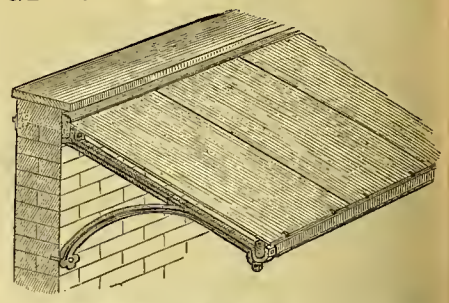

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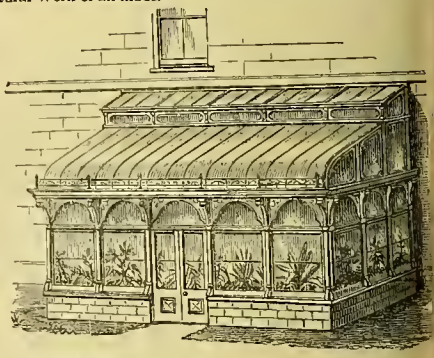

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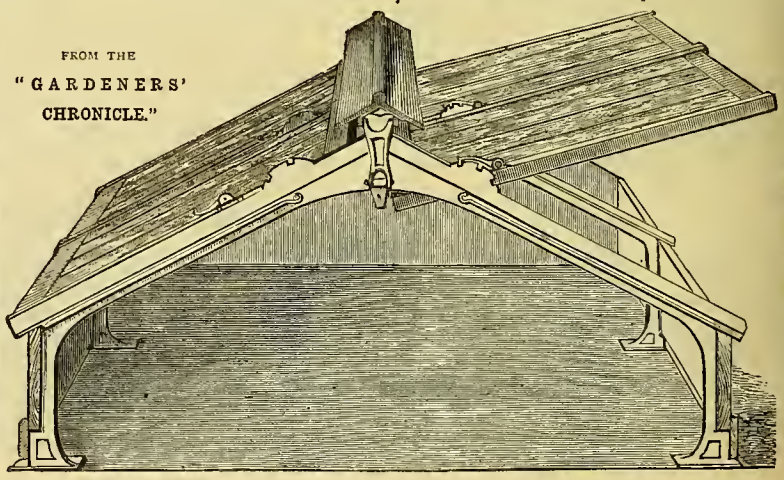

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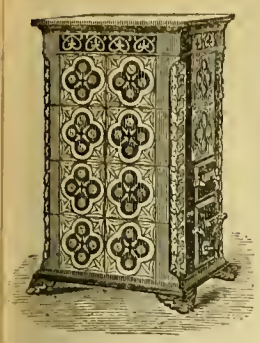

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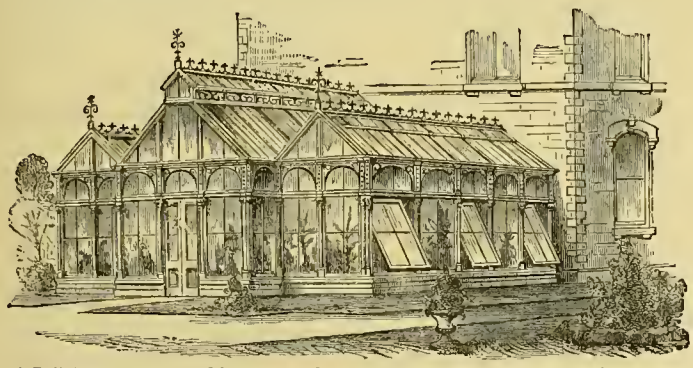

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WANTED, an active, hard-working Man as HEAD GARDENER, where two others and a boy are kept. Must thoroughly understand all ordinary Flower and Kitchen Garden Work, and have had practical experience in the Management of Greenhouse and Stove Plants, and the Forcing of Grapes, Melons, &c. Must be up to Keeping Accounts, and have some knowledge of Land and Stock. Good character for trustworthiness and sobriety indispensable. One who has been Second in a large establishment not objected to. Good wages and cottage.—Address, with full particulars of former situations, and wages required, to S. C. WILDE, Esq., Cheam House, Surrey.

WANTED, a thorougly practical WORKING GARDENER, who well understands Stove and Greenhouse Plants, Orchids, Melons, Vines, Kitchen Garden, &c. Good character indispensable. A second man kept. No cottage. Applicants are requested to state age, wages required, whether married or single, and to give full particulars as to experience, references as to character, &c.—Address, MILLER, Swanswell, Coventry.

WANTED, a GARDENER.—Must understand Vines, Cucumbers, Melons, and Flower and Kichten Gardening.—State wages, and apply to Mr. G. SMALLPEICE, Kingfield, Woking.

WANTED, a SINGLE-HANDED GARDENER. Must be a thoroughly respectable, married man, about 30 years of a ge. To have charge of Hothouse, Greenhouse, and Conservatory, also small Garden. Required thoroughly to understand Vines, Stove Plants and Orchids. Not to live on premises. To a suitable man liberal wages will be given.—Apply, by letter, to L., Garden Cottage, Lower Norwood, Surrey.

WANTED, a SECOND GARDENER, for the Houses. Wages 20s. per week. State age, experience, and reference.—E. KENNEDY, Gardener, Ivy Bank, Burnley.

WANTED, a married man, with no incumbrance, as SECOND GARDENER or FOREMAN, to live in the garden. State wages expected.—E. JONES, Searle's Gardens, Uckfield, Sussex.

WANTED, a ROSE GROWER, in a Nursery at Acton—a man who thoroughly understands Growing and Forcing Cut Bloom for Market. Must have had good trade experience.—Apply, stating full particulars, to J. & B., 89, Jermyn Street, London, S.W.

WANTED, in S.W. district (also one at South Croydon), a trustworthy industrious PLAIN GARDENER, with good personal character (an abstainer preferred). State wages required and all particulars, by letter only, to W. N., Rittenden Villa, Ramsden Road, Balham.

MESSRS. JAMES VEITCH AND SONS are REQUIRING a young man, about 24 or 25 years of age, as an ASSISTANT in their New Plant Department. One who is anxious to extend his knowledge of plants and is prepared to stay two years.—Apply, by letter, with testimonials as to ability and character, addressed Royal Exotic Nursery, Chelsea, S.W.

**To Parents and Guardians.**

WILLIAM MILES has a VACANCY for an APPRENTICE or IMPROVER.—A good opportunity for one who desires to gain a thorough knowledge of the business.—Address, West Brighton Nurseries.

WANTED, IMMEDIATELY, TWO or THREE strong, active young MEN, of good experience as Journeymen, for the Kitchen Garden. Wages 16s. per week, with bothy, fire, milk, and vegetables.—Apply, with full particulars, to Mr. GEO. MONRO, Fruit Salesman, Covent Garden, W.C.

WANTED, a quick, active young MAN (age about 21), under Glass. Well up in Potting, Tying, &c., and general routine of Nursery Business.—Apply, personally, to Mr. J. PAGE, The Hornsey Nursery, Hornsey, N.

WANTED, TWO or THREE young MEN, to Work in the Houses or Packing Shed. Must either be good quick Potters or sharp at Packing.—Apply, with particulars as to previous employment, to J. H. LEY, Royal Nursery, Croydon.

WANTED, a sharp young MAN, well up at Potting, Watering, and Tying. Must have filled a similar situation in a Market Nursery.—TURNER BROS., Green Hill Nursery, Garston, Liverpool.

WANTED, a young MAN (aged 18 to 20), in the Houses, under the Foreman.—Must understand Watering and Tying; one from a Market Nursery preferred.—JAMES WALTON, The Nurseries, Lee Green, S.E.

WANTED, ONE or TWO young MEN for Potting, Watering, Tying, &c.—R. BULLEN, Woodlands Nursery, Hither Green Lane, Lewisham, S.E.

WANTED, TWO strong young MEN, to Work in the Nursery and make themselves active and useful. They must have a knowledge of Watering and Potting. Wages 18s. per week.—Apply, by letter only, to R. WEATHERILL, Woodside Nursery, North Finchley, N.

WANTED, a young MAN, to work in the Houses. Must be sober and industrious, and have a knowledge of Bedding Plants. Wages 18s. per week.—Apply at once to W. BADMAN Cemetery Nursery, Gravesend.

**To Clerks.—Seed Trade.**

TEMPORARY EMPLOYMENT is IMMEDIATELY OFFERED, in a London House, to really good writers with a knowledge of the Trade.—Apply, by letter only, to S. C. H., *Gardeners' Chronicle* Office, W.C.

WANTED, a young MAN, to Assist in the Shop, and to make himself useful in the Nursery. One who has been used to the Cut Flower Business will be preferred.—HY. GODFREY, Stourbridge.

WANTED, a sharp active BOY, for the Orchid-houses.—Apply, stating wages expected and references, to Mr. J. MARTIN, The Gardens, Manor Farm, North Cray, Kent.

## WANT PLACES.

*IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.*

B. S. WILLIAMS begs to intimate that he has at present in the Nursery and upon his Register some excellent Men, competent either to fill the situation of HEAD GARDENER, BAILIFF, FOREMAN, or JOURNEYMAN. Ladies and Gentlemen requiring any of the above will please send full particulars, when the best selections for the different capacities will be made.—Holloway, N.

GARDENER (HEAD).—Age 28; thoroughly experienced in the routine of a Gentleman's Garden, Early and Late Forcing, &c. Good references.—H. A., Victoria House, Hawkhurst Moor, Kent.

GARDENER (HEAD).—The ADVERTISER will be glad to treat with any Gentleman requiring a good practical man in a place of trust. First-class references.—X. Y. Z., Mr. Miller, Pembury Grange, Tunbridge Wells, Kent.

GARDENER (HEAD).—JAS. TRIGGER, The Gardens, Milton, Peterborough, can with confidence recommend his Foreman (Henry Aubertin) to any Nobleman or Gentleman requiring the services of a good general man.

GARDENER (HEAD).—Age 35, married, no family; twenty years' practical experience; five with last employer. Good references.—A. P., 4, Elm Crescent, Elm Road, Kingston, Surrey.

GARDENER (HEAD); age 28.—EDMUND ROGERS desires an engagement as above; has served in good places, and can be well recommended.—The Gardens, Swithland Hall, Loughborough.

GARDENER (HEAD).—Married, one child; thoroughly practical and energetic, first-class Grower of Fruits, Flowers, and Vegetables; Land and Stock if required. Total abstainer. Good reference.—GARDENER, Strawberry Vale, Edgbaston, Birmingham.

GARDENER (HEAD), where two or three are kept.—Age 27, single; practical in all branches of Gardening, including Stove and Greenhouse Plants, Vines, Cucumbers, Melons, Flower and Kitchen Gardening. Can be highly recommended.—A. BELL, Bromley Common, Kent.

GARDENER (HEAD).—Age 37, married, two children; has a thorough knowledge of the profession in all its branches. Eight years' good character from last situation.—W. BACK, 21, Defoe Road, Church Street, Stoke Newington, N.

GARDENER (HEAD).—Age 37, married, no family; steady, energetic, and trustworthy. An excellent Grape Grower, also a good Plantsman, and well up in every other department of Gardening. Excellent references.—JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool.

GARDENER (HEAD).—HENRY PARR, The Gardens, Givon's Grove, Leatherhead, can with confidence recommend his Foreman, Edwin Brown, to any Lady or Gentleman requiring the services of a good practical man. Single-handed place not accepted.—Address as above.

GARDENER (HEAD).—Age 37, married, two children; thoroughly understands the Growing and Forcing of Fruits, Plants, and Vegetables, and has had extensive experience in Laying-out and Planting New Gardens. Well recommended.—Z., 18, Bark Place, Bayswater, W.

GARDENER (HEAD).—Married, Scotch; steady, energetic, and trustworthy. Twenty-five years' practical experience in all branches of Gardening. An excellent Grape Grower, and good Plantsman. Thirteen years' excellent reference from last situation.—JAS. GALBRAITH, 14, Mary Ann Place, Catford, S.E.

GARDENER (HEAD), to a Gentleman interested in Plants.—Age 30; three years' excellent character from Kew: eighteen months' as Foreman of the Herbaceous Department; four years in present situation. Good experience in Gentlemen's Gardens. Neighbourhood of Manchester preferred.—T. ENTWISTLE, Botanical Gardens, Manchester.

GARDENER (HEAD), where two or three are kept.—Age 34, single; thoroughly understands the profession in all branches. Good character from previous and present employers.—J. COLLIER, St. Mary's, Bedford.

GARDENER (HEAD).—Age 32, single; thorough knowledge of Early and Late Forcing; also Kitchen, Fruit, and Flower Garden. Twenty years' experience.—J. KIMPTON, 8, Elgin Terrace, Maida Vale, London, N.W.

GARDENER (HEAD, WORKING).—Married; thoroughly experienced in Flowers, Fruits, Vegetables, and every other department. Excellent references from last employer.—H. BARTLETT, 118 A, High Street, Tonbridge.

GARDENER (HEAD, WORKING).—Age 36, married; understands Pines, Vines, Cucumbers, Melons, &c.; Stove and Greenhouse Plants, Flower and Kitchen Gardening. Nearly four years' good character.—MANN, Gardener to T. H. Maudslay, Esq., Knight's Hill, Lower Norwood, S.E.

GARDENER (HEAD, WORKING); age 28.—GEO. HASKINS, The Gardens, Stowe, Buckingham can recommend his Foreman to any Lady or Gentleman requiring a good practical man. Upwards of three years in presen situation.

GARDENER HEAD, WORKING).—Age 35 one child; thoroughly practical in Early and Late Forcing, Stove and Greenhouse Plants, Orchids, and the genera Management of a good Garden. Excellent character.—D LONG, Ballbrook, Bracknell, Berks.

GARDENER (HEAD, WORKING).—Age 40 married; thoroughly understands Kitchen, Fruit and Flower Gardening, Vines, Pines, Peaches, Melons, Stove and Greenhouse Plants. Good character, and satisfactory reasons for leaving.—M. COLLER, 77, Macfarlane Road, Shepherd's Bush, London, W.

GARDENER (HEAD, WORKING).—Age 29 single; total abstainer.—GARDENER, Chorlton Hall Chester.

GARDENER (HEAD, WORKING).—Age 40 married, family grown up; practical knowledge o Gardening throughout. Seven years' good character.—J. I. 4, Woodbine Terrace, Haydon's Road, South Wimbledon, Surrey

GARDENER (HEAD, WORKING), where two or three are kept.—Age 26; single at present.—JOSEPH COVENTRY, The Gardens, Berry Hill, Taplow, can with confidence recommend his Foreman.

GARDENER (HEAD, WORKING) to any Lady or Gentleman requiring a thoroughly practical trustworthy man.—Age 30; fifteen years' experience in some of the leading establishments of the country. Good references —ROBT. BILLIALD, Ketton, Stamford, Rutland.

GARDENER (HEAD, WORKING), where more are kept.—Age 39, married, no family; has had seventeen years' experience in Vines, Orchids, Stove and Greenhouse Plants, all kinds of Forcing, Flower and Kitchen Gardening; Land and Stock if required. Good character.—A. W., 3, Alfred Cottages, Holmesdale Road, Highgate, N.

GARDENER (HEAD, WORKING), where three or more are kept.—Age 31, married, no family thoroughly understands the Management of Stove and Greenhouse Plants, Vines, Melons, Cucumbers, and Flower and Kitchen Gardening. Good references.—J. G., The Gardens, Brampton Manor House, Huntingdon.

GARDENER (HEAD, WORKING), to a Gentleman requiring the services of a practical man.—Age 40 married, no family; twenty-five years' experience in all branches of the profession—Orchids, Vines, early and late Forcing Fruits, Flowers, &c. Fourteen years Head Gardener. Good character.—E. H., 7, Percy Villas, Upper Norwood, S.E.

GARDENER (HEAD, WORKING), to any Lady or Gentleman requiring a good practical, trustworthy, energetic man.—Age 27, married; six years with present employer, who will have much pleasure in answering any inquiries as to characrer and ability.—J. P., Mr. Payne, Bookseller, Henry Street, St. John's Wood, London, N.W.

GARDENER (HEAD, WORKING, or good SINGLE-HANDED).—Age 27, single; experienced in all branches. Three years' good reference.—R. B., Lake Cottage, Snaresbrook, Essex.

GARDENER (HEAD, or SINGLE-HANDED).—Age 26, single at present; thoroughly practical; Indoors or Out. Good references from late and present employers.—J. PAGE, 8, Cumberland Terrace, Bouverie Road, Stoke Newington, N.

GARDENER (SINGLE-HANDED).—Age 21, respectable. Reason for leaving, wishing to better himself. Can have excellent character.—THOMAS DRUCE, Laleham Vicarage, Laleham, near Staines.

GARDENER (HEAD, or good SINGLE).—Married, no family; thorough knowledge of Stove and Greenhouse Management, Flower and Kitchen Gardening. Excellent testimonials.—J. C., 4, Loampit Vale, Lewisham, S.E.

GARDENER, or GARDENER and BAILIFF, or GENERAL MANAGER.—Age 45, married, one son (aged 15); good grower of Plants, Fruit, and Vegetables; Breeding, Rearing, and Fattening of Cattle; and the general routine of Farming. Good testimonials and character.—ROBERT KNIGHTS, Priory Terrace, Priest Bridge, Barnes, Surrey.

GARDENER and BAILIFF, FORESTER or GENERAL MANAGER.—W. POWELL, The Gardens, Elkington Hall, Louth, Lincolnshire, offers his services to any Lady or Gentleman requiring a practical, trustworty man in either of the above capacities. First-class references.—Address as above.

GARDENER (SINGLE-HANDED).—Age 26; well up in Vines, Stove and Greenhouse Plants, and Kitchen Gardening. Good references from former situations.—H. COURSE, 67, Gwyn Street, Bedford.

GARDENER (SINGLE-HANDED, or where another is kept).—Age 30; understands Vines, Stove and Greenhouse Plants, and Kitchen Gardening. Good character.—C., 109, High Street, Bromley, Kent.

GARDENER (SINGLE-HANDED, or where help is given); age 25, single.—R. ROBBINS, Gardener to Sir E. Lechmere, Bart., can highly recommend a Man as above. Good experience in Fruit, Flower, and Kitchen Garden Work, Glass, &c. Three years' good character.—W. S., Rhydd Court, Upton-on-Severn, Worcestershire.

GARDENER (SINGLE-HANDED, or UNDER).—Age 22, married when suited; two years' good character.—W. GAIGER, Chilbolton Down, near Stockbridge, Hants.

GARDENER (SECOND, or SINGLE-HANDED), or where help is given.—Age 24, single; references will bear strictest investigation from previous good places. Apply, stating wages, &c., to E. C., 4, Lily Terrace, Warwick Road, Kensington, London W.

GARDENER (good SECOND, or SINGLE-HANDED).—Age 26; eight years' good experience.—W. B., 33, St. Ann's Road, Notting Hill, W.

GARDENER (SECOND, or SINGLE-HANDED).—Age 23; respectable; good experience. Good character.—E. K., Mr. Ruffell, East Street, Havant, Hants.

GARDENER (SECOND), in a Gentleman's Family.—Age 22; eight and a half years' experience. Good character.—H. C., Meadow Side, North Finchley, N.

GARDENER (SECOND); age 20.—Mr. H. GADD, Woolaton Gardens, Nottingham, wishes to recommend Charles Vickers; part Indoors and Out; five years' experience.

GARDENER (SECOND), in the Houses.—Age 24; had twelve years' experience in good establishments. Six years excellent character from present employer.—C. BAKER, Burton Hill Gardens, Malmesbury, Wilts.

GARDENER (SECOND).—Age 21; strong and active; with a good general knowledge of his work. Can be well recommended.—A. RYE, Fetcham, near Leatherhead, Surrey.

GARDENER (SECOND).—Age 21; has had nearly six years' experience in the Houses. One year and a half's good character from present place.—C. GREENFIELD, The Gardens, Chilham Castle, Canterbury.

GARDENER (SECOND), in a Nobleman's or Gentleman's Garden; age 26.—I can confidently recommend a young man as above. Has had seven years' experience.—E. BUNNEY, The Gardens, Conyborough, Lewes.

GARDENER (SECOND), where not less than four are kept.—Age 26; fifteen years' experience in all branches. Three years' character from present place.—F. H., Mr. J. Kirk, Beacon Street, Newark-on-Trent.

GARDENER (SECOND).—Age 23; accustomed to the general routine of Gardening in its various branches. Reference may be made to the advertiser, with whom he has lived three years.—E. MORGAN, The Butts, Harrow-on-the-Hill.

GARDENER (UNDER), in the Houses and Outside, in a good establishment.—Age 22; six years' practical experience. Can be highly recommended.—G. MILES, The Gardens, Titley Court, Titley, Herefordshire.

GARDENER (UNDER), in the Houses, in a Gentleman's Garden.—Age 19; good reference.—Apply, stating terms, to E. W., Mr. J. R. Pearson, Nurseryman, Exchange Row, Nottingham.

GARDENER (UNDER), where Forcing is carried on.—Age 20; six years' experience. Bothy preferred. Can be well recommended by present employer.—GEO. DAKIN, The Gardens, Mickleover Manor, Derby.

GARDENER (UNDER), where two or more are kept.—Age 18; one year and seven months' good character.—A. B., W. Guest, Ironmonger, High Street, Sevenoaks.

GARDENER (UNDER), in a good place.—Age 21; six years' experience. Good character. Bothy preferred.—A. B., 3, Brougham Place, Orleans Road, Twickenham, Middlesex.

GARDENER (UNDER), in a Gentleman's garden.—Age 20; four years' experience. Could pay a small Premium if desired.—Apply, stating particulars, to A. EVANS, Coombe Florey, near Taunton, Somerset.

GARDENER (UNDER), in the Houses, under a Foreman, in a Nobleman's or Gentleman's establishment.—Age 23; eight years' experience. Good character.—J. HUNT, Searle's Gardens, Uckfield, Sussex.

GARDENER (UNDER), in the Houses, under a Foreman, in a Nobleman's or Gentleman's establishment.—Age 21; can be well recommended from present and past employers.—JOHN MORRIS, The Gardens, Doveridge Hall, Derby.

GARDENER (UNDER, as IMPROVER in the Houses, or SECOND where three are kept).—Age 21, single. Excellent testimonials.—A. H., 295, Goldhawk Road, Shepherd's Bush, London, W.

GARDENER (UNDER, or IMPROVER in the Houses).—Age 23; three years' character from present situation. Total abstainer.—D. WALTON, The Gardens, Burley Hall, Oakham.

GARDENER (UNDER), in the Houses.—Age 23; four years in present situation. Good character. State wages, &c.—H. F., 4, Rosetta Street, South Lambeth, London, S.W.

GARDENER (UNDER), where two or more are kept.—Age 20; good character. Last two year's in Nursery.—ALPHA, Elizabeth Villa, Ewart Road, Forest Hill, London, S.E.

FOREMAN, in a good establishment.—Age 27. Twelve years' experience, including four years at Chatsworth.—F. PEPPIT, The Gardens, Osberton Hall, Worksop, Notts.

FOREMAN, or to take Charge of Glass Department.—Age 25; good practice in Forcing of all kinds. Twelve years' excellent character.—G. W., 72, Lavender Road, Clapham Junction, S.W.

FOREMAN, in a good establishment.—Age 26; eleven years' experience; can be strongly recommended from present and previous situations.—G. M. S., The Laurels, Eastcote, Ratford, Herts.

FOREMAN.—J. SIMPSON, Gardener to the Earl of Wharncliffe, Wortley Hall, Sheffield, will be pleased to recommend his Foreman, who has been with him five years and in good places previously, to any Lady or Gentleman requiring a good Gardener and trustworthy man. Ample testimonials and assurances as to character and ability on application. No Single-handed place accepted.

FOREMAN, in the Houses, in a good establishment.—Age 25; eleven years' practical experience. Well recommended.—A. C., 24, Church Street, Fulham, S.W.

FOREMAN (INSIDE, or GENERAL).—Expert with Vines, Peaches, Melons, Cucumbers, Forcing of Strawberries, &c., Stove and Greenhouse Plants, Ferns (Tree, Exotic, and Hardy). Two years and six months in present situation; two years previous, both as Foreman Inside. Disengaged when wanted.—M. W., Oaklands Gardens, Charlton, Cheltenham.

FOREMAN, or SECOND, in a good establishment.—Age 26; ten years' experience in the Forcing of all kinds of Fruits, Flowers, and Vegetables. Good character from previous and last places.—C. BLECK, Wood Cottage, Tellisford, near Bath.

FOREMAN, or SECOND, in a large establishment.—Age 23; well up in Plant and Fruit Growing, and Flower and Kitchen Gardening. Highest character.—W. PROSSER, The Gardens, Marble Hill, Twickenham, Middlesex, S.W.

FOREMAN, in the Houses, PROPAGATOR and General PLANT GROWER to Market Florists or Nurserymen.—Age 33, single. Good references.—A. G., Mr. Nowell, 11, Berkeley Place, Clifton, Bristol.

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NURSERY FOREMAN, or good SECOND (OUTDOOR).—Married, no family; many years' experience in the Culture of Fruit Trees, Roses, and Outdoor Stock generally. Unexceptionable references.—W. H., Lower Wick, Worcester.

NURSERY FOREMAN (INDOOR).—Experienced Propagator and Grower of Stove and Greenhouse Plants, Roses, Conifers, &c. Good Salesman. Four years' character.—H. SANDY, Nightingale Cottage, Sutton, Surrey.

JOURNEYMAN, in a good establishment.—Age 20. Bothy preferred. Six years' practice.—A. B., Mr. Surman, Florist, Witney, Oxon.

JOURNEYMAN, in a Nobleman's or Gentleman's establishment.—Age 22; seven years' experience. Good references.—J. H., Vine Cottage, Peckham Rye, Peckham, S.E.

JOURNEYMAN, in the Houses, in a good establishment.—Age 21; six years' experience. Good recommendations from previous and present employers. Bothy preferred.—J. POWELL, Brickfield Cottage, Kingston Hill, S.W.

JOURNEYMAN, in the Houses.—Age 23; three years' good character from present situation.—Please state wages to JAMES AGATE, Marden Park Gardens, Caterham Valley.

JOURNEYMAN, or IMPROVER, in a Gentleman's Garden.—Age 21; six years' experience. Good recommendations from previous and present employers.—J. B., Pine-apple Nursery, Maida Vale, London, W.

IMPROVER, under a Gentleman's Gardener or Nursery Propagator.—Age 20; good character; several years in Outdoor Nursery.—A. FLOYD, The Nurseries, Princes Risborough, Tring.

IMPROVER; age 20.—C. PUZEY wishes to recommend a young man as Improver in a good Garden.—Scampston Gardens, Rillington, York.

IMPROVER, under a Foreman.—Age 18. Bothy preferred.—F. READ, Spinfield Gardens, Great Marlow, Bucks.

IMPROVER, in the Houses.—Age 20. No objection to Kitchen Garden. Good reference.—T. SMITH, Mr. Remnant's, Marlow, Bucks.

IMPROVER, in the Houses; age 19.—JOHN CHESHER, Gardener to J. M. Heathcote, Esq., wishes to recommend a young Man as above. Two years in present place.—W. WITTERING, Connington, Peterborough.

IMPROVER, in a Large Garden, where he would thoroughly learn his work.—Age nearly 16. He is strong and intelligent, and can have a good character.—D. REED, Nuneham Rectory, Oxford.

IMPROVER.—A strong, active lad (age 17), is desirous of placing himself under a good practical Gardener. Small Premium would be paid.—J. MEDDING, Weston-under-Liziard, Shifnal.

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BOOK-KEEPER, TRAVELLER, &c.—ADVERTISER (age 29) seeks an engagement as above, with a respectable House. Has a good knowledge of Accounts, and of Plants.—SEEDSMAN, 2, Lombard Street, Bedminster, Bristol.

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SEED TRADE.—The parents of a young man (age 19) are desirous of obtaining a situation for him in the above business. He has had fifteen months' experience. Amount of salary not so much an object as a chance of advancement in the profession.—G. A. G., Grange Farm, Bury St. Edmonds, Suffolk.

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"Have not had one diseased." Mr. Thomas Walsh.
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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, March 12, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 377.—Vol. XV. { New Series. { SATURDAY, MARCH 19, 1881. { Registered at the General Post-office as a Newspaper. { Price 5d. Post Free, 5½d.

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*NOTICE.—The Double-page Plate of DAFFODILS, Companion Plate to the POET'S NARCISSUS, published on October 16, 1880, will shortly be issued.*

Now Ready, in cloth, 16s.,
*THE GARDENERS' CHRONICLE,*
Volume XIV., JULY to DECEMBER, 1880.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific, at 1 P.M.; GENERAL MEETING for the Election of Fellows, and Lecture by Shirley Hibberd, Esq., on Tulips, at 3 P.M., on TUESDAY NEXT, March 22.
N.B.—At this Meeting there will be an Exhibition of Hyacinths, Tulips, &c., in the Conservatory, when the following Special Prizes, offered by a Fellow of the Society, for Amateurs, will be competed for, viz.:—For Nine Pots of Hyacinths, single spikes, distinct kinds; and Nine Pots of Tulips, not less than three kinds. 1st Prize, Silver Cup; 2d Prize, £3; 3d Prize, £2. Band of the Royal Horse Guards from half-past 3 o'Clock P.M. Admission, 1s.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
ARRANGEMENTS for 1881.
EXHIBITIONS of SPRING FLOWERS, WEDNESDAYS, March 30, April 27.
SUMMER EXHIBITIONS, WEDNESDAYS, May 25, July 6.
EVENING FÊTE and SPECIAL EXHIBITION, WEDNESDAY, June 22.
Tickets and Schedule of Prizes now ready.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
The FIRST EXHIBITION of SPRING FLOWERS will take place on WEDNESDAY, March 30. Gates open at 1 o'Clock. Tickets to be obtained at the Gardens only, by Vouchers from Fellows of the Society, price 2s. 6d. each.

NEWCASTLE-ON-TYNE SPRING FLOWER SHOW.
WEDNESDAY and THURSDAY, April 6 and 7. Entries close on Friday, April 1, to
JAS. J. GILLESPIE, Secretary.
Cross House Chambers, Newcastle-on-Tyne.
Schedules to be had on application to Secretary.

FARNINGHAM ROSE and HORTICULTURAL SOCIETY.
The ANNUAL EXHIBITION of this Society will be held at Farningham, on WEDNESDAY, June 29, 1881.
Schedules are now ready, and may be obtained of the Secretary,
Farningham. F. BURNSIDE, Esq.

THE ANNUAL EXHIBITION of the STOKE NEWINGTON CHRYSANTHEMUM SOCIETY will be held in the Assembly Rooms, Stoke Newington, on November 14 and 15.
Particulars on application to the Secretary,
WM. GOLDSMITH.
1, Stafford's Place, Grove Road, Stamford Hill, N.

LAWNS and HOW to MAKE THEM.—See CARTERS' PRACTICAL GARDENER. Price 1s.; post-free, 1s. 4d. (Winners of the only Gold Medal for Lawns, Paris, 1878.)
The Queen's Seedsmen, and by Royal Warrant to H.R.H. the Prince of Wales.
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FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

CATALOGUES of SEEDS and PLANTS, or offers of Novelties in all branches of Horticulture, solicited by the Professor C. KLUG'SCHE, Gaertnerei in Cappel-Oehringen, Wurtemberg, Germany.

WANTED, SKELETON LEAVES.—State kind, quantity, and price. Letters only.
A. M. S., 71, Bessborough Street, London, S.W.

Cut Flowers.
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of Hothouse and Outdoor FLOWERS, VIOLETS, PRIMROSES, SNOWDROPS, &c. Cash by return of post.

WANTED, Half-standard ROSES of the leading varieties. State price per 100.
W. G. CALDWELL AND SONS, The Nurseries, Knutsford.

WANTED, Manetti and De la Grifferaie ROSE STOCKS. State cash price per 1000.
G. WILLIAMS, Nurseryman, Stapleford, Salisbury.

WANTED, IMMEDIATELY, 10,000 MANETTI STOCKS, 2000 Seedling BRIER, and 1000 DE LA GRIFFERAIE. State price, and send samples to
F. PARKER, Kingsley, Alton, Hants.

WANTED, RHODODENDRON PONTICUM, 1 to 1½ and 1½ to 2 feet; must be strong, bushy, well rooted, and uninjured by frost. Quote lowest price per 1000 to
F. & A. DICKSON & SONS, The "Upton" Nurseries, Chester.

WANTED, 300 JUNIPERUS PROSTRATA, SABINOIDES or TAMARISCIFOLIA, good plants, for cash.
J. MORSE AND SON, Nurserymen, Dursley.

WANTED, AT ONCE, 1000 LIGUSTRUM OVALIFOLIUM (oval-leaved Privet), 8 or 6 feet high; 500 good strong Abele and Italian POPLARS, of any other trees that will do for Planting an Avenue by the Sea.
W. WILLETT, Offices, The Drive, Hove, Sussex.

WANTED, good BOX EDGING. Apply, stating quantity and price, to
JOHN WILLS, General Manager, General Horticultural Company, Warwick House, 142, Regent Street, London, W.

WANTED, 2-yr. Seedling ASH. Sample and price to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

WANTED, strong well-rooted 2-yr. old ASPARAGUS PLANTS. Send particulars as to price, and number to offer, to
F. CLARKE, Old Manor House, Beckenham, Kent.

WANTED, ASPARAGUS PLANTS, 1-yr and 2-yr. old, healthy and vigorous.—Send fair sample by post, stating quantity and lowest price per 1000, to F. & A. DICKSON & SONS, The "Upton" Nurseries, Chester.

TO FARMERS and GROWERS.—Consignments of Cabbage, Savoy, Brussels Sprouts, Broccoli Sprouts, Turnip-tops, and Vegetables in general, wanted for Sale on Commission.—T. BROSNAN, Covent Garden Market, W.C.

To the Wholesale Seed Trade.
WANTED, 30 Bushels Pomeranian White Globe, 60 bushels Matson's Purple-top Rutabaga, 40 bushels Red Norfolk, 16 bushels Grey Stone, 8 bushels Purple-Top Mammoth, 20 bushels Green-Top Scotch, 12 bushels Purple-Top Scotch, and 24 bushels Green Globe TURNIP; also 10 cwt. Berkshire Prize Yellow Globe, 8 cwt. Mammoth Long Red, 4 cwt. Orange Globe, and 2 cwt. Golden Tankard MANGEL WURZEL. All must be of 1880 growth, and good samples; and for cash on delivery in London or Liverpool less 5 per cent. discount.—COLONIAL, *Gardeners' Chronicle* Office, W.C.

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SUTTONS' SEED POTATOS.
SUTTONS' MAGNUM BONUM.

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TWELVE AMARYLLIS, finest named, 21s.; fine bulbs to produce flowers early this spring (double size, very remarkably fine, 42s.), will make a splendid show or flower. Packages gratis for cash with order, and one bulb gratis.
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GRAND NEW COLEUS, from a Collection of 30 varieties—not rooted scraps, but good plants—2s. 6d. per dozen; larger, with Cuttings on, 4s. 6d. per dozen. ZONALS of 1880, as per previous Advertisement, 12s. per dozen. All free for cash with order. LIST free.
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SPANISH CHESTNUT, HAZEL, ASH, LARCH, SCOTCH, BIRCH, ALDER, WILLOW, and THORN QUICK, all stout, well rooted, transplanted. A large quantity to be sold.
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RICHARD SMITH AND CO., Nurserymen, Worcester.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Samples and Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

THIRTY-SIX ACHIMENES, Finest Sorts, for 10s.—Sent carriage free on receipt of cash. Longiflora alba, Mauve Queen, and ten other most beautiful new sorts; very large corms.
J. H. LEY, Royal Nursery, Croydon.

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CHARLES TURNER'S Descriptive Price LIST for the present season is now ready, and may be had on application.
The Royal Nurseries, Slough.

JULES DE COCK, The Ornamental Plant Nurseries, Ghent, Belgium, offers to the Trade many thousands of healthy CAMELLIAS, of the best sorts, from 1 to 1½ foot high, without buds.

YOUNG'S GOLDEN CHINESE JUNIPER (JUNIPERUS SINENSIS AUREA).
See large Advertisement, p. 376.
MAURICE YOUNG, Milford Nurseries, near Godalming.

Grapes this Year.
FRUITING CANES, thoroughly ripened without bottom-heat, 7s. 6d. to 10s. 6d. each. PLANTING CANES, 3s. 6d. to 5s. each. Leading kinds.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

TERRA-COTTA WINDOW BOXES. (See illustration in the *Gardeners' Chronicle* of February 26 p. 276.) Prices on application.
JOHN MATTHEWS, Royal Pottery, Weston-super-Mare.

## SALES BY AUCTION.

**Important Sale of a First-class Collection of** CARNATIONS, PICOTEES, PINKS, CLOVES, a superb assortment of 400 Standard and Dwarf ROSES, selected FRUIT TREES, hardy CONIFERÆ, SHRUBS, AMERICAN PLANTS, SEEDS, a COLLECTION of GREENHOUSE PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on TUESDAY NEXT, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C.

**Important Sale of Orchids in Flower and in Bud,** in the City.

MESSRS. PROTHEROE AND MORRIS beg to announce that they will SELL by AUCTION, in the large Estate Room at the Mart, Tokenhouse Yard, E.C., opposite the Bank of England, on MONDAY, March 28, a great number of Established ORCHIDS in flower and in bud, comprising selections from some of the most noted collections in the neighbourhood of London.

On view morning of Sale. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Consignment from Japan.**

MESSRS. PROTHEROE AND MORRIS will SELL at the Mart, Tokenhouse Yard, E.C., on MONDAY, March 28, 3000 very fine bulbs of LILIUM AURATUM, L. EXIMEUM, L. ALBUM KRŒTZERI, and a new White LILY, with 100 clumps of rare and beautiful IRIS, just arrived from Japan; also a small importation of L. NEILGHERRENSE.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

**Edgware, N.W.**

The best Season for Transplanting.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, N.W. (ten minutes' walk from the station), on THURSDAY, March 31, at 12 o'Clock, a portion of the remarkably well-grown NURSERY STOCK, comprising a great variety of handsome Lawn Trees; and a splendid collection of other CONIFERÆ and EVERGREEN SHRUBS, which have all been carefully transplanted and prepared for removal, and are well adapted for ornamental planting.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Land Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

**5000 Lilium auratum, just received from Japan.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 21, at half-past 12 o'Clock precisely, an importation of 5000 Bulbs of LILIUM AURATUM, just received from Japan; also a large quantity of LILIUM species, of which drawings will be shown; 1000 LILIUM KRAMERI; an importation of Californian TREE SEEDS, including Picea grandis, Pinus Benthamiana, P. Llaveana, Thuya gigantea, &c.; a consignment of 2000 Double American TUBEROSES; several thousand Bulbs of TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, and GLADIOLI, from New Jersey; a consignment of choice Tuberous-rooted BEGONIAS, including fine double-flowering varieties from Ghent; two cases of BULBS from the Cape; a consignment of PLANTS from Germany; Twenty-five Cases of BELLA DONNA LILIES, &c.

On view morning of Sale, and Catalogues had.

**Consignment of Plants from Belgian, French, and** ENGLISH NURSERIES.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 23, at half-past 12 o'Clock precisely, 1500 First-class Standard, Half-Standard, and Dwarf ROSES, including most of the leading varieties, from renowned English and French Nurseries; also a consignment of choice-named CAMELLIAS, Indian AZALEAS, nice healthy plants, and well set with bloom-buds; DRACÆNAS, PALMS, and other Greenhouse Plants from Ghent; Pyramid and Dwarf-trained FRUIT TREES, all good named sorts; Ornamental-flowering TREES and SHRUBS; a great variety of Hardy Herbaceous BORDER PLANTS, choice GLADIOLI, LILIUMS, TIGRIDAS, and other BULBS for present planting, &c.

On view morning of Sale, and Catalogues had.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, of St. Alban's, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 24, at half-past 12 o'Clock precisely, Valuable ORCHIDS, consisting of an importation of Mormodes lentiginosa, Reich. f.—flowers yellow, minutely spotted red, centre of flower bright scarlet and pure white, some of the varieties have sepals and petals rose-coloured; the grandest lot yet offered of Zygopetalum maxillare, the rare Zygopetalum rostratum, a splendid importation of Oncidium curtum, Oroithidium sophronites, Colax jugosus, the very rare Paphinia cristata and P. rugosa, a splendid lot of Cattleya citrina; also a fine lot of the rare CHYSIS LÆVIS and other ORCHIDS.

On view morning of Sale, and Catalogues had.

**The First Portion of the Celebrated Collection of** ORCHIDS of JOHN DAY, Esq., TOTTENHAM.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY and FRIDAY, March 31 and April 1, at half-past 12 o'Clock precisely, the first portion of this splendid COLLECTION of ORCHIDS, comprising, amongst other fine things, the following:—

| | |
|---|---|
| Masdevallia Dayana | Aerides Schröderi |
| ,, velifera | ,, Veitchianum |
| ,, (Bull's blood) Harryana | ,, Fieldingii |
| Lælia anceps rosea | Angræcum Ellisii |
| ,, ,, alba | ,, sesquipedale |
| ,, ,, Dawsoni | Cattleya exoniensis |
| ,, autumnalis atrorubens | ,, Bluntii |
| ,, Jongheana | ,, labiata |
| ,, elegans, in variety | Calanthe Textoni |
| Phalænopsis amabilis | Cymbidium eburneum |
| ,, grandiflora | ,, tigrinum |
| ,, Schilleriana | Cypripedium Spicerianum |
| Odontoglossum crispum (in great variety) | ,, Warnerianum |
| ,, Andersonianum | ,, Stonei |
| ,, Coradinei | ,, var. platytænium |
| ,, Ruckerianum | Dendrochilum filiforme |
| ,, nævium majus | Dendrobium superbiens |
| ,, vexillarium (in great variety) | ,, Veitchianum |
| pulchellum majus | Epidendrum Cooperianum |
| | ,, syringothyrsus |

On view morning of Sale, and Catalogues had.

**Anthurium Andreanum.**

MR. J. C. STEVENS will SELL by AUCTION, by order of Mr. F. Sander, St. Albans, on THURSDAY NEXT, March 24, a fine lot of nicely established plants of ANTHURIUM ANDREANUM, propagated from cuttings (not seedlings)

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

**Flowering Orchids.**

MR. J. C. STEVENS begs to announce that he has fixed the following days for SALES of ORCHIDS in flower or bud:—

| | |
|---|---|
| FRIDAY, April 8 | WEDNESDAY, July 13 |
| TUESDAY, April 26 | |
| TUESDAY, May 10 | FRIDAY, August 5 |
| FRIDAY, May 20 | WEDNESDAY, August 24 |
| WEDNESDAY, June 1 | FRIDAY, September 16 |
| WEDNESDAY, June 15 | |
| WEDNESDAY, June 29 | FRIDAY, October 14 |

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

**Enfield, Middlesex.**

To BUILDING SOCIETIES, SPECULATORS, and OTHERS.

Remaining portion of BUILDING LAND.

The BRIDGENHALL ESTATE—85 Plots of valuable Freehold Building Ground, being the remaining portion of this excellent Property. Nice-tenths may remain at 5 per cent. for nine years, payable by instalments. A free conveyance given. Property situate about 1 mile from Great Eastern Station, Enfield, 1¼ mile from Great Northern Station.

MR. ARTHUR JACKSON will SELL by AUCTION, at the George Inn, Enfield, on WEDNESDAY, March 23, at 7 o'Clock in the Evening precisely, the above desirable BUILDING LAND.

Catalogues may be had of Messrs. RUSSELL, SON AND SCOTT, Solicitors, 11, Old Jewry Chambers, E.C.; and of Mr. ARTHUR JACKSON, Land and Estate Agent, 25, Liverpool Street, E.C., and Enfield, Middlesex.

**Moor Edge Nursery, Tansley, near Matlock.**

To NOBLEMEN, NURSERYMEN, and OTHERS.

MR. GEO. MARSDEN respectfully announces that he is instructed to unreservedly SELL by AUCTION, upon the Premises of Mr. Joseph Smith, Moor Edge Nursery, at Tansley aforesaid (under the powers of a Bill of Sale), on THURSDAY, March 24, and following day, if necessary, commencing at 10 o'Clock punctually, the entire NURSERY STOCK, comprising upwards of 360,000 Seedling Rhododendrons, several thousand large and bushy Rhododendrons, named varieties; 600,000 Spruce, many thousands of Spanish Chestnuts, Poplars, Mountain Ash, Cotoneaster, Azaleas, Cupressus Lawsoniana, Golden and other Yews, Wellingtonia gigantea, Coniferæ, Cedrus Deodara, Balm of Gilead, Ericas, Hollies, Alder, Beech, Scarlet Thorns, Irish Junipers, Retinospora pisifera, and other Ornamental and Forest Trees, and about 800 Fruit Trees.

Catalogues will be ready one week prior to the Sale, and may be had on application to the AUCTIONEER, Wirksworth.

Arrangements can be made for the lot or lots remaining on the ground until March 1, 1882.

Moor Edge Nursery is about 2 miles from Matlock Bridge Station on the Midland Branch (Ambergate to Buxton and Manchester.)

**Enfield, Middlesex.**

The GORDON NURSERIES and TWO FREEHOLD VILLAS, let at rentals and estimated rentals of £121 16s.; situate at Chasedale, Enfield, Middlesex, a few minutes from two Railway Stations.

MR. ARTHUR JACKSON will SELL by AUCTION, at the "George Hotel," Enfield, Middlesex, on WEDNDSDAY, March 30, at 7 o'Clock in the Evening precisely, by the direction of the Proprietor, who is retiring from business through ill-health, the following valuable Properties, comprising a well-built Brick and Slated FREEHOLD RESIDENCE, containing Parlour, Kitchen, Scullery, five Bedrooms. In the rear of property are three SPAN-ROOFED GREENHOUSES, 61 by 12; together with LEAN-TO, 30 by 12, Heated with Hot Water; 1400 feet Iron PIPING, BOILER built by Thames Bank Iron Company. Also Two VILLAS adjoining, producing £46 16s. Property has a frontage 45 feet by 245 feet depth.

Particulars and conditions may be had of ALBERT GOUGH, Esq., Solicitor, Waltham Abbey, Essex; and of Mr. ARTHUR JACKSON, Auctioneer, 25, Liverpool Street, E.C., and Enfield.

**Enfield Highway, Ponder's End, and Nag's Head** LANE, ENFIELD, MIDDLESEX.

By direction of Executors.

VALUABLE FREEHOLD and LEASEHOLD PROPERTIES.

MR. ARTHUR JACKSON has received instructions from the Executors and Trustees of the will of the late William Mitchell, Esq., to SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on WEDNESDAY, April 20, at 2 o'Clock precisely, in various lots, the following valuable PROPERTIES:—

A substantially brick-built FREEHOLD RESIDENCE, at Enfield Highway, with every convenience, suitable for a moderately-sized family.

About 40 acres of productive MARKET GARDEN LAND, in a high state of cultivation, of which about 16½ acres are planted with choice varieties of Fruit Trees, now well established; together with an extensive range of outbuildings. About 7 acres are most eligible, and now ripe for building operations.

A valuable FREEHOLD BRICKFIELD, situate in Nag's Head Lane, Enfield, containing 4 acres, of which about 2 acres of the deep beds of clay are unworked.

THREE FREEHOLD DWELLINGS and 1½ acre of FRUIT LAND, situate in the high road at Ponder's End, now also ripe for building operations.

THREE LEASEHOLD DWELLINGS and BLACKSMITH'S SHOP, also at Ponder's End.

THIRTY-ONE FREEHOLD exceedingly well-built brick and tiled DWELLINGS in St. James' Terrace and Old Road, Enfield Highway; let to excellent tenants at rentals amounting to £369 4s.

A FREEHOLD BRICKFIELD at the Old Road, containing about 5 acres; well adapted for a building estate.

Also about 57 plots of FREEHOLD BUILDING LAND, in St. James' Road and the Old Road.

Particulars, conditions, with plans, may be had ten days previous to the Sale, of J. R. RIGNALL, Esq., Solicitor, Enfield; at the Mart, Tokenhouse Yard; and of Mr. ARTHUR JACKSON, Auctioneer, Land and Estate Agent, 25, Liverpool Street, E.C., and Enfield Middlesex.

**Orchids in Flower or Bud.**

MR. J. C. STEVENS' next SALE of FLOWERING ORCHIDS will take place on FRIDAY, April 8, and he will be glad of entries not later than THURSDAY, March 31.

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

FOR SALE, FIVE £100 SHARES in CRANSTON'S NURSERY AND SEED COMPANY (Limited), Hereford, at PAR. An Interim Dividend of 6 per cent. was paid in January, and a dividend of 8 per cent. is expected in June. Apply to

F. G. PAINTER, 5, Moorgate Street Buildings, London, E.C.

**SUNNINGDALE NURSERY.**

*To Gentlemen Seeking a Pleasant Healthy Occupation.*

TO NURSERYMEN WISHING TO ENLARGE THEIR BUSINESS.

**To Gentlemen's Gardeners with Means.**

THE DIRECTION of the SUNNINGDALE NURSERY, established and successfully conducted by CHARLES NOBLE, must now, owing to the age and failing health of the Proprietor (who has no son to succeed him) be delegated to more robust hands, and he is prepared to entertain proposals for importing into the business new energies, either wholly or in part. The Grounds are extensive, over two-thirds being Freehold, and one-third Leasehold, to run some time, with little chance of objection to renewal. The situation is one of the very best in England (only a few minutes' walk from a railway station); it contains within itself every kind of soil, from heavy loam to peat and pure sand; and the neighbourhood is admitted on the highest authority to be one of the most healthy positions in Great Britain. The owner is prepared to consider any *bonâ fide* proposal, either from one or more persons, and every reasonable facility will be given to persons of moderate means. Skill and enterprise will be taken into account, and as favourably considered as mere money value. The business is capable of extension, or can be limited at pleasure, and contains within itself several specialities of undoubted value.

Bagshot, 1881.

TO BE DISPOSED OF, a FLORIST and SEED BUSINESS, with a good connection. The Shop is well situated in a principal street of Wolverhampton. The stock of sundries and fixtures to be taken to. This is a capital opportunity for a man who thoroughly understands the business.—For particulars apply to C. SHAW, Finchfield, Wolverhampton.

**Brentwood, Essex.**

Half-an-hour's ride from London, in the best position in the Town.

AN OLD ESTABLISHED FLORIST'S and SEED BUSINESS, presenting an excellent opening to a man of experience and limited capital, there being no Stock to take, and no Goodwill to pay for. Comprises an elegible House and Shop, several ranges of Glass, and capital Peach-house, in full bearing. Unexceptional references will be required. Rent on application to

Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.,

SEEDSMAN'S SHOP, and nearly an Acre of NURSERY GROUND, within five minutes' walk of the market at Hemel Hempstead; rent £42.

Apply to Mr. N. W. ROBINSON, Hemel Hempstead.

THE HORTICULTURAL EXHIBITION to be held in connection with the Essex Agricultural Society's Show at Southend-on-Sea will take place on WEDNESDAY and THURSDAY, June 15 and 16, when SILVER CUPS and PRIZES to the value of about ONE HUNDRED and THIRTY POUNDS will be offered for Plants, Fruit, Flowers, and Vegetables. No Entrance Fee will be charged to Exhibitors. ENTRIES CLOSE JUNE 1. The Schedule of Prizes (which will be published next week), Entry Forms, and full particulars, may be obtained of

Mr. JOHN TAYLOR, Jun., Hon. Secretary.

22, Cambridge Terrace, Southend-on-Sea, Essex.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS are requested to communicate with

W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WISE AND RIDES are prepared to RECEIVE CONSIGNMENTS of choice CUT FLOWERS, FRUITS, CUCUMBERS, &c., in quantity.

3, Tavistock Court, Covent Garden, W.C.

BUYERS wishing to avail themselves of a CHEAP OFFER of various TREES and SHRUBS should refer to large Advertisement appearing in this Paper on the 8th of last month, or see T. L. MAYOS' reduced LIST.

WANTED, strong Standard Cider and other APPLE TREES; also ASH, 3 to 4 feet.

Highfield Nursery, Hereford.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

SUTTONS' MAGNUM BONUM POTATOS.—For Sale, 11½ ton of the above Potato (a splendid sample, free from frost or disease), at £6 6s. per ton, nett cash.

EDWIN PAIN, The Gardens, Sundorne Castle, Shrewsbury.

QUICKS, strong and good, 3 to 3½ feet, 17s. per 1000. PEAR STOCKS, fine, 30s. per 1000.

W. JACKSON, Blakedown, Kidderminster.

**To the Trade.**

GLOIRE DE DIJON ROSES.—By the 100 or 1000. Fine plants on the Seedling Brier. Price on application.

MORRISON BROTHERS, Aberdeen.

**To Exhibitors and Buyers of Specimen Plants.**

W. G. CALDWELL AND SONS beg to offer the whole of their celebrated Exhibition Plants, which include all the best varieties of Flowering and Ornamental Foliage Plants. Also large quantities of HEATHS in various sizes, and other hard-wooded Plants, all in excellent condition and perfectly clean. Lists and prices on application.

The Nurseries, Knutsford.

**To the Country Trade.**
WHITE SPANISH and STRASBURG ONION.
JAMES CARTER, DUNNETT AND BEALE are prepared to quote Special Prices to their Country Friends of the above, on application.
237 and 238, High Holborn, London, W.C.

GRAMPIAN POTATOS, from Original Stock, as sent out by us in 1876. Price per Cwt. or Ton on application.
WM. SMITH AND SON, Seedsmen, Aberdeen, N.B.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock :—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high ; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high ; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high ; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" " ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded ; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

KING NOBLE or EARLY GOLDEN SHAW ; the best early Potato of its class, being as early as the true old Ashleaf, and as fine a flavour, but produces four to six times the quantity. Dwarf and compact habit. First-class for early work. Per peck, 4s. ; per bushel, 14s. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet ; BIRCH, 5 to 6 and 6 to 8 feet ; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet ; do. Horse, 6 to 8 feet ; ELM, Wych, 8 to 10 feet ; do. Chichester, 10 to 16 feet ; FIR, Scotch, 2 to 3 feet ; do. Spruce, 2 to 3 and 3 to 4 feet ; HAZEL, 2 to 3 and 3 to 4 feet ; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

WHITE ELEPHANT.—A choice new American Potato, of very great promise, raised from the same seed-ball as the Beauty of Hebron, which it resembles in many respects, but more productive ; in fact, we may claim that the White Elephant not only possesses the unexcelled qualities of the Beauty of Hebron, but also the wonderful productiveness of the old California of twenty years ago. Price 1s. 3d. per pound, 7 lb. 7s. 100 other choice kinds in stock.
DANIELS BROS., Seed Farmers, Norwich.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

JOHNSTON'S DOWNSHIRES.—We can now supply this fine variety, 3s. 6d. per peck, or 10s. 6d. per bushel. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment Norwich.

**Gold Medal Begonias.**
LAING'S CHOICE HYBRIDISED SEED, superior to all others, is harvested from their specimen plants which were again awarded first prizes at all the London great flower shows. Sealed packets, free by post, 1s. and 2s. 6d. each. All first quality. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

# ARTHUR VEITCH MEMORIAL

A Fund, to be called the "ARTHUR VEITCH MEMORIAL FUND," the proceeds to be dispensed through the GARDENERS' ROYAL BENEVOLENT INSTITUTION, for the benefit of aged and infirm GARDENERS, or their WIDOWS.

This movement having met with the warm approval of the leading Horticulturists in the United Kingdom, the Committee beg to direct the attention of Intending Subscribers to the List of Hon. Collectors for the Fund advertised in the *Gardeners' Chronicle* of February 5.

Subscriptions (not to exceed One Guinea from Head, or Half a Guinea from Under Gardeners) are respectfully solicited from all classes of Horticulturists.

The Fund will be open Three Months, and when closed each Donor will receive a Subscription List, showing the amount given by each Subscriber.

**Hon. Treasurer.** J. ROBERTS, The Gardens, Gunnersbury Park, Acton, W.

**Hon. Secretaries.** W. WILDSMITH, Heckfield Gardens, Winchfield, Hants.
J. HUDSON, The Gardens, Gunnersbury House, Acton, W.
J. AUSTEN, The Gardens, Ashton Court, Bristol.

**Extra Strong Vines.**
FRANCIS & ARTHUR DICKSON & SONS offer as above, splendid well ripened, short-jointed Canes, both Fruiting and Planting sizes, raised without bottom-heat, and thoroughly clean and healthy. Priced LIST, including all the best varieties, on application.
The "UPTON" Nurseries—Chester.

**30,000 Finest**
SHOW and FANCY PANSIES in Cultivation, in over 300 most beautiful and distinct varieties, to dispose of at 20s. to 25s. per 100. Also most superb collections of all the newest and best ANTIRRHINUMS, PENTSTEMONS, PHLOXES, VIOLAS, MIMULUS, &c., of which priced Catalogue for 1881 of 53 pages—which should be in the hands of all growers of these popular flowers—will be sent on application.—J. FORBES, Buccleuch Nurseries, Hawick, N.B.

**Special Offer of Magnum Bonum**
SEED POTATOS (Suttons' var., true). 40 Tons free on Rail at Castle Donington or Ashby, at £7 per Ton, from 10 cwt. upwards.
JOHN MACLEAN, Donington Park, near Derby.

**Rose Blooms.**
EDWIN HILLIER offers Tea-scented ROSE BLOOMS, 3s. 6d. per dozen. Not less than two dozen sent, and for cash only.
TELEGRAPH CUCUMBER SEED, true, 18 seeds for 1s.
The Nurseries, Winchester.

BEAUTY of NORFOLK.—Choice new Seedling Potato, of extra fine quality. This may be described as a late Beauty of Hebron, being of the same habit of growth and quality, but more robust, and ripens a fortnight later, is a good disease resister, and first-class for Exhibition. Per pound, 1s. ; 7 lb., 6s. ; 14 lb., 10s. 6d. 100 other choicest kinds in stock.
DANIELS BROS., Seedsmen to H.R.H. the Prince of Wales, Norwich.

H. LANE AND SON, having many Acres of the following, can offer them very cheap ; all well transplanted, and such as cannot fail to give satisfaction. An inspection is solicited :—
ABIES ORIENTALIS, 3 to 7 feet, fine.
" DOUGLASII, 7 to 12 feet.
" MORINDA, 8 to 10 feet.
CEDRUS DEODARA, 3 to 9 feet, a very large stock, extra fine.
CRYPTOMERIA ELEGANS, 2 to 7 feet, very fine.
CUPRESSUS LAWSONIANA, 3 to 15 feet.
" " ERECTA VIRIDIS, very fine, in large quantities.
PICEA GRANDIS, 16 to 20 feet.
" LASIOCARPA, 4 to 12 feet.
" NOBILIS, 3 to 12 feet, fine.
" NORDMANIANA, 3 to 12 feet, very fine.
" PINSAPO, 2 to 7 feet.
RETINOSPORAS, in variety, 1 to 7 feet, very fine.
YEW, English, 3 to 6 feet.
" variegated, 2 to 6 feet, very large, stock fine.
" Irish, 3 to 9 feet.
THUYA GIGANTEA, 5 to 10 feet.
" LOBBII, 4 to 18 feet.
" OCCIDENTALIS, 3 to 12 feet.
" SIBERIAN, 3 to 6 feet.
THUYOPSIS BOREALIS, 3 to 18 feet.
" DOLABATA, with leaders, 2 to 4 feet.
WELLINGTONIA GIGANTEA, 2 to 12 feet.
LAURELS, Standard Portugal, 4½ to 7 feet stems, very fine.
Standard Ornamental Trees, Chestnuts, Limes, Planes, Thorns, Poplars, Mountain Ash, &c., Evergreen Shrubs, Aucubas, Berberis, Box, Cotoneaster, Hollies, Laurels, Rhododendrons, in great variety, well set with bloom-buds. Deciduous Shrubs in great variety, Forest Trees, &c., Standard and Dwarf-trained Cherries, very fine ; Pyramid Apples, Pears and Plums ; Standard Damsons.
CATALOGUE and particulars on application.
The Nurseries, Berkhamsted, Herts.

WILLIAMS' for ORCHIDS either for the Cool-house, Mexican, for East India-house, either in Specimens or small plants. The largest Collection of Specimens suitable for Exhibition in the Trade.

WILLIAMS' for ANÆCTOCHILI and GOODYERAS. This interesting class of plants has for some years been much neglected, a fine Collection may, however, be seen here.

WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

LILY of the VALLEY CLUMPS.—Best Dutch variety ; for making beds they are a chance seldom met with. Price 21s. per 100.
W. F. BOFF, 203, Upper Street, Islington, London, N.

TWELVE HARDY EXOTIC and BRITISH FERNS, 10s. 6d.—Many being dormant, this is the best time to purchase, no injury being received by young fronds. Osmundas from America, Polystichums and Athyriums from Japan, Aspleniums from Jersey, &c. Strong plants for garden, rockery and other purposes. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, West Croydon.

**To the Trade.**
CUPRESSUS LAWSONIANA LUTEA.—Fine healthy young plants, 6 to 9 inches, 30s. per 100 ; 9 to 12 inches, 50s. per 100 ; 12 to 18 inches, 100s. per 100 ; 18 to 24 inches, 210s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming.

CARNATIONS, PICOTEES, PANSIES, PINKS, fine healthy plants, best named varieties.
S. HARTLEY, Headingley Nursery, Leeds.

PALMS for DECORATION.—Twelve large and graceful Palms for 42s. Fine, strong, clean, well-grown plants, in 5-inch pots, fit for table or any decoration, including Euterpe edulis, Latania, Corypha, Areca, &c., in pairs or all distinct. Packages and extra Ferns gratis, to compensate for carriage any distance, for cash with order.
J. H. LEY, Royal Nursery, Croydon.

CURRANT TREES.—Black, 3-yr. old, strong stuff, £3 10s. per 1000.
HY. MEYERS, Market Gardener, Twickenham, W.

QUICK, cheap, 100,000, about 2 to 4 feet, 18s. to 20s. per 1000 ; smaller size, from 10s. to 15s. per 1000.
W. GROVE, St. Owens Nursery, Hereford.

LILIUM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz. ; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

**Hardy Rhododendrons and Azaleas.**
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds. HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

ADIANTUM WILLIAMSII, and Choice CALADIUMS.—We offer fine healthy Plants of this beautiful new Adiantum, in 4½ inch pots, at 3s. 6d. to 5s. each. Smaller, 30s. per dozen. Also some extra large bulbs of CALADIUMS, choice varieties. Particulars and prices on application.
F. & A. DICKSON & SONS, The "Upton" Nurseries, Chester.

**Mangel Wurzel Seed.**
JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion, Rainham, Enfield Market, and Red Pickling, in any quantity. Apply to
Mr. T. DAVIES, Tangley, Guildford, Surrey.

**Vines—Vines—Vines.**
J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

**Why give more than 9s. per Cwt, for**
MAGNUM BONUM POTATOS, when a splendid sample, true, can be obtained at that price? Bags gratis ; terms cash.
The EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**To the Trade.**
FOR SALE, a few Bushels of WILLIAM I., STANDARD, and SHAH PEAS. Also a few Tons of MAGNUM BONUM and SCHOOLMASTER POTATOS. For particulars apply to
F. AND C. MYATT, Offenham, Evesham.

**Seedling Thorns and other Forest Trees, Hardy**
CONIFERS and SHRUBS, CHEAP.
MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

**Pelargoniums—Pelargoniums.**
JAS. HOLDER AND SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

BERBERIS AQUIFOLIA, transplanted, bushy plants, 1½ to 2 feet, 10s. per 100, 80s. per 1000.
LIMES, the best sort for avenue planting, splendid trees, 9 to 10 feet, 15s. per dozen, 100s. per 100; 8 to 9 feet, 12s. per dozen, 80s. per 100.
LIME layers, well-rooted, 5 to 6 feet, 25s. per 100.
" white leaved, grafted, 8 to 10 feet, fine trees, 2s. each, 21s. per dozen.
SYCAMORE, Common, 9 to 10 feet, 9s. per dozen, 60s. per 100.
LABURNUMS, 8 to 10 feet, 12s. per dozen, 80s. per 100.
ELMS, of sorts, 6 to 8 feet, 35s. per 100.
HORSE CHESTNUTS, 8 to 9 feet, 9s. per dozen, 60s. per 100.
POPLARS, 10 to 12 feet, 12s. per dozen, 80s. per 100.
" Black Italian and Ontario.
WEEPING ASH, 8 to 10 feet, straight stems and good heads, 21s. to 24s. per dozen.
BEECH, Purple, grafted, 7 to 8 feet, 15s. per dozen, 100s. per
WALNUTS, 8 to 10 feet, 12s. per dozen. [100.
THORNS, Paul's new Double Scarlet, fine Standards, 12s. per dozen, 80s. per 100; Pyramids, 5 to 6 feet, bushy, 9s. per dozen, 60s. per 100.
COB NUTS and FILBERTS, from layers, 5 to 6 feet, strong, bushy plants, 9s. per dozen, 50s. per 100; 3 to 4 feet, 6s. per dozen, 35s. per 100.
KINMONT AND KIDD, Exotic Nursery, Canterbury.

**Seed Potatos.**
SCHOOLMASTER and EARLY BIRD.
CHARLES TURNER has fine samples and pure stocks of the above two popular varieties. For full description, see Catalogue, now ready.
The Royal Nurseries, Slough.

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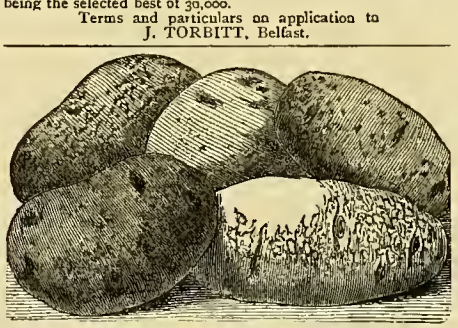

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After five years' trial this magnificent kind has proved, without exception, the best yet introduced, excelling all others by its beauty of habit and superior quality. It is of dwarf robust habit, being very branching and exceedingly floriferous, producing fine erect spikes ranging from 8 to 14 inches in length, and sometimes attaining a length of 18 inches. This variety possesses a most delightful odour, and is far more fragrant than other kinds. It is also much hardier than the older forms, and more suitable for decorative purposes.

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TRANSPLANTED FOREST TREES, QUICKWOOD, LARCH, &c., viz.:—

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| 500,000 LARCH .. .. .. | 1 to 3 feet. |
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The above are clean grown and well rooted.
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Strong plants of all the best in 6-inch pots, ready for immediate forcing or planting, 35s. per 100; in small pots, 12s. per 100. Many thousands ready for delivery, and cannot fail to give satisfaction. Send for a LIST.
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ASH, Mountain, 2 to 3 feet, and 6 to 12 feet.
LABURNUM, 4 to 7 feet.
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,, Ontario, 10 to 15 feet.
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Strong HOLLY, 9 to 12 inches high, 12s. per 100.
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ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 3½ feet.
SCOTCH.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted.
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**Our Cinerarias, Cyclamen, and Primulas.**
THE two former are now splendidly in flower, and all for seed. The crop on the latter is nearly ripe, and probably far exceeds anything of the kind ever before seen in this country; and we purchased the following, so as to be quite sure that we possess the best strain in the Trade, which the following will show.

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CATALOGUE post-free.

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SAVOY, Large Drumhead, and finest BRUSSELS SPROUTS, at 3s. per 1000.
PRICKLY COMFREY, true Caucasian, crown sets, 2s. 6d. per 100, 20s. per 1000.

**POTATOS.**
Fine samples, grown on new, light, and heavy land; can be highly recommended to those who require a change of seed:—

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| Climax and Peerless, very productive, and good quality .. .. .. .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
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| Model, fine, much recommended .. .. | 1 6 | 5 0 | 9 6 | 9 0 |
| Schoolmaster (true), extra fine, quality not to be surpassed .. .. .. .. | 2 6 | 9 0 | 16 0 | 15 0 |
| Paterson's Victoria (true): finest white Regents | 1 6 | 5 0 | 9 0 | 8 0 |
| Magnum Bonum (Sutton's true).—An extra selected stock of this valuable variety, splendid seed size, clean sample. Undoubtedly the best disease-resister and heaviest cropper in cultivation .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
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HERB ROOTS, SAGE and THYME, very fine plants; also RHUBARB for planting; and ASPARAGUS PLANTS. See General CATALOGUE of all kinds of superior Bedfordshire-grown Seeds, Plants, and Roots, on application to
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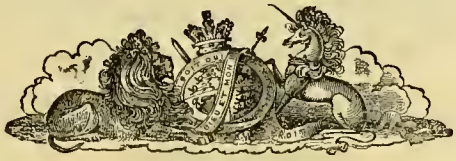

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THE
# Gardeners' Chronicle.

*SATURDAY, MARCH* 19, 1881.

## A GRATEFUL RECORD.

In an unpublished work of Alexander Necham's in the British Museum, there are some curious details relating to the state of gardening in the good old times. Necham, it will be remembered, was Master of the St. Alban's Grammar School, and died Abbot of Cirencester in 1217.

In gratitude to him and other patriots who, in the mediæval period, added to our garden products, or otherwise concerned themselves with horticulture, we will here record some of the results of their labours. The only aboriginal British fruits were hips and haws and a few others; the rest were imported. Necham mentions, among those which grew in the gardens of his day, Cherries, Mulberries, Pears, Apples, Chestnuts, Figs, Almonds, and Peaches. There were Quinces soon after Necham, perhaps before. We need hardly say that the Vine grew at St. Alban's, and had flourished at Cirencester since the Romans. The nuts of the period were the "large nut," *i.e.*, the Walnut, the Chestnut, and the Hazel nut.

Mr. Hudson Turner has stated in a valuable antiquarian essay, quoted in the delightful paper on our subject in Isaac Disraeli's *Curiosities of Literature* that the Gooseberry was first mentioned in 1276, when it grew in Edward I.'s garden at Westminster. As an indigenous fruit he supposes that it was known earlier, but only in the wild state. It was the same with Strawberries and Raspberries. The Romans probably brought all their best fruits to England, including the Gooseberry, twelve centuries before the last-mentioned period. During the two epochs of destruction, the early Saxon period and the time of the Baronial wars, the Roman introductions and those of the cultivated monks must have been very generally destroyed.

Among other culinary vegetables of early times, according to the late Mr. Hudson Turner, were Beans, Onions, Leeks, Garlic, "and others." But what "others" were grown, and to what extent they were cultivated in mediæval gardens of different kinds, has not been precisely recorded. Among the "others," however, was certainly the Pea, and Necham mentions the Lettuce, Rocket, Mustard, Watercress, and Hop. The Cabbage was known in the earliest times, and in his time was generally cultivated. Sir Anthony Ashley, of Wimburn St. Giles, Dorsetshire, has sometimes figured as the first planter of Cabbages in this country, and his monumental effigy in the church has a Cabbage at its feet. This introduction of the Cabbage, however, must have been a re-introduction.

The taste for gardening has always advanced hand in hand with civilisation. In Necham's garden of the year 1200 there were Roses, Lilies, Sunflowers, Violets, Poppies, and the Narcissus. The Pervinke, or Periwinkle, grew in the shade of orchards then as now, and is

mentioned by Chaucer in these sweet, simple verses :—

> "There sprang the Violet all newe,
> And fresh Pervinke, rich of hewe,
> And floweris yellow, white and rede,
> Such plante grew there nor in the mede."

The gardens of the baronial times were for the most part secure and sombre enclosures like the fortresses they ornamented, and some parts of them must have been particularly suited to plants that love shade, such as Periwinkles. One of the chief ornaments of a garden was always available in England, and there is ample proof that our predecessors, since the Norman Conquest, and perhaps before, were particularly fond of greensward. In most of the illustrations of old manuscripts gardens consisted chiefly of plain turf, and in some cases of a lawn with flower borders surrounded by a wattled fence and separated from the adjoining orchard by a wooden paling.

Passing to a later period, the following lines from Peach's *Emblems* of 1612 are worth quoting for the sake of the fruits they notice and for the reminder that the word filbert is derived from Philibert, a French king who improved that fruit :—

> "The Persian Peach, and fruitful Quince,
> And there the forward Almond grew,
> With Cherries known no longer time since ;
> The Winter Warden, orchard's pride ;
> The Philibert that loves the vale,
> And red Queen Apple so envide
> Of shool-boys, passing by the pale."

The red Queen Apple was a sort imported by Elizabeth.

Fruit culture made considerable progress during the reign of Henry VIII., whose gardener, Mr. Harris, planted the first Cherry orchards of Kent. Progress was again arrested for a short time by the Parliamentary wars, but only for a few years, and when it recommenced a "spirit of gardening and plantation" was awakened throughout the country by the great improvers of that period, whose names will occur to the reader, including Cromwell, Samuel Hartlib, and Evelyn. A large number of foreign plants were brought to this country, during the earlier epoch of horticultural improvement, by gentlemen returning from their travels. The Damask Rose was brought from Italy by the learned Linacre. Thomas, Lord Cornwall, in the reign of Henry VIII., added to our fruits three kinds of Plums. Grindal, Archbishop of Canterbury, brought over the Tamarisk ; one of the Carew family transplanted to the family seat at Beddington, Surrey, the Orange, which flourished there for a century. We owe to Sir Walter Raleigh two well-known plants. Clover came from Flanders with Sir Richard Weston, in 1645 ; Figs were planted at Lambeth by Cardinal Pole ; Lime trees at Dartford by Spilman, founder of English paper-mills. The original plants grow there still, 290 years old ; but, as one form of the Lime tree is certainly indigenous, this particular introduction was not the first, but only the most notorious. The Lombardy Poplar was brought over by the Earl of Rochford, 1758. The first Mulberry trees are still standing at Sion House, and were followed, about 1608, by many others, and by a general planting of the Mulberry, and a first attempt by William Stallenge to introduce the silkworm.

We shall here bring our narrative to a close on the safe side of the nineteenth century—a period which would need some thousands of columns more than can be spared, even for the briefest summary of the introductions from abroad. *Historicus.*

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Ornithogalum orthophyllum. — In one of the cool compartments of the T range at Kew the subject of this note is in flower. It is evidently nearly allied to the common "Star of Bethlehem," O. umbellatum, and in all probability is equally as hardy as that much better known plant. It is a native of South Europe.

## New Garden Plants.

### Agave Toneliana, *Hort. Peacock.**

This is an Agave from Mr. Peacock's series, now at Kew, which is evidently quite distinct from any of those contained in my monograph contributed to your columns in 1877. As we are going to include it as a distinct species in the catalogue of the Kew monocotyledonous succulents which has been prepared to issue in the next annual report, I wish to place its characters on record. Of familiar species it most resembles A. lurida or Ixtli in habit and general appearance, but the nearly continuous prickles give it a place in Jacobi's not very clearly-marked group "Submarginatæ" in the neighbourhood of A. Deserti and applanata. The name of A. Toneliana it bears already in Mr. Peacock's collection, but I cannot find that it has ever been published.

Acaulescent : leaves 40—50, in a dense rosette 4 feet in diameter, lanceolate, rigid, 1½—2 feet long, 3—4 inches broad at the middle, narrowed to 2½—3 inches above the base, where it is an inch thick, not more than ⅛ inch thick in the centre, flat in the lower half, dull green, glaucous only when young, armed at the tip with a pungent brown spine 1 inch long, which is decurrent as an entire margin to the leaf for 3—4 inches, the rest of the border margined with chestnut-brown deltoid-cuspidate prickles not more than ⅛—⅙ inch long, with a very broad base, which are confluent in a narrow brown border, which is only broken a little between the middle of the leaf and its tip. Inflorescence still unknown. *J. G. Baker.*

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## PHLOX DRUMMONDII.

In 1836 the *Floricultural Cabinet* of that year gave an illustration of Drummond's Phlox, then newly introduced from Texas, and it was represented as a dull red flower, the pips containing five segments, but ill-formed and loose-looking to the eye. It was described at the time as a very splendid flowering annual Phlox, a most profuse bloomer, and deserving a place in every garden because blossoming for a long time every summer. Since then changes have occurred in the character of this still most useful and popular flower, the dull-coloured starry pips have given place to those of many brilliant as well as delicate tints, and now there is such a wealth of form that the most symmetrical Verbenas give place to the Phlox Drummondii in this respect. The work of improvement probably commenced with the first attempts at seeding in this country, for the gardener by instinct as well as from choice selects the best types from which to take his seed for future sowing. Thus the type has grown in grace and beauty, while Nature, sitting at what Emerson terms "the shining Fount of Life" has lent her quickening influence, travailing in pain, so that the "man-child glorious" might be enriched thereby.

There are now many varieties of this useful Phlox. They have been produced from time to time, but all previous efforts fell into the shade when the glorious splendens grandiflora was announced a few years ago. This appeared to come as near as possible to perfection in the Phlox Drummondii; the brilliant vermilion hue, the striking white centre, the large, stout and finely formed pip, were all of such rare value, that it seemed as if greater perfection could not be reached. With this came in course of time other varieties equally massive and striking in appearance, and the old type of Phlox Drummondii will no doubt soon become a thing of the past. Some pretty dwarf types are also forthcoming, and will be found most useful in the garden. The past summer was eminently favourable to the development of the Phlox Drummondii, and some plants in Messrs. Sutton & Sons' seed grounds at Reading, raised from seed sown in the open ground, were marvels of profuseness and beauty.

A few years ago a new type of Phlox Drummondii, named Heynholdii, was introduced to this country, but novel and distinct as it undoubtedly is, it has never become the favourite with gardeners and others that the splendid large-flowering forms have. How the type Heynholdii, which is a manifest departure from the usual type of Phlox Drummondii found in our gardens, originated, cannot be clearly demonstrated, but it would appear to be the outcome of a chance seedling. It was first observed in the gardens of the Castle of Reinhardsbrum, in the Grand Duchy of Gotha, the favourite residence of the late Prince Consort, and at which Queen Victoria has made several lengthened stays when visiting Germany, and which is most charmingly situated. Mr. Ernest Benary, of Erfurt, in one of his visits to the castle gardens, pointed out the novel seedling to Mr. Heynhold, the head gardener, and eventually all the seed saved by Mr. Heynhold passed into the hands of Mr. Benary for distribution. It was in the autumn of 1868 that it was first sent out, and it received the name of Heynholdii in honour of the raiser. Since then Mr. Benary has paid particular attention to the section, and succeeded in saving several new varieties, which have been distributed in their turn, and illustrated by means of coloured plates. Of these varieties mention may be made of P. Heynholdii alba, sent out in 1876, with snow-white flowers ; cardinalis, a decided improvement on the type, the flowers being larger, of finer form, and wholly coloured with orange-scarlet ; cupreata or imperialis, Empress Augusta, flowers copper-rose, with deep scarlet centre, very effective ; Perfection, the plants having a globular habit of growth, and brilliant scarlet flowers ; striata, fine and distinct ; and, latest of all, globosa atro-rosea, with a dwarf globular habit of growth, well adapted for pot culture, the flowers of a beautiful and intense deep rose.

Mr. Benary remarks that "he has found by experience that all the varieties of the P. Heynholdii section are especially adapted for growing in small pots." We are decidedly of this opinion, and strongly recommend them for the purpose. They have one excellent characteristic in relation to their culture in pots, namely, they are all abundant and persistent bloomers.

Then there is a dwarf section of the Phlox Drummondii that is undergoing rapid and striking improvement. It would appear either that the dwarf growing type is being improved from the quality of the flowers of the old form up to that of the fine beauty of the grandiflora section, or that a dwarf type has sprung from the grandiflora section, but it certainly exists. The varieties are of great value for bedding purposes, and when gardeners come to appreciate them they will drive Verbenas from the garden. One of the most beautiful is nana compacta, chamois-rose, and as seen growing in Messrs. Sutton & Sons', seed-grounds at Reading, in August last, it appeared to be all that could be desired as a bedding plant. The plant grows about 6 to 8 inches in height, and the flowers are of a pale salmon-rose colour. Hortensiflora (rose), coccinea (scarlet), and Snowball (white), are all acceptable varieties in this section.

It is difficult to rightly estimate the beauty and value of the leading varieties of the grandiflora section. Special mention should be made of alba, atro-purpurea, carminea, albo-oculata, coccinea, violacea albo-oculata, and splendens. The striped varieties need improvement, as there is a want of distinctness of character and decision in the markings. We sadly want a striped Phlox like the General Radowitzi that was grown as a pot plant, and propagated by cuttings a quarter of a century ago. Unfortunately, it is quite lost to cultivation, and should it reappear as a seedling it would receive an enthusiastic welcome.

The practice of sowing seeds of Phlox Drummondii in the open ground instead of raising in a gentle heat or a cold frame and then transplanting, is one that is growing among gardeners. The lighter and warmer the soil the better is it adapted for sowing the seed in the open air, but the Phlox Drummondii is an accommodating plant, and will do better in ordinary soil than many are led to imagine. The plants raised from seed in the open ground are generally of more robust growth, as the roots, striking deeply into the soil, are not again disturbed. The plants come into flower earlier, and are more persistent in their character.

At some horticultural shows it is the practice to offer prizes for collections of cut trusses of Phlox Drummondii. When well grown, and the varieties are of the best quality, these compare most favourably with the cut Verbenas. They do not appear to succumb to heat so soon as the Verbena ; and if the trusses are cut with the summer dew on them, and shown in tubes or small vessels filled with water, they remain bright and effective throughout the day. *R. D.*

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* *Agave Toneliana*, Hort. Peacock.—Acaulis, foliis 40—50 dense rosulatis strictis coriaceo-carnosis lanceolatis bipedalibus medio 3—4 poll latis obscure viridibus junioribus tantum glaucotinctis, apice spinam brunneam pungentem breviter decurrentem armatis, margine dentibus crebris brevibus deltoideo-cuspidatis in lineam angustam brunneam subcontinuam confluentibus ; floribus adhuc ignotis.

## RHODODENDRONS.

(*Continued from p. 299.*)

The rich and glossy foliage of R. Aucklandii is one of its charms. "The bush" is described as being in its native haunts "copiously leafy," a character by no means too common among Himalayan Rhododendrons. R. Fortunei has inferior foliage, more flimsy, and generally paler; but the two species are so often confounded when judged by the leaves that it may be worth while to be a little more particular. Purchasers of the rarer Rhododendrons can very seldom see in blossom the plants they propose to buy. The first thing, therefore, for a fancier is to study to recognise the leaves. Many nurserymen have collections of young Rhododendron plants raised from unnamed seed sent from India (I know of several most inviting collections of this sort, and notably one at Mr. W. Bull's at Chelsea), and tallies get frequently misplaced among plants which live so many years before blooming; hence a critical knowledge of the foliage is very desirable, almost absolutely necessary, for a fancier. The faculty is acquired by practice, and excites sometimes great astonishment, as I have found, among the uninitiated. I have taken some trouble in procuring and comparing the foliage of the two species named above. The leaves of R. Aucklandii, then, are thicker, darker, larger, and more elongated, than those of R. Fortunei, and I have observed that the veins branch from the midrib at a wider angle. The under side of the leaf, examined under a lens, seems moreover of a coarser texture. This is my experience, but I speak subject to correction, for a comparison of the plates and descriptions in the *Botanical Magazine* and Sir J. Hooker's *Rhododendrons* is enough to drive one to despair. Rhododendron species are undoubtedly variable even in their native wilds, but there remains for the writers of the future much to be done in classification and correction of nomenclature.

Perhaps some of your readers know whether the two species I have named interbreed. I do not know, but it seems most probable. Both breed very freely with our hardy hybrids—with R. ponticum, and, I should imagine, with R. arboreum. I have already, in your columns, sung the praises of a breed raised between R. Aucklandii and the hardy hybrid John Waterer, in the Lawson Nursery. Last spring I received a truss from one of the seedlings possessed of even a stronger perfume than that of R. Aucklandii, the scented parent (thus more than confirming the views of Dean Herbert and Gärtner), and yet perfectly hardy. A plant of the same cross is now swelling for blossom here under glass, and very numerous plants of almost similar parentage are planted in the woods in every possible aspect. It is curious and interesting for a naturalist to observe the prepotency of R. Aucklandii, the pollen parent, in the character of the leaf. In the flower, so far as I have been able to observe, the crimson of John Waterer has a hard task to contend with the white of R. Aucklandii, although the seedlings vary much in respect of colour. I have another strain, however, kindly supplied by my friend Mr. Anderson-Henry, in which the contest is between species and species, and not between species and hybrid. The cross in this case is between R. Aucklandii and R. Thomsoni, the latter being the seed-bearer. The donor says most truly with regard to this breed, "The vigour of Thomsoni's progeny is wonderful, the leaves being enormous." I believe they have not yet bloomed, but Mr. Luscombe has bloomed several seedlings of a cross between R. Thomsoni and R. Fortunei, the fame of which has reached German science, and one of which at least is, in my humble opinion, truly splendid, although inclining to the paler tints. I have some plants of this strain which I hope to bloom, under glass, in a week or two. Meanwhile Mr. Luscombe (than whom there has been no more enthusiastic Rhododendron grower) informs me that "his first flowering plant disappointed him sadly, but three really good ones, out of twelve or fourteen, have quite satisfied him." One seedling, named Devoniense, has been presented to Mr. Harry Veitch, and Mr. Luscombe has some hundreds still to bloom. It remains to be seen whether these plants will prove hardy under our skies.

I shall have great interest in pitting the Fortunei hybrids of Devonshire against the Aucklandii hybrids of Edinburgh, and both of them against my own hybrids of both strains, hopefully trusting to Gärtner's dictum, "Most hybrids can bear a more intense degree of cold than their parents, and have more tenacity of life."

It is known that the late Mr. Standish raised seedlings between R. Aucklandii and some of his hardy varieties. Two of these appeared last year at the Horticultural Gardens, and one received a First-class Certificate. Nothing was said as to their parentage, but to a practised eye it was obvious. The plants were not very well grown, but were said to have stood the severity of winter. They should be shown in better form again.

R. Thomsoni, mentioned above, and named after the distinguished and lamented botanist, whom I had the pleasure and the honour to know, deserves more favour than it seems generally to find. The brilliant crimson of its colour is well nigh unrivalled, and the graceful fall of its bells in a well-grown plant is indeed beautiful. It has shortcomings, nevertheless, which invite to diligent culture for improvement. Seed of this species has been often introduced from various localities in India, and among others by Mr. Elwes, and, still better, plants have been raised from English-grown seed. Enthusiastic hybridisers seem to forget how much in the way of variety and improvement may be effected by merely breeding their species in Europe true for several generations. Under the altered circumstances of cultivation and climate, seedlings of Rhododendrons, although bred true, vary in an extraordinary degree. Long ago Sir W. Hooker observed that "no one who has cultivated the Himalayan Rhododendron on a large scale can fail to be struck with the numerous sports which have already started off from R. ciliatum, Dalhousiæ, campanulatum, and arboreum, and which will no doubt soon be accounted as species by nurserymen." The accuracy of this observation has been abundantly proved by much that I have heard and seen. As far as I can gather, England and Scotland and Ireland, and Belgium and Germany and Italy, will soon have interesting and differing tales to tell. *J. H. Mangles, Valewood, Haslemere.*

(*To be continued.*)

## HORÆ HORTULANÆ.

### No. III.—A Chat about Primroses.

If, in emulation of the fancies with which so many happy hours of childhood were whiled away, I were to ask myself the question—Suppose you were limited to one genus of flowers for your garden, what genus would you choose? the answer, I think, would come straight and clear, "The genus Primula." There would doubtless be a struggle for the Rose; the garden would indeed be dreary from which one could not pluck a single Rose the whole summer long; but yet in the end, with me, at least, the victory would be for the humbler genus with the wider range. Take the Primroses for all in all, they have such tender grace and soothing beauty, such delicate surprises in their various forms, with, as far as I know, hardly an ugly kind among them, they flower so freely and for so long a time that the delight they give is one of the purest and most lasting a gardener can receive. And yet I have been through many gardens, some of them kept up at great expense, and filled with many costly flowers, in which, outside the greenhouse, not a single Primrose could be seen.

Of all the kinds known to me at present, two, and only two, are so tender that they cannot be grown in the open air. And these two are, in a certain sense, typical flowers, appealing for approval to two quite different attitudes of mind. The one is the well-known florist's flower, the Chinese Primrose, P. chinensis, which, indeed, has so far usurped the general name of "Primula" that when you speak to many gardeners of Primulas they think you are talking of this and this alone. I do not wish to say anything against the Chinese Primrose. The newer forms especially are undoubtedly splendid flowers; they light up the dreariness of winter with resplendent masses of dazzling white and gleaming red, set off by foliage which, if somewhat coarse and limp in texture, is at least elegant in form and ample in growth; they, like other florist's flowers, are tokens of the great things which patient art may, by progressive steps, draw out from Nature's hidden stores. But to my mind the graces of the intrinsic nature of the Primrose have, under the hands of the artist, somehow or other, been driven away. To me they are no longer Primroses, but rather works of art for decorative use.

The other tender Primrose, the Abyssinian Cowslip, P. verticillata, is of quite a different kind: no florist hand has as yet changed its native beauty. My man Joseph thinks but little of it; he will not even give it that meed of praise which he sometimes bestows on my choicest alpine jewels; he will not even say "It's a pretty little thing." I know that if I left it to his care, it would speedily dwindle and be no more; so while I trust the Chinese Primroses to him, I see to this myself. Not that it needs much pains; planted in good rich soil, and well watered when growing fast, it takes kindly to a pot, needing only to be shifted when the pot is over-crammed with roots. From a rosette of crinkled leaves, dusted with a white farina, springs a tall stalk bearing at its summit a whorl of long, nodding, tubular golden flowers. It is, in fact, a refined and tender sort of Cowslip, with a fuller colour and a delicate fragrance of its own.

Perhaps its being fragrant is the reason why the florists have let it alone; for I have collected evidence which seems to me to go far to prove the existence of a conspiracy among those able men against sweet odours. The favourite objects of their art are for the most part scentless or ill-smelling flowers, and although natural selection enables us to understand why fragrance is given to the humbler, but denied to the more gaudy plant, this will not wholly explain the florist's selection; and when they take in hand a naturally fragrant plant they do their best to drive away its smell. To the simple gardener, unlearned in floral progress, the Pink is a symbol of summer days when the air is laden with delicious perfume, and he thinks of the Carnation and Picotee as something sweet to look upon, but sweet also to smell. Yet if he tries he will find that most of the new prize Pinks, with all their size, their brillant colours, and their bravery of lace, are scentless, and that many of the curled and carded geometric darlings of the Carnation show have no more odour than the labels which announce their success. So mighty is the florist art that it has driven fragrance even out of the Rose, that ancient type of all sweet flowers. I have watched the untutored visitor plunge his nose in vain into Baroness Rothschild, Duke of Edinburgh, and other Roses of great renown, seeking fragrance but finding none. To my mind a scentless Rose or an inodorous Pink is not a triumph but a reproach, and were I the ruler of the florist brotherhood I would forbid, under heavy penalty, the distribution of all such things. I would command the Baroness and the Duke to be kept, with the rest of the secrets of the art, hidden from the public in some back nursery, whence the exquisite form of the one and the glorious hue of the other might issue by careful propagation, with the lost fragrance regained. Seeing the host of new Roses which every year brings forth, surely it is not too much to ask that a Rose without odour shall be counted a Rose no more.

This, however, is by the way. Let us turn back to the Primrose. Shall I shock the reader or no if I now at once confess that the Primrose which I love above all others is the common Primrose, P. acaulis, the vulgar yellow Primrose? I am not insensible to the beauty of the high coloured hybrid Primroses. The old-fashioned mauve and the more brilliant, as well as the richer and darker forms, many of which we owe to the careful pains of Mr. R. Dean, are flowers which I would not willingly be without. The depth or delicacy of the colour of the petals, enhanced by the prominence of that yellow spot at the throat, almost invisible in the common Primrose, which old Sprengel calls the insect's signal, and of which perhaps more at some other time, gives all these hybrids a special charm; and, to my mind, he who does not grow them is an unwise man. I, too, have taken my part in "spring bedding," and in rare sunny days of the early year my heart has been gladdened as I looked on the bright designs which in sullen autumn Joseph had skilfully worked out in many coloured Primroses and other vernal flowers. And though, in spite of all my efforts to bring myself in accord with my floral brethren, I still feel my mind averse to double flowers, I have room left in my affections for double Primroses nodding their overweighted heads over cushions of green leaves. My love for Primroses is broad enough to take in all of these; and yet when I stray from the ordered garden into the neglected copse by its side, and in some shady hollow come across a group of wild Primroses, their

quiet simple beauty seems to me to master all the rest.

No, I had forgotten. The common Primrose has a rival in my affections in another kind of Primula, and that, too, one of artificial growth. Nothing, I admit, can surpass a cluster of yellow Primroses in the open air; but I am moved in a deeper though different way when I feast my eyes on the lovely forms of alpine Auriculas. For reasons into which I need not enter here I have little sympathy with green-edged and grey-edged masterpieces. I take little delight in formal precision, and while I admire the skill and praise the pains which breed a flower of geometric perfection, I have but little pleasure in the result; whereas I could, I think, gaze for hours without weariness on the lustrous hues and graceful shapes of selfs and alpines seen far away from the abominations of cotton wool and wooden props. But I am treading now on forbidden ground, for I am no florist; so leaving for the present what little I may have to say concerning these and the Polyanthus, as well as of their wild ancestors, the Cowslip, the Oxlips and the native Auricula, let me turn at once to quite other children of the Primrose group.

From the valleys of the Himalayas there come to us Primroses of the denticulata group. These all send up from a thick rosette of leaves a tall stalk ending in a close set hemispherical head of many violet or purplish flowers. The plainest of all is the typical denticulata with its light coloured flowers and often imperfect heads. The variety known as P. denticulata purpurea (sometimes called P. purpurea, but not to be confounded with the P. purpurea of Royle, which is quite a different plant), with its larger flowers of deeper hue, is an improvement; as is also the form known in trade lists as P. pulcherrima. Better still is the closely allied P. kashmiriana; few sights are more pleasant in spring than a group of these closely set together when from each crown of young pale green leaves thickly dusted with gold farina there springs a stalk, also richly dusted, ending in an almost perfect dome of bright mauve flowers. Best of all is the later flowering P. capitata, with its still more perfect dome and flowers of darker, fuller, purplish-blue. Two features are common to all these forms. In the first place when grown in pots under glass, or even in the open, under shade, their stalks seek the light, and running up to an ungainly height droop under the weight of the flower-heads, thus losing nearly all their beauty; for their great charm consists in the contrast of the blue or purple domes just rising above the nest of green, pale green, or golden leaves. This tendency of theirs shows that in their native home they suffer no stint of sunlight when they are putting forth their bloom. In the second place, though under favourable circumstances they put forth in spring and summer large luxuriant leaves spreading far and wide, if you examine them as the autumnal days shorten you will find that the young centre leaves of each rosette are being compressed into a thick dense heart; and when the winter frosts have slain the large outer leaves, this heart is all that is left above the ground. All winter long it remains dormant, an inconspicuous nut, almost in fact a green-tipped scaly bulb; but in the spring the infant leaves unfold and set free the flower-head which they had thus securely guarded through the biting winter frosts. This "hearting" of embryonic leaves round the developing flower is seen to a greater or less extent in many other Primroses, and indeed in other plants: the hopes of the aspirant for flower-show fame are raised when he finds a plump heart forming in his Auriculas; but it is most pronounced in the denticulata group and in a few other forms not otherwise allied. In the Japanese Primrose, P. japonica, that brilliant show of whorl upon whorl lies all winter through hidden in the centre of just such a compact brown nest; and the less common Caucasian Cowslip, P. luteola, with its rich umbel of yellow flowers, goes through its winter sleep in quite a similar way. What does this winter heart mean? Surely that in their native homes these Primroses pass the dull days of winter, quiet, hidden, buried, their own dead leaves, or it may be a thick coat of snow, covering them from all harm till the time of the spring awakening comes.

May we not from these two features, the limp stalk eager for the light, and the winter heart, work out the steps which we must take in order to avoid disasters and disappointments in attempting to rear these charming flowers? Their far-seeking thong-like roots tell us they need a deep rich soil, while their wide-spreading, luxuriant, I might almost call it gross summer foliage, bespeaks an ample supply of moisture all through the hot spring and summer days. Clearly we must give them rich damp soil. But their sensitiveness to light warns us that we must not seek for them a humidity which is begotten of shade; we must not plant them in that favourite damp retreat, the north side of a wall, or in bosky hollows where the wet lingers simply because the sunlight never comes. If we do choose such spots as these all may at first seem to be well; the leaves will spread out broad and long, and an ample foliage will seem to promise an abundant bloom; but with the autumn sorrow will arrive. Instead of closing up into stout firm hearts, untimely blooms will rear their heads, and the early winter frosts will rob us of our hopes for spring. Nay, more; these spots thus damp in summer will reek with moisture through the greater part of our changeful winter, and a blackened rot will eat into the sodden imperfect half-open buds. Even if we do not lose the plants altogether we can only hope to look on fragments in the coming spring.

No; these Primroses will not, like our native Primrose, flourish in shade and lasting damp, content with such pale sunshine as makes its way in spring through leafless boughs. They ask for unstinted light from early spring to far on in summer, for floods of water from their first awakening out of their winter sleep till the growth of their summer foliage is ended, then for a gradual slackening of all supplies, and lastly for a steady winter's rest, unvexed by rain, untempted by untimely warmth and sunshine. But where in an English garden can we find a spot which will meet these needs? All these needs we cannot meet; we cannot change our fickle winter, but we can go far to command success if we make use of an ancient method of culture, employed by many nations in the past, used in the present time by many an untutored race, but neglected this long while by the scientific farmer and the enlightened gardener—I mean irrigation. We import bulbs and plants from Japan; it would be well if we sometimes could import a little of the wisdom and skill of the Japanese gardener. I am told that in Japan the P. japonica and other plants are grown in running streams, and so acquire a luxuriance and beauty unknown in English gardens. Cannot we do likewise? Of course irrigation is troublesome, and when, as with so many of us, the purse set aside for the garden is light, calls for ingenuity and careful thought; but in most places something might be done, and in those favoured gardens where a little stream trickles down a gentle slope everything is ready to hand for the purpose.

This, then, is the plan which I believe to be the proper one for these denticulate Primroses, as well as for many other plants. Choose a sunny well drained spot, dig a bed deep and rich, and bearing in mind the percolation which it is to bear, take heed that the soil be rich in humic vegetable stuff, in order that the soluble salts on which the plants will have to feed may not be too easily washed away, for such a soil will hold with a tight mysterious physical grasp many things which would be soon swept away from a more earthy loam. Having put in your plants in the autumn let them rest quiet all the winter, sheltering them if need be with cocoa-nut fibre or other mulching, aiming to ward off wet more than cold, and welcoming rather than dreading a lasting covering of snow. When the glad rays of the sun, mounting higher day by day, quicken the hearted buds till they burst open and shoot, let the water gently trickle round their roots during the mid-day hours, carefully withholding it at night, and measuring your supply according to the rainfall and the sun's heat. As the days lengthen and grow hot give more and more, and should we ever again in England bask in unclouded summer skies, flush your bed freely, without stint and without fear. But when the summer solstice is past, and shadows lengthen, and nights draw in, little by little stop your stream, and use without dread the drought of autumn to gather up the substance of the spreading summer leaves into the winter heart. That heart once achieved, guard it jealously from too much wet; no drought that the latter half of the year can bring can do it harm, and so long as wet is warded off neither heat nor cold will hurt it. Secure from the stimulus of wet the heart will sleep in peace, no autumn blooms will vex your eyes, but in the coming spring you may safely look to see the beams of the summer sun buried in the once spreading but now withered leaves, rise again in noble heads of violet or golden sheen. *Dietes.*

*(To be continued.)*

Fig. 68.—Acer lævigatum. (see p. 365.)

Milla Leichtlini.—In the herbaceous department at Kew this perfectly hardy and very desirable little bulbous plant is now in flower. It was introduced to European gardens from the Andes of Chili by the ardent horticulturist in whose honour it is named. The shortly-stalked umbels are composed of a few rather large, slightly-scented flowers, the upper surface of each of the segments being pure white, the lower bearing a band of green down the centre.

## NOTES ON ROSES.

Yellow Roses.—In the current number of the *Flore des Serres*, M. Crépin gives the following enumeration of species (not garden varieties) with yellow flowers. The first in order is :—1, Rosa lutea, described by Dalechamp in 1587, and a native of Asia Minor, Afghanistan, and naturalised in some parts of Europe ; 2, R. hemisphærica, described first in 1762, and afterwards by Aiton as R. sulphurea. The single wild form has not been known till comparatively recently, when it was discovered in Asia Minor. R. Rapini and R. Bungeana are recent synonyms. 3, R. maracandica from Turkestan; and 4, R. turkestanica : neither of these is fully known ; 5, R. Ecae, described last year in the *Journal* of the Linnean Society (see *Gard. Chron.*, vol. xiii., p. 263), is a native of Affghanistan and is perhaps a variety of 6, R. xanthina, a Chinese species mentioned by Lindley on the faith of a drawing in Lambert's library, which drawing cannot now be traced, but to which M. Crépin and M. Franchet think that specimens from Abbé David in Mongolia, and from M. Przewalski are referable. In any case this Chinese yellow Rose is stated to be very elegant and very free flowering, and to be well worth introducing. Lindley describes it as like R. spinosissima, the Scotch Rose, "except that it has no seta, while it has double flowers of the colour of R. sulphurea."

Spring Treatment of Pot Roses.

Many persons take it for granted that Roses are sufficiently hardy to be plunged out-of-doors during the winter, and in ordinary seasons it does very well to plunge the pots containing hybrid perpetuals, hybrid Chinas, &c., out in the open in this manner, taking care that the pots stand on a hard bottom, where worms cannot get into the drainage. Where cocoa-nut fibre refuse can be obtained there is no better medium to plunge in, and if the pots are well covered with this material the roots are quite safe. Some loose dry bracken thrown over the tops will prevent injury from frost. Notwithstanding the very severe frost of last winter, the established Roses are scarcely at all injured, but those potted up from the open ground—and they were young perfectly healthy plants—have suffered considerably. The established plants were pruned long ago, and the earliest of them will be in flower by the end of March ; and it must be well understood that in forcing Roses, if the best results are to be obtained, the plants must be pushed along gently from the first, avoiding a high night temperature at any stage of the Rose's growth. Where proper forcing-houses are provided, there is no difficulty in getting a succession of Roses from March onwards. There are plenty of places where there are no forcing-houses except such as are devoted to Vines, Peaches, &c. I have had very good results by placing the earliest pot-Roses in the early vinery about the last week in November, when the Vines are started. The Roses remain there until January ; and as by that time the temperature has been increased to 65° at night to suit the Vines, we remove the Roses to the second vinery, which is started about the 1st of January, where they remain until they are nearly in bloom, when they can be removed to a warm greenhouse to perfect their blooms. We are not so successful with pot-Roses as we should like. The impurity of the atmosphere is one thing we cannot alter, and the continuous dull foggy weather is another drawback during the early months of the year. We can only combat these evils by keeping the glass clean, and admitting air on all favourable occasions. Indeed this matter of fresh air is so important that we never close the top ventilators quite close, unless it may be during the severest frosts, and when these are accompanied by fogs, as is not unusual, the outer air must be admitted very cautiously. In all houses where early forcing has to be done the front ventilators should be so arranged that the air passing into the house is warmed by the hot-water pipes. A bed of tan, leaves, or manure, is a most important aid to a rapid and strong growth. The pots should be plunged to about half their depth in a bottom-heat of about 80°. This treatment is quite necessary when the Roses have been recently potted, and have not had time to establish themselves. The Roses potted in November from the open ground should not be forced, or at least very slightly. I have just pruned ours, and have cut both Teas and hybrid perpetuals back to about three eyes from where the growths started. They would start strongly and well if we could now place them in a cool house or frame by themselves, so that they might be syringed overhead every day, and the house or frame be shut up early in the afternoon. I like to see the leaves hanging with dewdrops in the morning. This is a sign that there is sufficient moisture in the atmosphere. Forced Roses dislike a dry atmosphere, and will not produce good flowers in it ; besides, they are more likely to be attacked by greenfly. *T. Douglas, Ilford.*

Fig. 69.—Acer pectinatum.

## THE KEW ARBORETUM.

The Maples.—VIII.

Acer pectinatum, Wall., *Cat.* 1226. *A. caudatum*, Wall., *Plantæ Asiaticæ Rariores*, ii., tab. 132 (bad as regards the serratures of the leaf). *A. caudatum*, in part Wall., *Pl. As. Rar.* ii., pp. 4 and 28 ; Hiern, in J. D. Hook. *Flora of British India*, i., p. 695, in part. *A. acuminatum*, Wall., in *Don. Prod. Fl. Nep.* 249 ; Brandis, *Forest Flora of N.W. and Central India*, p. 112.—Nepal and Sikkim.

This Maple (fig. 69), which Wallich himself confounded with A. caudatum, is thoroughly distinct from that species. The principal differences exist in the fine, acutely setose serration of the leaves, in the fruit pedicels being less than half the length of those of A. caudatum, and in the horizontally spreading rose-tinted seed-vessels. The leaves, which vary in size and form, just as do those of A. caudatum, are from 3—5 lobed ; the specific distinctions, however, run perfectly parallel, and no intermediates exist either in the Kew Herbarium or in Wallich's own herbarium at the Linnean Society. In the latter place there is a series of specimens of A. caudatum, but not one of A. pectinatum. The geographical distribution of the two plants is, moreover, quite different. This species has not yet been introduced to this country.

Acer caudatum, Wall., *Cat.* 1225 ; Brandis, *Forest Flora of N.W. and Central India*, p. 112. *A. caudatum*, in part Wall., *Pl. As. Rar.* ii., pp. 4 and 28, excl. tab. 132 ; Hiern, in J. D. Hook. *Flora of British India*, i., p. 695, in part. *A. lævigatum*, Hort.—Kashmir to Kumaon.

This differs from A. pectinatum in the coarse, irregular toothing of the leaves, in the very much longer fruiting pedicels, and in the seed-vessels with larger ascending brown wings. In its native country it is a large-sized tree, with dark brown bark. It was introduced to Britain in 1845, and is grown in most nurseries under the totally wrong name of A. lævigatum. The rather peculiar foliage and the long slender purplish-red twigs render it a somewhat striking and very distinct species. It is quite hardy in England ; about Metz, however, M. Leon Simon informs me it is injured every winter. M. J. van Volxem says it is fairly hardy in Belgium, and that as a rule it is only the green unripened shoots which suffer. The species is readily propagated by layers ; M. van Volxem tells me that he has not yet been successful in grafting it. The leaf here figured (fig. 68) was taken from a plant in the Isleworth nurseries of Messrs. C. Lee & Son, and the fruit from a Wallichian specimen in the Kew Herbarium. *Geo. Nicholson.*

## Orchid Notes.

Australian Orchids.—We have before us the sixth part of Mr. Fitzgerald's *Australian Orchids*, of which we have had occasion to speak favourably before. The drawings are accurate and valuable for their full analysis. The text is also of great importance from the numerous details given as to the construction of the flower, and the endless adaptations of structure to function and to insect agency in fertilisation.

The species illustrated are Caleana major, C. minor, Thelymitra carnea and pauciflora, which have nearly regular star-shaped flowers—a peloria, in fact, in reference to other Orchids; but what is of special interest to learn is, that these flowers rarely if ever open, and are therefore fertilised by their own pollen, not requiring the agency of insects to bring them pollen from some other flower.

Of Dendrobium two species are illustrated, viz., D. monophyllum and D. cucumerinum; the latter is a remarkable species, with curious pseudobulbs or leaves (?) resembling Gherkins. Of Pterostylis, the following species are illustrated, viz., P. concinna, ophioglossa, nutans, hispidula, Mitchelli, squamata, Daintreyana, and obtusa. Spathoglottis Paulinæ is spoken of as intermediate between epiphytes and terrestrial Orchids, the pseudobulbs, the habit, the form of the flowers, and especially that of the column and anther, are those of the tree or rock Orchids; the texture of the leaves and the habitat (in peaty swamps) are those of the terrestrial. This is the first self-fertilising epiphyte seen by Mr. Fitzgerald; but it would seem to be adapted for insect fertilisation also. The leaves are like those of a Phaius, the flowers in erect stalked racemes, each about an inch in diameter, lilac, and nearly regular, the lip, however, deeply three-lobed. Sarcochilus divitiflorus has long, slender, pendulous racemes of flowers, each with very long, linear-lanceolate, yellow segments spotted with red.

### Vanda teres.

M. le Comte du Buysson narrates in the current number of the *Flore des Serres* how he succeeds in making this plant produce flower-spikes or leaf-shoots at will. The stems of this plant are cylindrical as also are the leaves. Wrapping round the stem at each internode is a lightly fitting sheath which splits at the base to admit of the passage of the leaf-shoots in July and August, and of the flower-spikes in March or April. If a stem of the plant be examined a latent bud or eye may be discerned at the base of the sheath. The activity of the bud may be developed by slitting up the sheath carefully just above the bud—by doing in fact what the bud itself would ultimately do if left to itself. If this be done in spring at the time when the buds begin to split the sheath which covers them, the buds will develope into flowers, but if this little operation be deferred till July axillary branches or leaf-shoots will be formed. This interesting experiment is suggestive of the value which practical cultivators may derive from a careful study of Professor Pfitzer's notes on the organisation of the stems and leaves of Orchids as lately given in our columns.

### Vanda Boxalli.

This, my former Vanda lamellata var. Boxalli, flowered in December last in Sir Trevor Lawrence's wonderful collection. The grand inflorescence was a glorious sight, and proved that the colours of the flowers were far finer than on that sketch prepared *in loco* by Mr. Boxall for Mr. Stuart Low. The moral of this would be for Mr. Low to send a fine fresh box of colours to his collector, so that he might do greater justice to his discoveries. The flowers are white, with lilac edges to the sepals and petals, and wonderfully contrasting are the sepia-brown inferior margins of the lateral sepals. The spur is nearly totally lilac. The upper part of the lip is white above, with light lilac longitudinal stripes, while the anterior part is totally light lilac, with darker lilac keels. It is simply lilac underneath. I expect the pandurate lip, the very large lamellæ (not conspicuous in the dried flowers I had from Mr. Low), and the square auriculæ of the lip, will afford satisfactory specific marks of distinction, to which the distinct colour, the tall growth, and the unusually long leaves, may be additional helpmates. The third species of the affinity is the rare Vanda clitellaria, Rchb. f.; then comes Vanda hastifera, Lind., Rchb. f. *H. G. Rchb. f.*

### Surfacing and Repotting.

We have been busy either surfacing or repotting a large portion of the Orchids—such species as Odontoglossum vexillarium and O. Roezlii in the warm house, and nearly all the cool house species, as they require considerable supplies of water; it is found that the sphagnum grows rather too freely and quite covers the base of the plant and hides the pseudobulbs. We do not quite like such a free growth as this; the surface is, therefore, removed and replaced with fresh sphagnum mixed with very fibrous peat, pieces of charcoal, and clean potsherds. I have been often anxious when repotting or rebasketing choice Orchids, and have pondered in my own mind whether I was doing it at the right time, in the right way, or whether it would not have been better to have let them alone. If it is necessary to repot an Orchid, the best time is undoubtedly when the young roots begin to start from the base of the last formed pseudobulb. If growers will look out for this they are not likely to make a mistake as a general rule, which, however, may not be without exceptions. The young roots start at different stages of the bulbs' growth in different species. Sometimes the bulbs are quite their full size, at other times they may not be more than half-grown. The species of Dendrobium in most instances send the young roots out from the base of the half-grown stems; and many of the Odontoglossums do the same. Hitherto, we have grown the beautiful O. vexillarium in pots, which were placed in Orchid baskets and suspended from the roof of the Orchid-house. This was a clumsy arrangement, and as I have seen them do equally well or better in shallow pans, a number of the plants were turned out of the pots and potted in the pans last week; they will not, I am sure, experience any check as the young roots are just emerging from the half-formed bulbs. Young plants of the stronger growing Cattleyas, if it is necessary to pot them, may be done now, as in many instances the roots are on the point of starting. It is very easy to over-pot such plants. One very successful grower said once in seven years was often enough to repot a specimen Cattleya; this may be so, but it is not desirable to be bound by any hard and fast rule. The state of the compost and condition of the plants must be taken into account when the time comes round to repot any of these plants. *J. Douglas.*

### The Orchids at Woolton Wood.

At the seat of Holbrook Gaskell, Esq., near Liverpool, one East Indian house contains the grandest Phalænopsis I ever saw. They are grown upon huge blocks of wood in a carpet of Ferns. One, P. Schilleriana, was carrying a crop of over 100 blooms, and another had a spike, unexpanded, 6 feet 8 inches in length. P. amabilis is in equally robust health, but was nearly out of bloom at the time of my visit, but what remained were of enormous size. The roof is covered with blocks and baskets. Two splendid plants of Dendrobium chrysanthemum have growth over 5 feet long. Suspended and interspersed with Stanhopeas, Aerides, Dendrobes, &c., are Nepenthes of sorts in a thriving condition. On the stages I noticed some choice Cypripediums, masses of Cymbidium Mastersii in splendid health; also very fine plants of Dendrobium chrysotoxum, D. densiflorum, and D. fimbriatum, well set with buds; and last, but not least, some specimens of the old Dendrobium nobile, 3 yards in circumference and about 4 feet in height, solid with blooms of the most lovely colour. In another house I saw a general collection of Brazilian and Mexican Orchids, with several baskets of Dendrobes at rest, one a very fine plant of D. Falconeri, the culture of the whole bearing the stamp of a master hand. There are here also over 100 seedlings, growing vigorously, some of which promise to be of considerable scientific value, as there appears to be quite a new departure in the form of bulb, as was pointed out to me by Mr. Davies, whose accurate knowledge enables him to perceive a very slight deviation. *A Visitor.*

## COLONIAL NOTES.

Jamaica.—The account sales of the Cinchona bark stripped from the trees destroyed by the hurricane of last August have been published in the *Jamaica Gazette*, a copy of which has just reached us, and show a very gratifying result. At the time when the bark was sold the market price had fallen 1*s.* 2*d.* below the point at which it stood when previous consignments were sold. The average price realised for last year's shipments was 4*s.* 8*d.*, while for the one in question it was 4*s.* 5*d.*—a difference of 3*d.*; proving that bark from Jamaica is still at the top of the market, it not having fallen to the average quotation, but being 11*d.* above. The shipment consisted of 180 bales, weighing in gross 14,397 lb., and nett 12,618¾ lb.; it realised £2796 12*s.* 3*d*, which, with what has been sold before, brings up the transactions of the last fifteen months to £8167. Some of the bark brought what were very high prices when the state of the market is remembered, a bale of C. officinalis selling at the rate of 7*s.* 8*d.* per pound, another for 7*s.* 2*d.*, and a third for 7*s.* The C. succirubra averaged 3*s.* 1½*d.*, as against 3*s.* 11¾*d.* for former consignments; some of it, however, sold for 4*s.* The hybrid variety hitherto styled C. Calisaya, but which Mr. Morris states in his memorandum accompanying the account sales will in future be sold on its merits as a hybrid, sold for prices ranging as high as 4*s.* 5*d.* In the case of C. officinalis the highest price was obtained for root bark, while trunk bark sold best in the case of the other two varieties.

### South Australian Plants.

Prof. Tate has recently published a complete list of all the plants known to inhabit extra-tropical South Australia. The list has been revised by Baron von Müeller. The number of species is 1582, the most prominent orders being Compositæ, Leguminosæ, Gramineæ, Chenopodiaceæ, Cyperaceæ, and Myrtaceæ. Of Orchids there are forty-seven species in seventeen genera; of Proteads thirty-two species in eight genera.

## ARTIFICIAL MANURES.

We subjoin analyses made for us by Mr. Bernard Dyer of two samples, bought in canisters, of "Hooper's Manure No. 3, for Roses, Vines, and orchard-house fruit trees," and "No. 1, for hard-wooded plants." By referring to our article at p. 144 it will be seen that, speaking generally, the value of a manure to a cultivator depends on the proportionate quantity and admixture, in an available form, of nitrogen (as ammonia salts or as nitrates), of phosphates, and of potash. The proportion of potash in the present case is small, but the nitrogenous ingredients are high. No. 3 canister weighed about 1 lb. 12 oz., and was purchased for 1*s.*; No. 1 canister weighed about 3 lb. 3 oz., and was purchased for 2*s.* 6*d.* At this rate the price per ton for No. 3 would be about £64, and for No. 1 about £88.

"Composition of Two Samples of Manure marked Nos. 3 and 1 (Hooper's).

| | No. 3. | No. 1. |
|---|---|---|
| Moisture | 4.50 | 5.56 |
| *Organic matter and ammonia salts | 46.01 | 44.33 |
| **Soluble phosphoric acid | 0.83 | 1.02 |
| ***Insoluble phosphoric acid | 10.92 | 13.03 |
| Lime | 14.94 | 16.74 |
| Potash | 0.60 | 0.56 |
| Nitrate of soda | 12.63 | 11.98 |
| Oxide of iron, chloride of sodium, &c. | 5.24 | 3.33 |
| Sand | 4.33 | 3.45 |
| | 100.00 | 100.00 |
| *Containing nitrogen | 8.73 | 8.20 |
| Equal to ammonia | 10.60 | 9.96 |
| **Equal to phosphate of lime | 1.81 | 2.23 |
| ***Equal to phosphate of lime | 23.84 | 28.44 |

BERNARD DYER, F.C.S., F.I.C."

## Garden Operations.

### *KITCHEN GARDEN.*

Now that the ground is in a better state for working than it has hitherto been during the present year, work that could not be proceeded with in consequence of the unpropitious state of the weather at an earlier period should now be pushed on as speedily as possible. Asparagus beds should without further delay have the short dung that was laid on them last autumn carefully forked in, so as not to injure the crowns in the operation, and the soil broken fine with the fork as the work proceeds. The beds should then be lined off afresh, and a few inches of soil from the alleys laid on, which, after a few days' exposure to the weather, and when sufficiently dry should be raked over, and where leaf-mould is plentiful a few inches thick might then be put on the beds. This, in my opinion, causes the "grass" to come more crisp and of a better colour. Seed of Conover's Colossal and Battersea Giant Asparagus should now be sown in drills 2 inches deep and 12 inches between, in a border, where the soil is of a light, rich, and sandy nature, for transplanting the following year. Sea-kale seed should also be sown either in nursery beds in drills 2 inches deep and 1 foot between, in patches (about three seeds in each patch, which subsequently should be thinned out to one) 6 inches apart in the row, or else in the situation in which the plants are ultimately to be forced, in rows 2 feet apart and 18 inches in the rows, in light rich soil, from 2 to 2½ feet deep. Plantations may also be made from cuttings of the roots, which, if cut into lengths of 3 or 4 inches and placed in a box intermixed with sand, as recommended in our Calendar for January 8, should be dibbed in from 10 to 12 inches apart, and 18 inches between the rows. These thongs or root cuttings will furnish plants to be taken up for forcing next December, but if the plants are intended to be forced in their permanent situation by the aid of pots, dung,

and leaves, then the distance should be as recommended above—2 feet between the rows and 18 inches from plant to plant, and the thongs should be about an inch under the surface of the soil. A sowing of Chervil should now be made in shallow drills, also another breadth of Turnips, Radishes, and Neapolitan Cabbage, and Grand Admiral Cabbage Lettuce, also Paris Green Cos and Paris White Cos Lettuce. A small sowing of each should be made at short intervals, so as to always have a good supply of young plants wherewith to make frequent plantings in order to maintain a good succession. Early sowings of Peas and Beans should now have some soil drawn up to them, and the former should be sticked.

Frames and Pits.—Lettuce, which will shortly be turning in for use, Carrots, Radishes, &c., will require to be carefully ventilated during the presence of cold wind, and they should have water applied to their roots occasionally, to encourage a free growth and thereby ensure crispness. Successional pits of Potatos should be earthed up, and with those in a more advanced stage of growth watered when the soil has become moderately dry.

Mushrooms. — Beds which were made the last week in January will now, assuming that the spawn was good and had been inserted in the beds when the heat had declined to 75° or 70°, and that they were subsequently cased over with finely sifted loam beaten firmly together with the spade, and the atmosphere kept rather moist with a mean temperature of 60°, will now be "showing" Mushrooms freely, and should the surface of the beds indicate dryness they should be watered through a fine rose, the water being at a temperature of 85° or 90°, which will stimulate their growth. *H. W. Ward, Longford Castle.*

## *FLOWER GARDEN.*

As soon as it can be seen how far the severity of the weather has affected the less hardy varieties of shrubs they should be cut back to the live part. Hereabouts no kinds are seriously injured except Laurustinus and Euonymus. Most of these will have to be cut back to the ground-line, and from present appearance it is doubtful whether the latter will break at all. Common Laurels are already breaking into new growth, and hedges of these, though comparatively little injured, require a good deal of trimming up, such as the cutting out of browned tips of shoots, as also do Portugal Laurels. The clipping of all other kinds of hedges or belts of shrubs, as well as the pruning of single specimens to keep the same bushy, should be done at the earliest opportunity, the present being the right season for such operations.

Let all recently transplanted shrubs be kept mulched so long as the necessarily untidy appearance thereby presented can be tolerated, which in most cases would be longer than it usually is if it was remembered that the permanent well-doing of the plants hinged on its prolongation, not to mention the saved labour of watering if a dry period intervene between now and their establishment in the new positions. All shrubs that have been used for winter bedding ought by this time to be in their summer quarters; for the most part, these being small, mulching or watering is not a real necessity, but our experience is that even with these a thin layer of litter conduces to immediate establishment in the soil and a healthy spring growth of the plants. Any dressing that it is intended to apply to lawns or turf should not be longer deferred, nor should the preparatory rolling, necessary before mowing begins. One good rolling while yet the turf is impressionable, by reason of the winter rains, is of more service than a dozen rollings will be as the spring advances, and for the same reason grass seeds that have yet to be sown should be got in at the earliest moment, repeating the rolling after each frost, which, having a tendency to loosen the soil, the grass seeds are longer in germinating, or else perish altogether unless this attention is given.

Beds of spring flowers need to be surface-stirred, and all blanks caused by the hard weather made good. Wallflowers and Stocks are the only plants amongst spring bedders that have been seriously injured, the largest and earliest sown plants having been the first to succumb. It is thus we are taught by our failures; the lesson in this instance being to sow later. Hyacinths and Tulips ought to be afforded protection when the nights are frosty; nothing is better than tiffany, or if the untidy appearance is not objected to, Yew or evergreen spray. Most kinds of herbaceous plants and bulbs having now made their appearance above-ground, the gaps can be made good by division of the larger plants, or else by the sowing of hardy annuals in the vacant spots; at any rate, some place or other should now be found in which to sow Sweet Peas and Mignonette, following on with successional sowings at intervals of about three weeks. In places where the beds are not planted with spring flowers, much may now be done towards relieving the pressure of work at the usual bedding-out time, by at once planting all hardy kinds such as Violas, Pansies, Ajugas, Saxifrages, Sedums, and the like; and when these are planted a further advance step may be taken by labelling the space left for the more tender plants, and making note of quantities required, and propagating accordingly. The reminder in my last note anent the sowing of Asters, Stocks, Zinnias, everlastings, ornamental grasses, &c., should at once be put into practice, in a position with a southern or western aspect and frames should be placed over them; a hard bottom is preferable, as then the seedlings move better. Continue the propagation of tender stock, and to make room for these the hardier varieties may now be transferred to cold pits, or some, such as Calceolarias, may be planted under the wall coverings or where protection can be readily applied. *W. Wildsmith, Heckfield, Hants.*

## *FRUIT HOUSES.*

Peaches and Nectarines.—The fruit in the early house will now be stoning, and disbudding by this time should be finished, and all the young shoots tied down at the heel. The trees will be assisted through the stoning process by having a good mulching of half-rotten manure and a thorough watering afterwards with chilled water. Keep the night temperature at about 60°, with a rise of 10° by day with fire-heat, and 15° to 20° by sun-heat, with a steady circulation of air. Syringe the trees well all over twice daily with water of about the same temperature as the house; do them early in the afternoon, so that the foliage may get thoroughly dry before night. The second house will now require daily attention as regards disbudding, thinning fruit, and heeling down the young shoots. Give the same treatment as to the early house as regards syringing and temperature, &c., but take special care that they do not get dry at the roots, as this is often the sole cause of fruit dropping off. The blossoms in the third house should now be setting fast, as we have very favourable weather for them. If not already done, at once pull off all the blooms on the under-sides of the shoots or any badly placed ones. Disbud the strongest shoots and the extremities of trees gradually. As soon as the fruits are thoroughly set give a good watering with chilled water. The fourth house will be coming into bloom; fertilise and give the same treatment as applied to the earlier houses. Keep the ventilators open day and night in later houses, to retard the flowering period as long as possible. *J. Wallis, Keele Gardens.*

### Orchard Houses.

In the houses where the trees have been forced the fruit will now be entering upon the stoning period, and with the fine weather we are now enjoying satisfactory progress will be made. If the trees are in good health, growing freely, and free from insect pests, the fruit may very nearly be all thinned out at the commencement of the stoning period; the energies of the trees are very much taxed at that time, and it is not desirable to allow fruit to exhaust them during a portion or even the whole of the stoning period, as is sometimes done, and then to remove it. I am quite aware that the extra fruit is left on during the stoning period in case much of it would be likely to drop; but it does not do so under proper management, and when the trees are in good condition. The young wood near the top of the trees should be stopped first, and later that nearer the base; the strongest shoots should be stopped first—Indeed, it may not be necessary to stop the weaker growths at all. Where the trees are in pots, and the roots are entirely confined to them, unremitting attention to watering is necessary. A pot tree would probably be ruined for the season if the roots became too dry when it happened to be in full growth. When the orchard-house is of large size, it is much better to have a good garden-engine, as an ordinary hand-syringe neither does the work so quickly nor so efficiently. The water should be applied with considerable force to the under-sides of the leaves, as the spider appears there first and on the oldest leaves, while the aphis tribe attends to the points of the growing shoots and the youngest leaves. The trees in the late house are not yet in flower, but a week or so of fine weather will show a mass of blossom. I like to give the trees a thorough fumigating with tobacco smoke a week or two before the blossoms open. I well remember recommending this to a friend, but he could not see the use of it. "Where are the aphis," he said, "that you want me to kill?" Well, they may not be seen at the time, but if the house is not fumigated, it is no trouble to see them after the blossoming period; whereas there may be no more trouble during the season with this pest if fumigating is persisted in at the right time as a preventive. Admit plenty of air night and day at this time, and until the blossoms open. The later the blossoms open, so much the more likely are the trees to escape the spring frosts. The Plum, Pear, Apple, and Cherry trees are yet out-of-doors, but the blossom-buds are rapidly expanding, and we shall have them into the house at once. Everything should be kept neat and clean in the house now. The borders have been crammed with Chrysanthemums and other plants, but all such things that require much water should be lodged elsewhere.

### Orange Trees in Pots.

I advised that the trees should be lookeed over and made thoroughly clean when time could be spared to do it; now that the weather is fine work will be pressing, and few people have patience to see men sitting washing Orange trees by the slow process of one leaf at a time. There has been ample opportunity to get all indoor work forward. Some of the trees may now be in blossom. Let those be placed in a dry airy house, but a temperature not less than 55° at night. Trees on which the fruit has set should be pushed forward in a night temperature of 65°. It takes all the season to get the fruit well ripened. The leaves should be well exposed to the sun. Shut up early in the afternoon, to utilise all the sun-heat. *J. Douglas, Loxford.*

### Melons.

The progress that plants have recently made, notwithstanding the uncongenial nature of the weather, is in all respects satisfactory, and with increasing light and sunshine a still more rapid development of growth may be expected. It is well in the management of early crops to avoid as much as possible the adoption of such conditions as will produce a tendency to extreme vigorous growth, which in periods of dull weather is liable to damp off unless very great attention is given in supplying water to the roots. Where such a tendency threatens to appear at the base of the stems, the plant should be dusted with hot lime and a drier atmosphere be maintained until the outer rind of the stem heals up and grows firm. As a rule damping off (to use the hackneyed phrase) is as much the result of an over-moist atmosphere and insufficient air, as it is of a superabundant supply of water to the roots, or a loose over-rich compost. The daily sprinklings of the paths and beds, and especially syringing of the plants, should always be regulated in proportion to the amount of sunshine and fresh air that the plants enjoy in the course of a day; and it may also be observed that roots are made in greatest number where the soil is made firm by moderate pressure, and the growth in consequence is of a much harder nature and less liable to disease. For the present it will be best to remove all lateral growths from plants that are not intended for early fruiting; but if only one or two approved kinds are grown for the earliest crop, as recommended at the beginning of the year, and these are expected to yield a succession of fruits, one or two of the strongest plants should be pinched in advance of the rest, in order to cause them to furnish fruiting laterals, in which case from one to two fruits will be sufficient to take from such plants. An early fruit or two is always more prized, and is really of more commercial value than double the number of superior fruits would be when the supply becomes more plentiful. With the prospect of approaching genial weather it will now be safe for those who grow Melons in frames to set about the work in earnest with every chance of success. Having a good supply of well-prepared fermenting dung and leaves a sunny nook sheltered from the north and east should be chosen as the most favourable situation for making a bed, which should be not less than 5 feet high at back and 3 feet at front, and having a margin of from 18 inches to 2 feet of bed all round the frame to admit of fresh supplies of fermenting materials being added as the heat decreases. A dry bottom should be made of faggots, and when the frame is placed upon the bed it should be filled with the materials, so that when the mounds of earth are put in the centre of each light the plants will only be from 6 to 9 inches from the glass. *W. Hinds, Canford.*

### Cucumbers.

Plants coming into full bearing will now require careful and regular attention in order to turn the vigour of the plants, which is daily increasing, to the best advantage, namely, to the production of fruits. No more shoots should be encouraged to grow than can be accommodated with full trellis-room, and these should be regularly stopped, with a view of promoting fertility and assisting the fruits to swell rapidly, which is best accomplished by retaining the least number of superfluous growths and fruits. We make a point of syringing right and left every day, except when there is a succession of dull days, when damping the surface of the bed and the walls and paths of the house, is found to give sufficient atmospheric moisture. In dull weather the work of absorption goes on slowly, and leaves drenched with water so near to the glass are likely to sustain a chill, with the probable result of the attacks of insect pests succeeding as a further legacy. If, however, there is plenty of room for a free circulation of air between the leaves of the plants and the glass, there is less likelihood of a chill. Fruiting plants that are making young roots freely should now be liberally supplied with liquid manure at a temperature of from 80° to 85°, and trial sticks or a ground thermometer should always be kept in the bed as a means of indicating the bottom-heat temperature. Train, stake, and earth-up young plants, and attend to their requirements as directed for Melons. *W. Hinds, Canford.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Tuesday, | Mar. 22 | Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M<br>Sale of Carnations and Picotees, Pinks, Roses and Fruit Trees, at the City Auction Rooms, by Protheroe & Morris. |

NOW that the season for planting Potatos has once more come round, it is worth while to devote a little consideration to the question, What is a Potato? In olden times, before competitive examinations were so common as they are now, two stock questions with examiners related to the nature of the Potato and the action of the common pump respectively. These questions were not altogether easy for town-bred students, who had no knowledge of a Potato save on the dinner-table, and to whom the outside even of a pump was hardly more familiar than the inside. As time goes on pumps will become even less of "common objects" than heretofore, but it is quite otherwise with what it has become the fashion to designate as the "noble tuber." Everything relating to it is of interest, and its nature and mode of growth necessarily are of cardinal importance to the grower. In everyday language a Potato is a root, "a fruit that grows at the root," a bulb, a tuber, even a seed. It cannot be all of these at one and the same time, it is clear. If the real nature of the growth in question were a matter of indifference to practical cultivators, and only concerned botanists and purists warring against vagueness of language, it would be hardly worth while to raise objections to the want of precision, and, indeed, inconsistency of the popular appellations of the esculent in question. But, in point of fact, very important cultural practices depend upon a correct appreciation of the nature of the Potato tuber. What would be good practice in the case of a root would not apply to a fruit or a seed, and thus it happens that the points which at first sight might be thought to concern a botanist only, are really of great moment to the grower. With the aid of some woodcuts, derived, we believe, originally from a German source, but which we have copied from the *American Agriculturist*, we may just glance at the life history of the Potato set. As we plant it, it is the result of last season's growth. Stored up within its rind is a quantity of water, as well as starchy and other material; its surface is indented and marked with "eyes." Place it under favourable conditions of warmth and the water and the starch undergo changes: the starch, heretofore insoluble, becomes dissolved and so changed in character that it more nearly resembles sugar, growth begins, the tissues swell, new cells are formed at the expense of old ones, the eyes lengthen into sprouts or chits, or by whatever name the shoots may be designated. In point of fact, we have in the Potato set when it begins to grow an almost precise correspondence with the shoot of a Peach, or of any other tree. In both the food, starch, water, nitrogenous matters, were collected last autumn and stored for use this season; in both the "eyes" or buds will lengthen into shoots. That a Potato tuber is really nothing but a modified shoot, may be guessed from the fact that every now and then we find such a shoot on the haulm between it and the leaf as shown in fig. 70. Potatos growing on the haulm are not so very uncommon. Wherein, then, does the difference between an ordinary shoot and a tuber consist? Merely in this—that the one is developed beneath ground, the other above. The subterranean shoot is predestined for a more independent career than the shoot of an ordinary tree, for while this remains attached to the parent, the Potato tuber is separated at the end of the first season. A shoot of an ordinary tree when it awakens into life can draw upon its parent for sustenance, and therefore its tissues need not be gorged beforehand with stores of food, but the Potato is, as we see, cut adrift from its parent. The haulm and the leaves do their work; they accumulate raw material, which they convert into good food; they store this up in the tubers in large quantities, and this done they die. The tuber, however, lives on; and, thanks to the parental care, it has a supply within itself of the necessary food. Hardly have the eyes begun to sprout when, as may be seen in our sketch (fig. 75, p. 371), roots are protruded from their base. The food-stores in the tuber are enough to start with, but they are not enough to go on with, hence the young roots push out in all directions to forage for themselves. All this time, then, the young shoots are living upon the old tuber, and they will do so so long as its stores are unexhausted. But the history, so far, will show how important it is to keep the sets in a temperature sufficiently low, and in such darkness and dryness that growth may not go on till we are ready to plant and to offer to the young roots an independent source of existence so soon as they are fit to avail themselves of it. So, too, we may see that the practice which some follow of rubbing off the "chits" is so much waste; they will form again, it is true, but a wanton injury will have been done and time

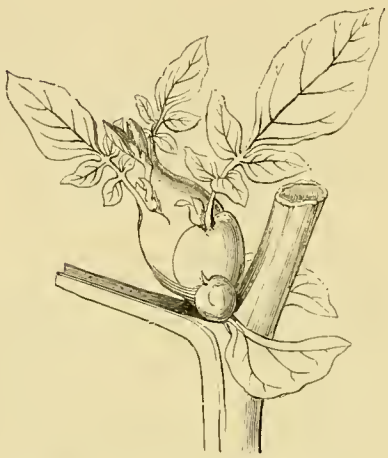

Fig. 70.—Tuber growing on the haulm of the potato.

will have been lost. It is the practice with some to suppress all the eyes but one near one end of the tuber. The reason given for this is that the one left will be able to avail itself of the food provided for all the others, but if a good haulm is to be made—and that, it must be admitted, is the necessary precursor to a good crop—it would seem bad practice to suppress the many for the sake of the one—to have one group of roots only, instead of many. But supposing growth goes on uninterruptedly, the roots which we have seen emerging from the base of the shoots grow, divide, and subdivide, multiply exceedingly, according to the nature and quality of the soil. This, together with the coincident growth of the stem and leaf or haulm, is illustrated in figs. 72, 73, 74, p. 371. These illustrations will show the value of the earthing-up process, the earth drawn up round the collar increases the food-supplying surface, gives the roots more range, secures a greater supply of air to the roots through the loose soil, and, provided it be not raised too high, is of unmixed benefit to the plant.

The first object of the cultivator is to encourage free, rapid and healthy growth of root and haulm. The reason is obvious: root and leaf are necessary to the growth of the plant, and essential to the formation of the tubers. Once provided with a good supply by means of the true roots and leaves, the plant sets itself to work to provide for the future. It may do this in two ways—by the formation of flowers, fruit, and seed, and by the production of tubers. We may leave seed-production out of our calculations for the present, because in most cases it is the tubers we want, not the seeds, save in exceptional cases.

At the same time that the roots below-ground and the haulm above-ground are doing their work, collecting and preparing the food, the tubers are gradually developing below-ground on the subterranean portions of the stem. What these tubers really are has been hinted at before, but it is clear now that they are underground branches destined to remain underground, to swell and become stores of food for the ensuing season.

In its native country the Potato is exposed after the growing season to a period of extreme drought, and all above-ground vegetation dries up, where with us it rots. In either case the destruction is complete, and were it not for the tubers safely ensconced below-ground the chance of perpetuating the plant would be small. True, it might be propagated by seed, but only a small proportion of seed is formed; that is subject to depredations from birds, and is liable to other accidents; and, moreover, reproduction by its means is necessarily a slower process than is that by the tubers buried safely beneath the ground out of the reach of hungry animals or birds, and placed under more equable climatal conditions than they would be above-ground, where cold nights and even frost succeed to torrid days. The question obviously arises, whether in this country autumn planting might not be more beneficial than that in spring. But it must be remembered that the Potato in our fields and gardens is under very different conditions to what it is in the wild state. Our cold, wet soils are not at all well adapted to keep such succulent masses, and again our spring frosts play havoc enough as it is with the young shoots, and would do so still more in the case of autumn-planted tubers, unless protected. In the case of the Potato, as with every other product of foreign climes, we have as practical growers not only to get hints from the natural organisation and mode of growth of the plant, but from the way in which that organisation and that mode of growth become changed under the altered circumstances of cultivation. The best cultivator is not he who knows all about the way in which Potatos live and grow under natural circumstances, but he who, from his knowledge of the life-history of the plant and his practical experience as a cultivator, knows how to make the plant adapt itself, not to its own requirements, but to the express purpose for which it is grown.

—— Lemoine's New Double Lilac.—Mr. Bull, who has become the possessor of the greater part of the stock, startled us some time since by showing us sprays of this very beautiful Lilac (fig. 71). The flowers are very double, and clear snow-white. We have seldom or never seen a more beautiful white flower at this season of the year. We hear that the variety was raised by M. Lemoine, of Nancy, and that the flowers, under ordinary conditions, are lilac; but when forced they are of the pure white we have described. It was at one time supposed that darkness was necessary to secure the production of these white flowers, but it has been proved by M. Lavallée and others that a high temperature is alone sufficient, the explanation given being that the plant is so rapidly forced into growth that the colouring matter of the flowers has not time to form. See *Gardeners' Chronicle*, vol. vii., 1877, p. 342.

—— Crassula quadrifida.—As a pretty and easily-grown winter-flowering greenhouse plant this species deserves a word of praise. It has upright panicles of pleasing, if rather small flowers, which are pink when in bud but pure white when fully expanded. Good specimens have been in bloom some time in the Succulent-house at Kew. It is a native of the Cape of Good Hope.

—— Afghanistan.—Dr. Aitchison, Surgeon-Major in the Punjaub army, whose collections in the Kurrum Valley we alluded to on a former occasion, has returned from Affghanistan with another extensive collection of dried plants, and is now at Kew engaged in working them up. Amongst other interesting museum objects Dr. Aitchison has brought home specimens of Chamærops Ritchieana, a Palm that covers miles of the alluvial plains with a dense bushy thicket. Frequently, too, it occurs as a branching tree, 15 to 25 feet high, but then usually in the vicinity of other trees or buildings. Dr. Aitchison's specimens illustrate this peculiarity exhibited by comparatively few other Palms.

—— Royal Horticultural Society.—The show in connection with the meetings of the Floral and Fruit Committees in the conservatory at South Kensington, on Tuesday next, promises, we understand, to be one of unusual excellence. Hyacinths, Tulips, Cyclamens, and other spring flowers will be shown in large numbers. There will be a spirited competition for the very liberal special prizes offered by a Fellow of the Society for Hyacinths and Tulips.

—— The Literature of Botany.—Messrs. Dulau & Co., 37, Soho Square, W., announce their intention of publishing shortly a *Guide to the Literature of Botany*, being a classified selection of botanical works, including nearly 6000 titles not given in Pritzel's *Thesaurus*, by Mr. B. Daydon Jackson, Secretary of the Linnean Society.

—— Special Lectures at South Kensington.—The experiment of special lectures in connection with certain of the exhibitions at South Kensington last year having proved successful, arrangements have been made for a few to be delivered in the course of the present season. Mr. Shirley Hibberd will accordingly discourse on the Tulip in the conservatory at 3 P.M. on Tuesday next, March 22. On the occasion of the Auricula show, we understand there will be an appropriate lecture by the Rev. F. D. Horner. In respect of other arrangements we shall inform our readers in due time.

—— The Pelargonium Society appears to be waking up with the opening of the spring, and, as is the way of such corporations, its first cry is for money. The honorary secretary informs us that the prospect for the present season is a bright one, as the plants in training for show purposes are doing remarkably well. It seems that a few more members are needed to keep up the strength of the Society to a reasonable standard of efficiency. The honorary treasurer is Henry Little, Esq., Hillingdon Place, Uxbridge.

—— The National and Central Horticultural Society of France.—Following the example set by our own Horticultural and Botanic Societies, a series of popular lectures is arranged to be given on Thursdays in March, April and May. M Duchartre is to speak of Flowers and Flowering; M. Prillieux on the Action of Frost on Plants; M. André on Palms in Nature and in Gardens; M. Chaté on Market Plants, and Stocks in Particular; Dr. Fournier on Ferns; and M. Charles Joly on Horticultural Exhibitions in France and other countries.

—— A Mushroom Society.—We do not give this heading in any sinister sense, but merely to indicate that a society is established in Paris for the purpose of developing the culture of these esculents

Fig. 71.—Lemoine's new double lilac. (see p. 368.)

in the quarries and vaults of that city. The quarry at Bellegarde is described as a succession of underground cathedrals covering a space of about 9 acres. This is only one of several similar properties possessed by the Society, and utilised for the growth and preservation of Mushrooms. The Society is placed under the protection of the Virgin, whose statue surmounts the establishment at Bellegarde. An orphan school for girls, under the direction of the nuns, forms also a part of the establishment. The quantity of Mushrooms produced daily amounts to 1000 kilos. (nearly 1 ton). A total profit of 400,000 francs is promised for the 365 days of the year, for the prospectus informs us that though the Sabbath day's rest is observed at Bellegarde by the workmen the Mushrooms are under no such obligations, and hence a double yield is collected on Monday. As the culture can be carried on irrespective of weather a large percentage of profit is ensured. The shares are issued at par at 500 francs each.

—— A New Tanning Material.—*The Colonies and India* draws attention to a new tanning material, in the form of the bark of Oxalis gigantea, which contains upwards of 25 per cent. of a bright red-coloured tannin, which has been tried with good results. The bark is thin and brittle, and therefore easily ground, and the tannin, being in large thin-walled cells, is readily extracted by water.

—— Colchicum luteum.—In the Colchicum collection at Kew this rare and pretty species is now in bloom, and its hardiness seems sufficiently demonstrated when it is stated that the Kew plants have not been protected in any way during the exceptionally severe weather of the past winter. The flowers are of a bright yellow, and about the size of those of Bulbocodium vernum. It is a native of Affghanistan and some of the surrounding countries.

—— "Flore des Serres."—A new part of this valuable publication, now under the editorship of M. J. E. Planchon, has just been published. Its coloured figures we shall record in due course, meanwhile we may mention, among the more prominent of its literary contents, articles on Cultivated Anemones, by M. Verlot; on the Eucalyptus in Provence, by M. Naudin; on the Origin of some of our Ornamental and Food Plants (Sunflowers and Jerusalem Artichokes), by M. Decaisne; on Yellow Roses, by M. Crépin, &c.

—— The Synnotias.—Like many other handsome and interesting bulbous plants from the Cape, the Synnottias are scarcely ever seen outside a botanic garden, although they certainly are easily grown and desirable plants. The genus is nearly allied to Gladiolus, but the habit and general aspect of the species seems to be that of a dwarf Sparaxis. At Kew the old S. bicolor is now in flower, as well as another labelled S. Walthami, a name not given in Mr. Baker's *Systema Iridacearum*.

—— A New Aphis.—The American *Gardeners' Monthly* reports that a new species of aphis, supposed to have come from Japan, has been discovered on Japan Lily plants, by Mr. Peter B. Mead, of New York, and has been described and named by Mr. Joseph Monell, of St. Louis, Siphonophora Lilii. It is thus described:—"General colour yellow; basal half of abdomen brownish-red; antennæ mounted on conspicuous tubercles. Style yellow, a little over half as long as the nectaries. Nectaries dusky, yellowish just at the base, about four times as long as the tarsi. Venation normal. Length 2 mm. Alar expanse 7 mm. On flowers of Lilium."

—— Complimentary Dinner to Mr. Malcolm Dunn.—At the complimentary dinner given on the 9th inst. at the Windsor Hotel, Edinburgh, in honour of Mr. Dunn, gardener to the Duke of Buccleuch at Dalkeith, and first President of the Scottish Horticultural Association, between seventy and eighty gentlemen were present. Mr. John Downie took the chair, and Mr. McLeod, Superintendant of the Public Parks and Gardens of Edinburgh, and Mr. Sadler, Curator of the Botanic Garden, acted as croupiers. Proposing the toast of "Our Guest, Mr. Dunn," the Chairman said that, four years ago, when Mr. Dunn was elected President, there were few members in the Scottish Horticultural Association, and it was prophesied that it would not be long in existence. Now, however, there was a membership of 520, so that its prosperity was beyond all doubt; and for the great success which had attended the Association they were much indebted to Mr. Dunn. They all knew that he was at the top of his profession as a gardener, and held one of the highest positions in the country, and any one who visited Dalkeith could easily see that there was a master-hand at work there. Mr. Dunn, in reply, thanked the members of the Association for the honour they had done him, and remarked that the Horticultural Association was originated some years ago by a number of gentlemen, some of whom were present that night, and much of the success of the Association might be attributed to their energy. He had no doubt that the Association would continue to prosper under the care of Mr. Downie, their new President. Referring to the advantages offered to members of the Association, Mr. Dunn said that it enabled practical gardeners to communicate their experiences to others, and acquire additional knowledge themselves. The younger members were also able to learn a great deal without much trouble, while at the same time they were encouraged to communicate to the Association the result of their own experience.

—— Christmas Roses at Kew.—A collection comprising a rich series of species and varieties of Hellebores is now the principal object of attraction in the herbaceous ground at Kew. The special collection now spoken of is not the ordinary one but another kept apart in beds at some distance from the place assigned to the order of which the genus Helleborus is a member. We believe it was presented to the Royal Gardens by Mr. Hooke, an enthusiastic and very successful cultivator and hybridiser. Several seedlings raised from seed obtained by Mr. Hooke from carefully crossed flowers seem to exhibit decided new shades of colour; and one, colchicus × guttatus, has sepals handsomely marked somewhat after the fashion of the chequered flowers of the Snake's-head, Fritillaria Meleagris. H. guttatus is particularly striking—the white ground colour of the inner sepals towards their bases being thickly spotted with small rich purplish red dots. H. colchicus and H. abschasicus are represented by large specimens with deep purplish flowers, but in beauty of colour the flowers of some seedlings seem to considerably surpass those of either of their presumed parents.

—— The Coffee Disease in Ceylon.—*The Colonies and India* says that in Ceylon a Mr. Schrottky has been experimenting in the hope of curing Coffee-leaf disease by a system of inoculation, and he entertains great hope of success. He has been asked by several of the leading agency houses to make trial of his supposed system on their estates, and one was to be at once undertaken on the Roseneath estate, near Kandy. The Government cryptogamist, as well as Dr. Thwaites and Dr. Trimen, the present and past superintendents of the Botanic Gardens, would, it was understood, carefully watch this experiment, which would extend over several acres. Should results be favourable, it is said to be Mr. Schrottky's intention to apply for the reward of £25,000 offered by the Dutch Government for the discovery of a cure for the Hemileia vastatrix. Some time must, however, elapse before any result can be apparent, or any opinion formed as to the efficacy of the proposed remedy.

—— Strawberry-Houses.—Amongst the requirements of most large gardens special houses for Strawberries are now becoming very general. Few gardeners find they have enough of this delicious fruit in the spring and early summer months, and as year after year rolls on the hundreds of plants increase to thousands, and even the thousands expand until vineries, Peach-houses, plant-houses, and even pits fail to give the needed space for housing the immense number of plants. Any one who has visited Gunnersbury Gardens would perhaps have come to the conclusion that there was glass enough for all purposes there, but such would seem not to be the case, for one of the latest additions is a large span-roof house for Strawberries, of which fruit some 10,000 plants are annually forced. In this house there is a maximum of light and heat, and, if need be, air, with a minimum of unused space, for a stage fills the house that is covered with hundreds of plants, and beneath it is the footway, with ample head-room. Thus from beneath the plants may be removed or replaced, be watered, and the fruit when ripe most conveniently gathered. The plants stand near to the glass, the foliage is not drawn, and the fruit is of the finest flavour and richly coloured. Mr. Roberts forces several kinds, but gives preference to the old Keens' Seedling and British Queen. It may be objected that such a house can hardly be utilised later on in the year, but if planted with Vines trained as single rods these might be drawn out and kept cool and be reintroduced early in May, so that but little growth would be made until Strawberries were nearly over. If the shelves were not permanently fixed the work of training and thinning the fruit would be facilitated.

—— Winter Flowers at Hatfield.—The production of cut flowers in such quantities as are now wanted in most large private establishments requires no ordinary amount of forethought and attention, and is one of the many matters that go to burthen gardeners at the present day to an extent unknown a generation back, for, in place of the comparatively few that used to suffice when not obtainable out-of-doors, the demand is now such as to sorely tax the often limited accommodation to grow them. It is not alone a question of having an uninterrupted supply of some or other of the flowers that come in through the winter season, it becomes necessary for gardeners to study well, not only the effective appearance of the flowers they grow, but also their lasting properties. All that goes to constitute beauty in the individual flower as growing on the plant is useless unless it has enduring properties as well when cut. Through this the plants of use for winter blooming are very much reduced in number, and it is only by confining the cultivation to a comparative few, and growing these in quantity, that the demand can be met. This Mr. Norman fully understands, and directs his course accordingly. Of Calanthe Veitchii and vestita some 200 pots are grown, three or four bulbs each, in 48's and 32's. They are well done; the bulbs, stout and large, producing for some three months such a quantity of long-lasting flowers as not many other things are capable of. A few spikes were still remaining in the first week in March. The old Calla (Richardia) æthiopica is also grown in hundreds. The first flowers, brought in about the close of the year, are from plants kept altogether in pots, and are succeeded by others planted out during the summer, lifted and potted in autumn. With these the centre stage of a large house was nearly filled—strong examples, with stout foliage and large flowers on not over-lengthened stalks. Tree Carnations occupy a considerable portion of two long houses, where, with a little warmth, they keep on through the autumn, winter and spring, giving a succession of their fragrant bloom at all times acceptable, but never so much so as in the winter. Cœlogyne cristata, than which there are few more elegant things in cultivation, is also present in the shape of a number of plants, mostly in medium-sized pots, in which way there are generally quite as many flowers to be had as where the specimens are fewer and larger. The flowering of this was nearly over. Of Dendrobium nobile there is a large stock, splendidly managed; they are in pots varying in size from 6 to 8 or 9 inches in diameter, and show by the yearly increase of the growth that the treatment is exactly what they require. Some of last summer's bulbs are 2 feet long, and over 2½ inches round in the thickest part. Many of the plants of this Dendrobium were flowering from the last season's bulbs, with the leaves fresh and green upon them, as freely as they usually are met with from bulbs a year older and devoid of leaves—a condition never present unless the plants have been managed in a way exceptionally suited to them. Some of these last summer's bulbs were blooming from six or eight of the nodes, mostly three flowers each. The old Phaius grandifolius is represented by a number of examples in 10-inch pots, bearing from three to five spikes each, which are very effective for the centre of large vases. Eucharis amazonica is well done. As an evidence of how quickly this most useful plant increases where the treatment suits it, three plants in 10-inch pots, in three years, have been increased so that they fill one side of a house 50 feet long, from three to four rows deep, occupying 24 and 16 sized pots, furnished with big foliage, indicative of the strength of the plants. Of double white Primulas there are a quantity which for vigour and profusion of bloom it would be difficult to surpass; they occupy a wide shelf over a path in one of the large span-roofed houses, kept at an intermediate temperature, with their heads within a few inches of the glass,

and present a sheet of white flowers such as almost hides the leaves; they consist of the old double white and a seedling raised by Mr. Norman, much superior to the old both in general appearance and size of the flowers. Allamanda Schottii, planted out in the stove, and trained to the roof, is kept on growing, and produces flowers all through the winter. Clerodendron Balfourianum, occupying a place in the same house near it, was likewise in bloom, its white bracts and deep red flowers looking if possible brighter than they do in summer. Violets also are grown in such quantities through the winter as is only possible where there is a large extent of suitable pits devoted to them. The large plant of Luculia gratissima grown in the conservatory affords quantities of its beautiful flowers for many weeks during the latter part of the year. It seems strange that this fine old plant is not more generally cultivated.

—— Crocuses in St. James' Park.—Some one has been good enough to plant a few Crocuses on the grass near Buckingham Palace. Though the numbers are few indeed, the effect is so pleasing that we trust next year a much larger supply will be used, and the bulbs scattered broadcast, instead of in formal rings.

—— Affodilles, Affadil, Daffodil.—The first of these three words appears, like the second and third, to have been derived from the Latin Asphodelus. It is a French word which was in use in the seventeenth century, and occurs in a quotation from Lescarbot's *Histoire de la Nouvelle France*, in Professor Decaisne's article on the origin of the Jerusalem Artichoke lately published in the *Flore des Serres*. We direct attention to this note because the word is employed to designate the tubers. Thus:—"n'y a plante qui ait tant de racines que celle-ci, car quelquefois on y trouve bien quatre-vingts affodilles attachées ensembles. Elles sont bonnes cuites," &c. Decaisne also mentions that Brunfels applied the name Affodillus to Lilium Martagon, a plant with scaly bulbs.

—— The Weather.—General remarks on the weather during the week ending March 14, issued by the Meteorological Office, London:—The weather has been cloudy generally, but dry except in the north and north-west. A thunderstorm occurred over central England on the 8th. The temperature has been much higher than of late, readings being some degrees above the mean in all districts. The thermometer was highest on the 10th or 11th, when it rose to 62° at Nottingham, and to 60° or 61° at many other English stations. The lowest of the minima occurred in "Scotland, E.," where the temperature fell to 30°, and over central and eastern England, where it fell to 33°. The rainfall was more than the mean in "Scotland," "England, N.W.," and "Ireland, N.," but less in all other districts. Bright sunshine was again very generally deficient, the percentages ranging from 7° or 8° in the western parts of England, to 32° in "England, E." Depressions observed:—No. 1 was shown over northern Scotland on the 9th; it was not very deep, but caused fresh or strong westerly winds on nearly all our coasts, which fell lighter as its centre travelled away in a north-easterly direction. No. 2 advanced from the westward, and on the 11th was off the north of Scotland; it at first moved in a north-easterly direction, but afterwards travelled south-eastwards towards the Baltic; it gave us moderate or fresh westerly winds, which veered to north-west on our eastern coasts in its rear. No. 3 appeared to be of a more serious character, and was approaching our western coasts on the 13th, and caused strong southerly winds in nearly all places, and fresh gales in the extreme west; by the following day, however, its centre appeared to be some distance to the north-westward of the Hebrides.

—— Gardening Appointments.—Mr. J. Hobbs, late Foreman in the gardens of Sir J. H. Thorold, Bart., Syston Park, Grantham, has been appointed Gardener to E. Eyre, Esq., King's Hill, Dursley, Gloucestershire.—Mr. James Rennie, lately Foreman at Abbey Leix House, Queen's Co., has been appointed Gardener to Sir James H. Gibson Craig, Bart., Riccarton, near Edinburgh.—Mr. Graham McCulloch, from Messrs. Dicksons & Co.'s Pilrig Park Nursery, Edinburgh, has been appointed Gardener to Viscount Powerscourt, of Powerscourt, Co. Wicklow.

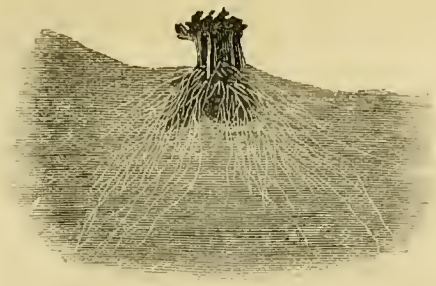

Fig. 72.

Fig. 73.

Fig 74.

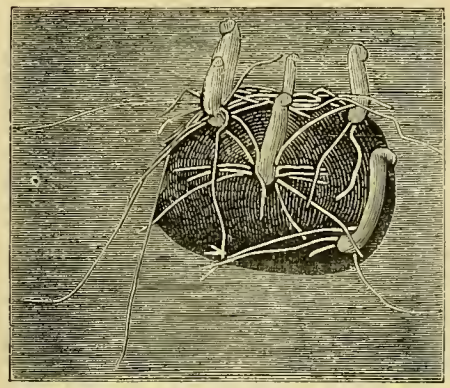

Fig. 75—how potatos grow. (see p. 368)

# Home Correspondence.

A Red Crocus.—In the autumn of last year my friend, Mr. F. N. Reid, of Minori, near Ravello, South Italy, sent me a single corm of a unique variety of Crocus Imperati, named by him C. Cicalesi. It was found by the side of a watercourse in the valley of Minori. To-day I have had the pleasure of flowering it, and it is remarkable for the inner segments, and the inner surface of the outer segments, being of a distinct dull red colour in lieu of purple. The red is not a mere vinous lilac, but a distinct red, which I can only reproduce on paper by a mixture of carmine and burnt sienna. This is such an extraordinary departure from the ordinary range of Crocus colouring, that I think it worth recording. The corm has not produced seed in Mr. Reid's garden, but during its temporary sojourn in England I shall hope to reproduce it either by seed or offsets. *George Maw, F.L.S., Benthall Hall, near Broseley, March* 15.

Messrs. Weeks & Co.'s Hydro-Caloric Coil.—I should like to make a few remarks on the "Hydro-Caloric Coil," described by you at p. 332, the idea or principle of which is not new, though this specific arrangement of Messrs. Weeks & Co. may be. Some years ago my firm heated glasshouses with Mr. G. Taylor's system of zinc tubes to and over pipes (recently referred to in your columns) which is very similar in motive though differently arranged; and more recently I have used Ritchie's patent stove, of which this new double-pipe arrangement is a *fac simile*, with the results here stated. It may not be generally known that this heating stove consists of a pair of double cylinders with an Argand burner fitting into a cap connected with the enclosed space between cylinders. The outer casing gets very hot in a few minutes, while the inner one is kept cooler by the air of the room being sucked through it from below, which passes out at the top quite hot and pure. The one I refer to is in a small lean-to facing west, the roof partially glazed, the remainder being slates lined with boards, glass in south end, and glazed door to house passage. During the severe frosts of January the lowest temperatures recorded by a registering thermometer were 33° and 34°, on nights when the minimum outside was 6° and 10°, and some water left in a saucer on the floor close to the passage was turned into a cake of ice. In the daytime, with external air at 30°, inside 58° at 4 feet from floor, the same thermometer was held 1 inch above the air outlet of stove when it recorded 131° in less than two minutes, at 2 feet above it was 85°; held near the side of stove it was 96°, and close to the floor 46° only. What I wish to call attention to is the varying heat in a small space, as the hydro-caloric coil must act in precisely the same way, only with as much more "battery" power as there are tubes at work shooting up the hot air direct to the roof and forcing it out through laps of glass, or accumulating it at the ridge. How would Vines fare if 18 inches above such a volume of air at 120° or even 100° continually driven against a small portion only of their surface at the rate of 20 cubic feet per minute, their neighbours on each side being exposed to cutting draughts of cold air drawn in through laps to assist in replacing the hot air shot out with such force? The grating over the pipes will check the upward current, I admit, but what is wanted is a deflector to turn it downwards outside the coil, whence it will inevitably rise again. Heated air must ascend; you cannot get it to descend of itself, and the temperature along the ground for a foot high will be 20° to 50° below that on top of coil in a house heated in this way, as the warmed air passing out of inner tubes takes up with it on the outside the other air of house, which in its turn is replaced by anything it can drag in from under doorways, &c. I quite approve of such a coil as a ventilator if you can keep the fresh air admitted down to about 60°, the ordinary heating pipes keeping up the general heat. In churches and high rooms of any kind this tendency of warm air to escape out of reach will be intensified. I know of one where the organist is high up near the roof, almost stifled with heat, while the congregation, 30 feet below, are shivering with cold, and recently new stoves have been added (nearly roasting the clergyman) and gas left burning all day in the vain attempt to raise the lower temperature 10° only. As to its use in hospitals, I question whether medical men will approve of any kind of hot water heating, as it is found that the air only is warmed, and the iron bedsteads, furniture, &c., left cold, the moisture condensing on their surface. Such air is not dry enough, and is too relaxing as a rule for the patients. Having unfortunately had to experience a few months' life in a hospital ward, I can certify as to the preference given to good roaring fires and open ventilators as more health-giving when properly arranged. For my bedroom I now prefer Ritchie's stove to an open fire, as the temperature is kept uniform all the night through with very little gas, and all the moisture from the gas and the atmosphere is condensed and caught in a tin dish for

this purpose, the quantity of water yielded varying from a pint to a quart in ten hours' time. If Messrs. Weeks & Co. can place their tubes diagonally, admitting cold air along the top, and force it out warmed below along the floor level, a much better distribution will be obtained, and I fancy something approaching perfection attained, to the satisfaction of sanitarians and engineers. *B. W. Warhurst.*

Snowdrops.—Spring-flowering plants have had a bad time of it this winter in the North, the ground having been frost-bound from November to the second week in March, and covered with snow in addition the greater part of the time. Snowdrops in mild winters bloom here from the second or third week in January to the end of February, according to the mildness or otherwise of the season, the average time they are at their best being about the middle of February, when the old woods round the Castle are literally white with Snowdrops in countless profusion, making as fine a bit of spring gardening as can be seen anywhere. This year the bloom is nearly a month late, as it is only now at its best. Does not this afford strong evidence that cold retards the flowering period of Snowdrops as well as of most other spring plants? A few Snowdrop bulbs had accidentally got among the soil used for filling cutting boxes in autumn, the Pelargoniums were struck in the usual way, the boxes being wintered in a cold house ranging from 38° to 45°. The Snowdrops made their appearance about Christmas, and flowered about the first and second week in January, at which time their neighbours out-of-doors were only showing through the ground under the snow. This certainly goes against the idea that "cold fosters growth in the Snowdrop," and proves that a mild temperature hastens the flowering period, while a low temperature retards it. In hard winters like the past, when the ground is sealed with frost and snow for weeks past the usual flowering period, the Snowdrop makes a great effort to flower, in spite of unfavourable conditions; hence, if the snow is long continued past the usual flowering time, Snowdrops may be found flowering under the snow. As to the point raised by Mr. Fish, whether the Snowdrop does not flower earlier in Scotland than in England, I should say that depends a good deal on the locality, whether it is mild and sheltered or cold and exposed. They would probably flower early in the former case, particularly if near the mild influence of the sea; and later in the latter case, particularly in high and late localities. As to the other point, whether the kinds cultivated in England and Scotland are the same, Mr. Barr kindly sent me some English and Dutch bulbs two years ago to grow with the Scotch bulbs, for the purpose of comparison; one packet of Dutch bulbs being labelled Sassenheim, and the other Hillegom. Growing side by side I see no difference in point of time of flowering [Nor we either. Eds.]; the Dutch flowers have a deep narrow cup, rather deeper green than our home form, petals long, and narrow at the base, paper-white. G. Imperati appears to be the large type of this form. The English bulbs show paler green markings on the flower cup, petals rather shorter and of better texture, broader at the base, and rather more globular than the Dutch variety; but, singular enough, 50 per cent. are double. Our Scotch form is similar to the English, but in some cases the cup is broader and shallower and the flower more globular than the others. It appears to me there are two well marked types of G. nivalis, one with a deep narrow cup and long petals, narrow at the base, with G. Imperati as the large form of it; the other with a wider, shallower cup, shorter and stouter petals, wide at the base, more globular, with G. Melvillei as the large form. This latter variety has more substance in the petals than any of the other kinds. G. Elwesii has been very fine with me this year where left undisturbed since the autumn of 1879. Galanthi seldom show to the best advantage the first year after planting, especially if they have been much dried and long kept out of the ground. After being lifted and dried for commerce it is usually the second year after planting before the flowers can be fairly compared with those from established bulbs. *D. M., Dunrobin.*

Dead Strawberries.—I never recollect seeing so many deaths among Strawberry plants in the open garden as this season. Whether the terrible mortality here is owing to the influence of soil or climate, or to both combined, it would be difficult to say; at all events the facts of the case are suggestive. I believe it is usual for Strawberries to die more or less in winter in this district, but the idea of whole plantations almost disappearing, is a state of affairs that compels the gardener to put on his considering cap. Two years ago when I came here I found a large percentage of plants had died out of old plantations, but hoped that younger and more vigorous plants would weather the storm better. I happened to call on Mr. Douglas, of Loxford Hall, on my way here, and in course of conversation with him about Strawberries, he pointed out to me that, owing to the soil at Loxford being so light and gravelly, Strawberries seldom did well when they were over a year old. I was much struck with the similarity of the soil here to that of Loxford—it is much deeper, but in texture both appear to be very much alike. What seems to be a remarkable confirmation of Mr. Douglas' words is the fact, that all young plants which were layered in pots as if for forcing, and planted out last August, have defied the weather, while plants two years old, and in the best possible condition last November, are so decimated in numbers that one can hardly tell where the rows of plants have been. Of course many are coming away feebly, and others will yet come, still at the most favourable estimate the prospect of a crop from these plants is not very cheerful. The death rate is heaviest amongst Keens' Seedling, Dr. Hogg, and Sir Charles Napier. President seems to stand any amount of frost without injury. Of plants that were planted out last year after being forced Keens' Seedling has suffered the most, being almost annihilated. In a higher situation and on drier soil plants have certainly fared better, and this fact would point to our damp climate requiring special cultural conditions and a favourable situation to neutralise its effects. The varieties of young plants that have stood the winter intact, and which were kindly sent to me by Mr. Douglas, are Duc de Magenta, Loxford Hall Seedling, Auguste Nicaise, James Veitch and Oxonian. I may mention in conclusion that Marguerite, which is a good late kind here, is quite weather-proof even on a north border, which is the lowest as well as the wettest part of the garden. *W. Hinds, Canford, Dorset.*

Early Strawberries.—In your notice (p. 333) of early Strawberries at Hatfield, of which the first dish was gathered on the last day of February, it it stated that Black Prince was the variety used for early work, and the Vicomtesse Héricart de Thury was the next in succession. Now, in justice to the Vicomtesse, I beg to state that we use (as we have done for the last few years, having discarded Black Prince in consequence of its small size) the Vicomtesse Héricart de Thury as our earliest variety, and right well has her ladyship turned out. This year we picked our first dish on January 28, our next on February 8, 17, and 26—all nice dishes and good-sized berries for the time of year; and such a year, too! *H. W. Ward, Longford Castle.*

Shrubby Veronicas and Frost.—We have lost a great many more things here from the effects of the late severe winter than was the case after the winters of 1878-79 and 1879-80. Veronicas are nearly all dead. The following are the kinds that have suffered most:—Veronica Imperatrice, V. rotundifolia, V. Traversii, V. decussata, the only variety that seems to have any life left in it being V. Princess Royal. The conditions under which these plants made their growth last season could not have been more favourable, so that it is evident the above-mentioned kinds must have the protection of glass in severe winters. They were grown in an open situation sheltered from the north and east and in beds of rich open soil which was artificially prepared and thoroughly drained; and as there can be no excuse about badly ripened wood after last summer, the above list of mortality conveys its own significance. I shall have more to say by-and-bye of other plants and trees that have suffered seriously through the extreme severity of the past winter. *W. Hinds, Canford, Dorset.*

Lauder's Goschen Broccoli.—The above-named Broccoli looks quite uninjured here, while several other varieties, grown alongside and similarly treated, are killed. It has not been laid-in or specially prepared in any way, and has escaped injury in two different quarters of the garden, thus showing distinctly its very hardy character. *Hugh Henderson, Hall Place, Cranleigh, Surrey.*

Clematis indivisa lobata.—The other day, when visiting the well kept nurseries of Mr. Balchin, at West Brighton, I was much struck with the beauty of this climber. It was trained upon the roof of one of his greenhouses, and was flowering magnificently at this season of the year. Greenhouse flowering climbers are very scarce, and I can strongly recommend it to every one in search of a good useful easily grown climber. What makes it more valuable is the easy way in which it produces its beautiful white flowers in great profusion, rendering it very valuable at this dull season of the year. *A. O.*

Setting Boilers.—May I ask Mr. T. Christy to kindly explain in what way he accounts for the results obtained by the alteration in the setting of a saddle boiler as recorded by him in your paper of February 12? The facts there stated have puzzled me considerably, and I believe in that respect I am not alone. There can be no doubt that, as he says, the subject of setting boilers is one of great importance, and my object now in writing this is to obtain as much information as possible. As shown by the diagrams which accompany Mr. Christy's remarks, a saddle boiler set on two courses of bricks above the furnace bars failed to heat satisfactorily 700 feet of piping, but being reset on four courses of bricks a temperature 10° higher in two houses was obtained. Now I should have expected the reverse of that, considering the amount of heat which would be absorbed by the brickwork; unless the boiler was too small for its work, that is, had not sufficient fire space, but then I should have thought it would prove more economical in the long run to put down a larger boiler set on a level with the bars. I notice that in the re-setting (fig. 42) the furnace is built wider, so that the bottom of the boiler partly projects over the fire; this, of course, would be an advantage, but what is represented by the dotted lines? Would not the addition of hollow bars with a water-way through have increased considerably the heating power of the boiler?—as however low the fire might burn, so long as any remained it would be in contact with some part of the boiler, which could hardly be the case if bricks and solid bars were used. As the arrangement of the flues is not shown, I presume they were constructed on the ordinary plan. I believe that quite one-third more heat is available from the same amount of fuel by the addition of a water-way at back and over the top, as in the double L saddle boiler: is this the opinion of others who have tried it? *G. Duffield, Winchmore Hill.*

Soot as Manure.—"J. S." is not quite exact when he says that I am averse to soot. I object to it in the air and in fog and snow; but as a manure, applied properly, I favour it as much as he does. I think it is very probable there are some dark artificial manures into which soot largely enters, and if so, no doubt the better for the purchaser, if the manure is of low price; but, as a rule, the difference between the price of soot and the most inferior of manures is very great. Without doubt soot is a valuable plant manure, because it contains nearly one half of salts of ammonia. This is an excessive proportion, but then it has also a large proportion of charcoal, and that is not a very excitable agent. Compared with this, I find that one popular Potato manure has but a proportion of 15 per cent. of salts of ammonia, whilst it has about 40 per cent. of phosphate of lime—a most important ingredient in any Potato manure. We want in manures for Potatos something that will not only make plant growth, but tubers, and of these again not watery compounds but full of starch and nutritive matters. It is here that the manure chemist can render valuable aid to the Potato grower. We do not want so much plant growth or top—that in excess is an undoubted evil—we want a medium top and plenty of sound healthy tubers. I do not think any amount of soot will enable me to grow cleaner or finer tubers than I grew last year with Hill's and Amies' manures; the former in the largest proportion, because I had the most of it to employ. As the samples which took the prizes at the International Potato Show at the Crystal Palace and at the Royal Aquarium were grown exclusively with these artificials, I much doubt whether soot alone could produce tubers that would excel them. *A. D.*

Leeks.—Any vegetable that will stand the test of zero without showing the slightest trace of a brown leaf is, I think, deserving of special notice; such an one is the Leek; and to those who are responsible for a continuous supply of vegetables, and have not hitherto grown them in quantities, I would say by all means do so—they will stand you in good stead in time of need. Last year they proved to be one of our best friends; and at the present time, when the kitchen garden is almost devastated of green stuff, they are invaluable. That good old adage of "What is worth doing is worth doing well," applies with great force to the Leek; it ought, therefore, to have liberal treatment, and be grown in trenches much in the same way as Celery. To have a succession through the winter and early spring months two sowings—the first about the middle of March, and the other the first week in May—will be quite sufficient, planting out an equal number of the largest and smallest plants from each sowing. *J. Horsefield, Heytesbury.*

The College Road Nurseries, Cheltenham.—A houseful of Primula sinensis alba plena has been remarkably gay for several weeks past, and the plants still continue flowering in the greatest profusion, their blooms being found invaluable for bouquet and other purposes. Iberis gibraltarica, the largest flowering species of its genus, is cultivated extensively in pots and forced, by which latter operation it becomes almost pure white. [See the remarks on the double white Lilac at p. 368. Eds.] For the cool conservatory this plant is almost unrivalled; it is here annually raised from seed, which is the best mode of propagating it, and grown on in large 48-sized pots, when it meets a ready sale. The plants produce on the average each from eight to twelve fine spikes, so that this is a most

attractive and desirable plant. Among some fine examples of Orchids in flower is a remarkably fine form of Cypripedium Boxalli and C. villosum, the upper sepal of the latter being densely spotted with black. The former is of great size and substance, with fine markings. Dendrobium Veitchianum [D. macrophyllum] is a singular species. The outline of the bulb resembles that of a Cattleya, from the summit of which springs the flower-stem, which is erect and naked; the flower-stalk and buds are densely hirsute, the interior of the flower resembles in form that of a miniature old-fashioned bonnet without strings; it is of a whitish and green colour, and densely spotted on the outside with crimson-chocolate, the interior being heavily streaked with the same colour. A fine form of Dendrobium aggregatum majus, with ten flowers, is most attractive; its colour is yellow with orange centre. *T.*

## Foreign Correspondence.

The Olive Tree Parasite.—The Olive trees of Provence are menaced by a scourge which may ultimately prove as dangerous as the Phylloxera. A grey fly, known as the Dacus oleæ, has made its appearance, and has already devoured a large quantity of Olives. It lays its eggs twice a year—in July and in September. The small yellowish-white maggot which results eats its way into the pulp of the Olive, where it bores long galleries; then, when it has reached the adult age, it drops on to the earth and seeks a crevice or hollow to pass through the winter months and chrysalis stage. By spreading the Olives out on a table or a cloth the larva will soon quit the fruit and seek some damp and obscure corner. It can then be seized and destroyed. When the Olives, weakened by the presence of the parasite, fall on the ground they should at once be picked up, otherwise the worm will escape into the soil. Experience has shown that the first generation does not always spoil the Olives, but the ravages of the second lot are wholly destructive. It will be seen, therefore, that the insect menaces seriously one of the principal agricultural products of the South of France. The Olive groves extend over many acres of land, often difficult of access, and it is not to be expected that the indolent southern peasant will ever have the energy to pick up every day the Olives that have dropped from his trees, so as to destroy the worms they contain; yet this is evidently a case where energetic measures should be taken at the very onset. The Provençals are already suffering keenly from the falling off of their vintage, but if they lose their oil also existence will indeed become difficult. *S.*

Spain and the Phylloxera Laws.—A correspondent sends us the following:—The stringency of the Phylloxera laws in Spain and their comparative mildness in Portugal (see p. 338) finds a parallel in another matter. The Island of Madeira, under Portuguese rule, owes much of its prosperity to the inducements held out to unfortunate sufferers from lung diseases, the mild climate and cordial reception accorded by the inhabitants having, no doubt, done much towards alleviating symptoms, and even towards arresting the complaint altogether in countless instances. In the Canary Islands, under Spanish rule, this and every other class of invalids are absolutely forbidden to make the islands their temporary home. A warning to this effect was published in our newspapers about a year ago. The necessity for the warning has just been confirmed by a friend who was in the islands (not, happily, as an invalid) in December of last year. We think there are no statistics to prove that phthisis and cognate complaints are more prevalent amongst the native population of Madeira than in the Canaries. Bigotry and superstition are, no doubt, rampant in both; but, on comparison, Portuguese rule comes out very favourably.

## Reports of Societies.

**Edinburgh Botanical:** *March* 10.—The Society met at 5, St. Andrew Square, Dr. S. A. Goldie Balfour in the chair. The following communications were read:—

I. On the Morphology of the Pitchers of Cephalotus follicularis. By Professor Alexander Dickson.

Professor Dickson exhibited and described certain abnormalities in the shape of intermediate forms between the ordinary foliage-leaf and the pitcher. The simplest of these closely resembled the foliage-leaf, but exhibited a spoon-like excavation of the upper leaf-surface. In the others the excavation was deepened in the form of a funnel with oblique mouth, the apex of the leaf being on that side of the orifice farthest from the axis. That part of the margin of the excavation which is nearest the main axis, and which in the spoon-like modification of the leaf is a simply rounded excision, exhibits in the more excavated forms a simple or lobed projection representing the pitcher lid. All these abnormalities exhibited a keel or ridge in the middle line on the lower leaf-surface running up to the apex. This ridge represents the middle dorsal wing of the pitcher. Professor Dickson held that these abnormalities proved that the pitcher cavity is an excavation or pouching of the leaf-blade from the upper surface, that the leaf apex is represented by the apex of the middle dorsal wing of the pitcher, and that the pitcher-lid is merely an excrescence or outgrowth from the upper leaf-surface.

II. Note of the Floating Power of some of the family of Fucea as observed at the strand between Colonsay and Oronsay, August 25, 1880. By Mr. Symington Grieve.

Crossing the strand separating these two islets of the Western Hebrides just before it had been bared by the receding tide, Mr. Grieve observed grooved tortuous tracks, each beginning or ending at a large stone, below which no annelid or other sea animal capable of making such markings on the sea bottom could be found. At length a stone on the move, buoyed up by sea-weed, was detected making them, and the power of Fucus vesiculosus and nodosus to buoy up stones from a few pounds weight to others exceeding several hundred-weights was clearly traced. The tide carried the stones so elevated on with it in its egress, ultimately leaving them stranded on the sea bottom at its recession. The power of such agencies should be taken into account when speculating on geologic changes.

III. On Temperatures from February 1 at the Royal Botanic Garden, and Effects Thereof on Vegetation. By Mr. John Sadler, Curator.

During February the thermometer was at or below freezing point on twenty occasions, as compared with twenty-one times in February, 1880. The lowest temperatures were the following:—7th, 23°; 12th, 29°; 13th, 23°; 24th, 24°; 28th, 15°. Collectively there were 100° of frost, as compared with 30° in the same month of last year. Since March commenced the thermometer had been at or below freezing on seven occasions, the lowest readings being:—1st, 15°; 2d, 20°; 3d, 20°—the total number of degrees of frost being 45°. During February very little came into flower. On scraping up the snow, plants were found flowering under it; but that day (Thursday) might be said to be the first day in which flowers had been seen in full open bloom. A comparison was given of the dates of flowering of several plants last year and this, the general result being to show that vegetation is this year a month behind its condition last year at the same date, the present state of matters bearing a close resemblance to what was seen in 1879. There had during the past winter been three different winters—a November winter, a December and January winter, with fresh days between, and lastly, a February and March winter. As to the effects of this weather, so far as could be seen up to the present time, although the leaves of some plants had been a little scorched, vegetation seemed to have escaped damage in a very remarkable degree. Had the same conditions been experienced last winter there would have been a very different story to tell.

**Scottish Horticultural Association.** — The fourth annual meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on Tuesday, March 1. The President, Mr. M. Dunn, Dalkeith Park Gardens, in the chair. There was a large attendance of members. Mr. Alexander Milne, the Secretary, read the report of the session 1880-81, from which we take the following extracts:—

The Council, in issuing their fourth annual report, are happy to state that the Association continues to increase in usefulness. The work undertaken during the past year has been much the same as that of the previous session, with this addition, that the Association has been enabled, through the liberality of several of its members, to offer competitive money prizes to young gardeners for the purpose of getting them to excel in some of the branches of their profession. Although these competitions have not been taken advantage of to their fullest extent it is hoped that by continuing the prizes a greater number of young men may be induced to join in the competitions. During the year fifty-three new members have been added to the roll, and since the institution of the Association on March 20, 1877, 525 members have been entered on the roll.

Twelve certificates of the Royal Caledonian Horticultural Society have been awarded by the adjudicating committees of the Association on new productions, to eight members. The number of new articles submitted to these committees during the year has been much greater than in the preceding twelve months. This is a gratifying feature, as it shows that members have great confidence in the adjudicating capabilities of the various committees. Certificates of culture have been awarded to two members since the last annual meeting. The number of papers and communications read on horticultural subjects during the session amounted to twenty-six, all of them being followed by valuable discussions, which bring out many important points. There is to note a large increase in the number of exhibits at the twelve monthly meetings, and the Council take this opportunity of acknowledging their obligations to country members in forwarding exhibits. In the herbarium competition five members (under gardeners) have forwarded collections, and one member has entered a collection of insects destructive to plant life.

While the Council recount with some feelings of pride the amount of good work done by the Association during its existence, they are still alive to the necessity of having a Journal of their own, and of having a reading-room and library open to members for their resort and consultation. They believe that these desirable adjuncts are but questions of time.

The Council cannot conclude this report without referring to the change that is to take place in the Presidency—Mr. M. Dunn, your first President (after yeoman service for four years), seeks retirement. You will be asked when the proper time arrives to pass a vote of thanks to such a worthy President; but the Council cannot allow to pass unnoticed in this report so important a factor in the success of the Association as a change in this office.

In the occupancy of the chair Mr. Dunn has, by his inspiring zeal and unflagging energy, done good work for the advancement of horticulture. In conducting the business of the chair his high and earnest tone has shed a lustre round the presidency, which will stimulate his successors to carry on the good work. In a successor to Mr. Dunn, your Council are happy to state that Mr. John Downie has kindly consented to receive your approbation for the position of President. Should you be pleased to accept the services of such a veteran worker in horticulture, your Council believe that the Association will continue to do much practical work and maintain its usefulness.

The adoption of the report was approved of.

Mr. D. P. Laird, the Treasurer, submitted his report. The income for the year, including balance from last account, amounted to £68 3*s.* 7*d.*; the expenditure amounted to £46 5*s.* 1*d.*; carrying a balance of £21 18*s.* 6*d.* to next year's account. The report was adopted.

In the herbarium competition five collections of plants were entered. The judges, Messrs. Mark King, R. Lindsay, John Sadler, and Jas. Thomson, reported that they had examined the collections and had awarded the prizes as follows:—1st, Alex. Scott, Royal Botanic Gardens, Edinburgh; 2d, James Duncan, Pilrig Park Nursery, Edinburgh; 3d, W. Taylor, Tunbridge Wells. The other collections were sent in by David Conning, Lambton Castle Gardens, Durham, and Chas. Cavage, Abercorn Nursery, Edinburgh: the judges recommended that they should both receive certificates of merit.

The prize offered for collections of insects destructive to plant life were not all competed for, only one collection having been sent in: it belonged Mr. Geo. W. Oliver, Royal Botanic Gardens, Edinburgh, and was very favourably reported upon by Professor Wilson, Edinburgh University, Professor Traill, Aberdeen University, and Mr. M. Dunn, Dalkeith Park Gardens.

The election of office-bearers for the ensuing year was then proceeded with. Mr. Isaac Anderson-Henry, F.L.S. and F.R.S.E., of Hay Lodge, Trinity, was elected Honorary President; Mr. John Downie, of Messrs. Downie & Laird, President; Messrs. Hugh Fraser and M. Dunn, Vice-Presidents. Mr. Alex. Milne was re-elected Secretary; and on the motion of Mr. McLeod, seconded by Mr. John Downie, it was agreed that the Secretary should receive the same compliment as last year. Mr. D. P. Laird was re-elected Treasurer, and received the thanks of the meeting for his services; Messrs. Jas. Grieve, Wm. M. Welsh, John Methven, Jas. Thomson, and Wm. Priest, were elected members of Council.

On the motion of Mr. A. D. Makenzie, seconded by Mr. Robertson Munro, a cordial vote of thanks was passed to the retiring President, Mr. Dunn, who had occupied this office since the institution of the Association.

Two magnificent trusses of the beautiful Indian Rhododendrons, Falconeri and argenteum, were exhibited by Messrs. Downie & Laird.

**Dundee Horticultural Association.** — The ordinary monthly meeting of this Association was held in the Imperial Hotel, Dundee, on Friday evening, the 4th inst., the President, Mr. D. Doig in the chair. Owing to the inclemency of the weather the attendance was smaller than usual. After the usual preliminary business, Mr. Peter McArthur, gardener to John Ling, Esq., of Kimbrae, Newport, read a paper on "The Importance of a Practical Knowledge of Vegetable Culture." After a few introductory remarks, Mr. McArthur said that our culinary vegetables ranked high as articles of food, being very nutritious, and at the same time acting as a corrective against many diseases. They had been cultivated by the nations of the East from the remotest ages. Perhaps the most ancient mention made of any special kinds was to be found in the sacred writings of Moses, the Hebrew lawgiver, who incidentally referred to them in the Book of Numbers, from which we learned that Cucumbers, Melons, Leeks, Onions, and Garlic, were in use in the land of Egypt in these days, 4000 years ago. Mr. McArthur then referred to the date of introduction and the native countries of many of the most useful kinds of vegetables, and briefly traced their history up to the present time. As an instance of the rise and progress of the Potato he alluded to the enormous consumption of this vegetable at the present day compared with what he had heard from the lips of an old gardener in the West of Scotland, who well remembered hearing his father say that when the Potato first came among them they carefully scooped out the eyes with a small portion of the flesh attached, and preserved them as sets for the following year's crop, while the remaining portion of the flesh only was used as food. Mr. McArthur then dealt with the practical part of the subject. It was of the greatest importance that a gardener should have a thorough knowledge of this department of his business. He was afraid there were manifold signs of a growing tendency with many to partly, if not altogether, overlook or despise this very necessary part of their education, the more pleasing occupants of the stove or greenhouse claiming by far the greater part of their attention. He

by no means spoke lightly of the love for the beautiful and graceful in flowers and foliage, or of the intellectual pleasure or enjoyment that would ever remain inseparably associated with their beauty and culture, but the gardener who must supply his employer's table with first-class vegetables every day in the year could not afford to overlook the requirements of the one for the more pleasant duties associated with the other. The preparation of the soil was of the first importance in vegetable culture—to study its nature and capability, how best to husband its resources, and how to increase its fertility. To be able to make a judicious choice of seeds was also a very necessary acquirement, as experience in this matter went a long way to assist in keeping up a continual succession of fresh and useful vegetables. The insect and parasite pests of the kitchen garden also demanded the skill and energy of the gardener. How to prevent or lessen the ravages of the Onion and Carrot worm?—what was the cause of that scourge amongst Peas, the mildew, and how it always appeared when rain came after a tack of dry weather?—these and the like were questions of weight and importance to the gardener, seriously affecting his work and often frustrating his well-laid plans.

Mr. W. Williamson, Tarvit Gardens, Cupar Fife, then read a paper on "The Propagation, Cultivation, and Selection of Table Plants for Exhibition." He selected twelve plants from five distinct genera, and treated in detail their habits, propagation, and culture. These consisted of two Palms, four Crotons, three Dracænas, two Aralias, and one Pandanus. The varieties chosen all required a stove temperature, and their successful management depended on the necessary accommodation, combined with a correct knowledge of their requirements and an acquaintance with their natural habitat. Cocos Weddelliana, Geonoma gracilis, Croton picturatus, interruptus, aureus, and Johannis; Dracæna Sydneyi, terminalis alba, and Guilfoylei; Aralia elegantissima and Veitchii gracillima, and Pandanus Veitchii were, in Mr. Williamson's opinion, among the very best of the table plants; but with the rapid improvements that were yearly taking place in this class of plants, no doubt these would be superseded by other varieties of still greater value.

Mr. Williamson then referred more directly to the position these plants held in the show room. He thought there was great room for improvement in staging them; very often they were set so close together that one could scarcely distinguish which plant the various leaves belonged to, whereas to be seen to advantage each plant should have more or less clear space around it. They might with advantage be utilised in dividing the different sections of cut flowers, where their graceful and elegant forms would go far to break up the sometimes monotonous appearance of these exhibits.

This paper gave rise to a lively discussion—the class that ought to be used, and their treatment, as well as habits and height, all being points of dispute.

A scheme for the encouragement of self-improvement amongst the younger members of the Association was then submitted, the subjects suggested for consideration being practical horticulture, botany, and chemistry. This scheme was approved of by the meeting, and it was remitted to the Council to arrange the details necessary for carrying it into practice. A vote of thanks to the Chairman terminated the proceedings.

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**Manchester Royal Botanical and Horticultural**: *March* 15.—This Society's jubilee year opened on Tuesday with a show which was excellent in every particular. Of Orchids there were never more beautiful examples seen in the Town Hall. Mr. Joseph Broome, of Didsbury, exhibited, among various familiar and much-cherished species, the very curious Dendrobium crassinode, from Burmah, with clusters of waxy, pure white and purple-tipped blossoms on its leafless stems; also a nice specimen of Cymbidium eburneum, with flowers 3 to 4 inches across. A very attractive novelty, in the same group, was a capital specimen of Cymbidium Lowianum, with one great arching raceme of large yellowish-green flowers, eight fully open, and more to follow. This was the first occasion of its appearance in Manchester.

Mr. George Hardy, of Timperley, exhibited a splendid mass of plants, amongst which were Odontoglossum Donianum, yellow and brown, O. cirrhosum, Cypripedium Boxalli, two or three examples of Vanda suavis, Cattleya Trianæ (one of the infinitely varied labiata group), Dendrobium Wardianum, Oncidium lamelligerum, rare and curious, and probably a natural hybrid between O. macranthum and O. serratum, but having flowers smaller than those of the former, yet larger than those of the latter species. The base of its two wavy petals is bright chocolate-brown, the remainder bright yellow; and the sepals olive-brown. The plant was bought at Stevens' for a mere trifle as O. macranthum. Mr. Hardy's bank of plants, surmounted by feathery Palms, included also Deutzias, Hyacinths, and other general favourites. Close by was an extremely beautiful example, from Mr. William Leach, Fallowfield, of Dr. Ainsworth's now well-known hybrid, Dendrobium Ainsworthii, a lovely bouquet of no fewer than 120 snow-white blooms, with plum-purple coloured lips. In a choice little group of Orchids from Mr. William Sparkes, of Charlwood House, Huyton, Liverpool, the specialities were a fine Cymbidium Lowianum, a Cymbidium eburneum, and an Odontoglossum Hallii, with four spikes of blossoms, one of which was 5 feet long, with four laterals, and about thirty blooms on it, the total number on the plant being seventy-six in all. Mr. S. Schloss, of Bowdon, occupied considerably more than one half of the stage below the organ with fine-foliage plants, the most striking amongst which was an Anthurium crystallinum, presenting the semblance of half-a-dozen crusaders' shields, of an engaging green, and most beautifully laced with cream colour. Mr. Schneider, of Cromwell Range, Fallowfield, a new exhibitor, had two nicely bloomed plants of Oncidium serratum, chocolate and gold, the petals crisped along the margins; Odontoglossum cirrhosum, O. Rossii, O. gloriosum, and one of the best forms of O. Roezlii that have been seen. Hyacinths were shown in first-rate condition by Mr. William Agnew, M.P., of Eccles. It was for the nurserymen, however, to excel, and Messrs. Cutbush & Son, of Highgate, led the way in the best possible manner. Mr. B. S. Williams, of Holloway, showed, as usual at this time of the year, a batch of beautiful Cyclamens; also many Orchids; several brilliant new seedling Clivias, and other interesting plants, including a dozen of his new strain of the Chinese Primula, called alba magnifica. Messrs. Standish, of Ascot, sent a fine collection of spring decorative conservatory plants. Messrs. S. & W. Yates contributed, as on former occasions, a capital lot of greenhouse plants, including some remarkably good Cinerarias.

The following awards were made by the Committee:—

Cultural Certificates.—For Oncidium lamelligerum and Cymbidium eburneum, to Mr. George Hardy, Timperley; for Dendrobium Ainsworthii, to Mr. John Leach, Fallowfield; for Odontoglossum Hallii, to Mr. M. Sparkes, Liverpool; for Cymbidium Lowianum, to Mr. Joseph Broome, Didsbury; for Dendrobium nobile var. Wallichianum, to Mr. Schneider, Fallowfield; for Anthurium crystallinum and Croton D'Israeli, to Mr. S. Schloss, Bowdon; Hyacinths—Mr. William Agnew, M.P., Pendleton; Messrs. William Cutbush & Son, Highgate; Cyclamens—Mr. B. S. Williams, Holloway; Lily of the Valley—Messrs. John Standish & Co.; Lilacs—Messrs. Standish; Dendrobium nobile—Mr. D. Adamson, Didsbury. First-class Certificates: Seedling Primula—Mr. J. Tomkins, Birmingham; Imantophyllum cruentum—Mr. B. S. Williams; Primula sinensis, var. alba magnifica—Mr. B. S. Williams.

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## Obituary.

Mr. James Alexander (late senior partner of the firm of Messrs. Dicksons & Co., Waterloo Place, Edinburgh), died at his residence of Redbraes on Saturday last, in his seventy-sixth year. For the last twelve months he had been in declining health, and during the last three months he had been constantly confined to bed. Mr. Alexander was a native of Banffshire, and served his apprenticeship in the old-established business of the Reids, of Colleonard, Banff, which is still carried on by Mr. William Alexander, the only surviving brother of the deceased. In 1824 Mr. Alexander, who was then in his nineteenth year, went to Edinburgh, and entered as assistant in the seed warehouse of Messrs. Dicksons & Co., Waterloo Place, where his untiring devotedness to business, and his straightforward manliness, were soon recognised, and he was not long in working his way to the head of his department. He was for a short time disassociated from this firm, having in 1843 made an engagement as manager of the business of Messrs. James Dickson & Sons, Hanover Street, Edinburgh; but on the death of Mr. Richardson, then senior partner of Messrs. Dicksons & Co., he rejoined that firm as a partner of Mr. Scott, the only surviving member of it. Since Mr. Scott's death, in 1862, Mr. Alexander has been senior partner of the firm until his retirement from business two years ago. During his long active business life of over sixty years few men have gone through more hard work than he did. For fully forty years he had been "on the road" during the summer and autumn months; and however uncertain his hour of retiring to rest might be, he was always sure to be afoot before six in the morning. In his wide business connection he had made troops of friends, and he had no keener pleasure than in dispensing to them his ungrudging and unostentatious hospitality, while not a few when in adverse circumstances have been indebted to him for more substantial help. In his active days he was familiarly known among young gardeners as "Banff," and many a gardener and forester who came as a raw stripling from the North got their first start in life from him. Endowed with a retentive memory, he had amassed a great store of information regarding the history of Scotch families, which gave to his conversation a highly interesting turn. While no man could have a more generous appreciation of what he believed to be simple and true, he was fearless and unsparing in his condemnation of whatever he regarded as hypocritical or dishonourable.

As illustrative of his aversion to publicity, it may be mentioned that when a few of his old friends waited upon him, two years ago, to ask him to allow them to get up a testimonial to him on his retiring from business, he emphatically refused to give his consent; and we suppose it will be no breach of confidence to mention now that "the Model Ward," in the new Royal Infirmary of Edinburgh was furnished entirely at his cost, the one condition he made being that it should be kept strictly private. He has also bequeathed various sums to this and several other local charities.

So far as we know he was the oldest representative of the nursery and seed trade in Scotland. He was one of the two or three congenial spirits, some of whom had passed before him into the silent land, who founded the Scottish Arboricultural Society, which has now grown to dimensions the most sanguine among them could never have anticipated, and for several years during its earlier history he acted as secretary and treasurer. He was also for a number of years auditor to the Caledonian Horticultural Society. We understand that he has left his beautiful little property of Redbraes to his nephew, who bears his name, and who has been associated with the firm of Messrs. Dicksons & Co. since 1864, and has been a partner for the last eight years.

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## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, March 16, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mar. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 10 | 29.89 | −0.04 | 57.0 | 45.0 | 12.0 | 51.6 | +11.0 | 47.9 | 86 | S.W. : W. | 0.00 |
| 11 | 29.86 | −0.06 | 58.3 | 43.0 | 15.3 | 50.1 | + 9.4 | 43.3 | 78 | S.W. : W. | 0.00 |
| 12 | 29.82 | −0.09 | 53.2 | 40.0 | 13.2 | 46.0 | + 5.2 | 43.2 | 91 | N.E. | 0.00 |
| 13 | 29.73 | −0.16 | 52.6 | 38.6 | 14.0 | 44.6 | + 3.6 | 41.1 | 88 | E. | 0.00 |
| 14 | 29.73 | −0.15 | 51.0 | 37.0 | 14.0 | 42.3 | + 1.1 | 36.3 | 80 | E.N.E. | 0.00 |
| 15 | 30.08 | +0.21 | 55.5 | 35.5 | 20.0 | 44.1 | + 2.7 | 36.9 | 75 | N. : E. | 0.00 |
| 16 | 30.21 | +0.35 | 59.5 | 31.0 | 28.5 | 45.0 | + 3.5 | 39.4 | 80 | E. | 0.00 |
| Mean | 29.90 | +0.01 | 55.3 | 38.6 | 16.7 | 46.3 | + 5.2 | 41.2 | 83 | E. | 0.00 |

March 10.—A fine day; sun shining at intervals; fine night, but overcast.
— 11.—Overcast in the morning, then mostly clear; a fine day, and night fine.
— 12.—Damp fog in the morning; a quiet warm day; fine night.
— 13.—A fine day, but cold east wind; halo at night.
— 14.—The sky partially obscured in the morning, afterwards cloudless; a fine day and night.
— 15.—The sky overcast till after 9 A.M; a fine day throughout.
— 16.—A fine bright morning; a very fine day; night fine but misty.

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London: *Atmospheric Pressure.*—During the week ending Saturday, March 12, in the neighbourhood of London, the reading of the barometer at sea level increased from 29.25 inches at the beginning of the week to 29.50 inches by the afternoon of the 6th, decreased to 29.24 inches by the afternoon of the 7th; it was 30 inches by midnight on the 8th, decreased to 29.90 by the morning of the 9th, and by midnight on the 10th it was 30.11 inches, and at the end of the week was 30.03 inches. The mean reading at the level of the sea was 29.79 inches, being 0.3 inch lower than last week, and 0.31 inch below the average for the week.

*Temperature.*—The highest temperature during the week was 58°.3, on the 11th, the next in order being 57°, on the 7th and 10th, and 56°, on the 6th. The lowest of the high temperatures was 50°.5, on the 8th. The mean of the seven high day temperatures was 54°.9. The lowest temperature during the week was 39°.5, on the 9th, the next in order being 40°, on the 12th, and 41°, on the 8th. The highest of the low temperatures was 47°.2, on the 6th. The mean of the seven low night temperatures was 43°.2. The greatest range of temperature in one day was 15°.3, on the 11th, the next in order being 13°.2, on the 12th, and 12° on the 10th; the least range was 8°.8, on the 6th. The mean of the seven daily ranges was 11°.7.

The mean daily temperatures were 51°.5 on the 6th, 50°.5 on the 7th, 44°.1 on the 8th, 47°.3 on the 9th, 51°.6 on the 10th, 50°.1 on the 11th, and 46° on the 12th. They were respectively 11°, 10°.8, 3°.6, 6°.8, 11°, 9°.4, 5°.2 above their averages.

The mean temperature for the week was 48°.7, being 11°.3 higher than last week, and 8°.3 above the average of the corresponding week for sixty years.

The highest reading of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, were 125° on the 11th, 106°.5 on the 6th, and 103°.5 on the 8th. The least reading was 64°, on the 12th. The mean of the seven daily readings was 96°.7.

*Rain.*—Some fell on the first four days of the week; the largest amount being 0.10 inch, on the 9th, and the smallest 0.01 inch on the 6th. The total fall for the week was 0.26 inch. The weather at the beginning of the week was variable, but improved greatly towards the end.

England: *Temperature.*—During the week ending March 12 the highest temperatures were 61°.3 at Cambridge, 60°.8 at Norwich, 59°.7 at Nottingham. The lowest of the high temperatures were 53°.4 at Bradford, and 53°.1 at Brighton. The mean from all stations was 56°.9.

The lowest temperatures were 32°.4 at Bradford, 34° at Sunderland, Leeds, Hull, and Sheffield, and 35°.9 at Wrottesley. The highest of the low temperatures was 43° at Truro. The mean from all stations was 37°.4.

The range of temperature during the week was greatest at Hull and Sunderland, 24°, the next in order being Sheffield, 25°.8; Nottingham, 23°.6; and Wrottesley, 21°.4. The least ranges were Truro, 12°; Plymouth, 11°.5. The mean from all stations was 19°.5.

The mean of the seven high day temperatures was highest at Cambridge, 58°.2; the next in order being Leicester, 55°.9; Sheffield, 55°.8; and Norwich, 55°.6; the mean was smallest at Bradford, 50°.5. The mean from all stations was 53°.5.

The mean of the seven low night temperatures was lowest at Hull, 41°; the next in order being Sunderland, 41°.2, Wrottesley 41°.4, and Bradford 41°.8. The mean was highest at Truro, 46°.6, and Cambridge, 45°.8. The mean from all stations was 43°.3.

The mean daily range was greatest at Sheffield, 12°.4; the next in order being Hull, 12°.1; and Sunderland, 12°. It was least at Liverpool, 7°.9; Plymouth, 6°.8; and Truro, 6°.5. The mean from all stations was 10°.2.

The mean temperature for the week was highest at Cambridge, 51°.2; the next in order being 49°.3 at Blackheath, 49°.1 at Truro, and 49° at Norwich. It was least at Bradford, 45°.3. The mean from all stations was 47°.7.

*Rain.*—Some fell at all stations; the greatest amounts being 1.93 inch at Leeds, 1.53 inch at Sunderland, 1.33 inch at Sheffield, and 1.14 inch at Bristol. The least fall was 0.17 inch at Brighton. The mean from all stations was 0.85 inch, and the average number of days on which rain fell was four. The weather during the week was very variable, sunshine interspersed with showers being prevalent at the first part of the week.

Scotland: *Temperature.*—During the week ending Saturday, March 12, the highest temperatures recorded were 58°.4, at Aberdeen, 56° at Dundee, and 53°.5 at Leith. The general mean was 53°.

The lowest temperatures were 29°.5, at Aberdeen, 30°.2, at Greenock, and 31° at Dundee. The general mean was 31°.2.

The mean temperature was highest at Leith, 43°.2, the next in order being Edinburgh, 42°.6, and Paisley, 41°.9. The general mean was 41°.2.

*Rain.*—The greatest fall registered was 2.18 inches, at Greenock, the next in order being 1.51 inch, at Paisley, and the least, 0.20 inch, at Dundee. The general mean was 1.07 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

How to Extirpate an Oxalis.—In some parts of Northern Spain a plant producing little scaly bulbs, supposed to be an Oxalis, is becoming a great nuisance in cultivated fields. Can any one suggest a method of extirpating it?

## Answers to Correspondents.

Coal Ashes: *E. Joynson.* Yes, very good, if not overdone.

Cork Oak: *R. Palmer.* We believe it has been introduced into the Australian colonies, but will make further inquiries.

Names of Plants: *W. Alison.* Both Phaius grandifolius. We cannot name the Camellia. We cannot undertake to name florists' flowers.—*A. Penn.* Diplacus glutinosus.—*K. B.* 1, Begonia manicata; 2, B. foliosa; 3, B. fuchsioides.—*Blackberry.* So far as we can tell from a single leaf, your plant is the common "Honesty" (Lunaria biennis), a beautiful old-fashioned border plant.

Pruning Peach Trees: *Constant Reader.* If, as we understand, you refer to young trained trees, you will do well not to cut them back too severely, but to lay in two-thirds or more of the length of the young wood, according to its condition as to ripeness.

Vines Bleeding: *A. Foster.* There is no certain specific that will stop the bleeding of Vines in certain conditions. Thomson's Styptic, or Painter's Patent Knotting, are as good as anything you can get.

Violets: *J. R.* Wild white forms of the sweet Violet are not uncommon. Yours appear to be escapes from some garden.

### CATALOGUE RECEIVED.

Dickson & Robinson, 12, Old Millgate, Manchester—Select Farm Seeds.

Communications Received:—W. B. H.—R. D.—W S—C. B. S.—E. W. S.—The Winner of the 1st Prize.—J. Webster (thanks).—J. C.—D. T. F.—J V. & Sons—B F—J S. M.—A D. M.—R C—J. D.—J. C., Farnborough.—A. D.—H. E.—A Young Gardener (next week)—Ampelos.—J. P.—A. De C.—H. J. E.—J. H.—O.—J. McA.—W. B.—S. W.—A. S.—R. E.

# Markets.

*COVENT GARDEN, March 17.*

Our market is so quiet just now that nothing calls for special remark. Good well kept Grapes will now be useful, but Cucumbers are quite a glut. *James Webber, Wholesale Apple Market.*

Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 1 0– 2 0 |
| Grapes, per lb. | 3 0–12 0 | Strawberries, per oz. | 1 6– 2 0 |
| Lemons, per 100 | 4 0– 6 0 | | |

Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Garlic, per lb. | 1 0– .. |
| Asparag., Fr., bndl. | 25 0– .. | Herbs, per bunch | 0 2– 0 4 |
| — English, bund. | 8 0–14 0 | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Beans, French, p. lb. | 2 0– .. | — Cos, each | 0 4– 1 0 |
| — Broad, per lb. | 1 0– .. | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 6 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 2 6– .. | Parsley, per bunch | 0 4– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Radishes, per bun. | 0 2– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Rhubarb, per bund. | 1 0– .. |
| Chilis, per 100 | 3 0– .. | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 1 0– 2 0 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| | | Tomatos, per lb. | 0 9– 1 0 |

Potatos:—Kent Regents, 80*s* to 100*s*.; Champions, 60*s*. to 85*s*.; Best Regents, 120*s*. per ton; German Reds, 4*s*. 6*d*. to 8*s*. 6*d*.; Belgian Kidneys, 3*s*. 9*d*. to 4*s*. per bag.

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 0 6– 1 0 | Narcissus, Paper-White, 12 sprays | 1 0– 2 6 |
| Bouvardias, per bun. | 1 0– 3 0 | Pelargoniums, 12 spr. | 1 0– 1 6 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 0 9– 1 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Primula, double, per bunch | 1 0– 1 6 |
| Cyclamen, 12 blms. | 0 3– 0 6 | — single, 12 sprs. | 0 6– 1 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Roses (indoor), doz. | 3 0– 9 0 |
| Eucharis, per doz. | 4 0– 6 0 | — red French, per dozen | 3 0– 4 0 |
| Euphorbia, 12 sprays | 1 0– 3 0 | Snowdrops, 12 bun. | 2 0– 4 0 |
| Gardenias, 12 blms. | 6 0–12 0 | Stephanotis, 12 spr. | 12 0–18 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Hyacinth, Roman, 12 sprays | 1 0– 2 0 | Violets, 12 bunches | 1 0– 2 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | — Neapolitan, Fr., per bunch | 3 0– 5 0 |
| — red, 12 blooms | 1 0– 3 0 | — Czar, Fr., bunch | 0 8– 1 0 |
| Lilac, Fr., per bunch | 6 0– 8 0 | | |
| Lily of the Valley, 12 sprays | 1 0– 3 0 | | |

Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Azalea, per doz. | 30 0–42 0 | Ficus elasticus, each | 1 6– 7 6 |
| Begonias, per doz. | 6 0–12 0 | Foliage Plants, various, each | 2 0–10 6 |
| Cineraria, per doz. | 10 0–12 0 | Genista, per doz. | 9 0–18 0 |
| Cyclamen, per doz. | 12 0–24 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cyperus, per dozen | 6 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Dracæna terminalis | 30 0–60 0 | Myrtles, per doz. | 6 0–12 0 |
| — viridis, per doz. | 12 0–24 0 | Palms in var., each | 2 6–21 0 |
| Epiphyllum, per doz. | 18 0–30 0 | Primula, single, per dozen | 5 0– 6 0 |
| Erica hyemalis | 9 0–18 0 | Scillas, 12 pots | 9 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Snowdrops, 12 pots | 6 0– 9 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |

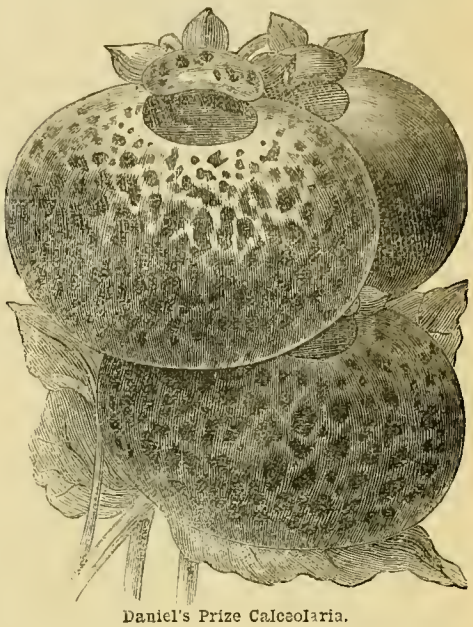
## SEEDS.

London: *March 16.*—The weather being now very favourable for field operations, farmers are enabled to make considerable progress with spring work, and there is, in consequence, a daily increasing demand for Clover seeds, &c. The arrivals of all descriptions are still moderate, and stocks being also comparatively light quotations all round exhibit steadiness. The available supplies of Kœnigsberg Tares are being quickly exhausted. Perennial and Italian Rye-grasses continue firm. For blue Peas there is an improved request. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

**Government Stock.**—On Monday Consols closed at 99⅝ to 99¾ for delivery, and 99¾ to 99⅞ for the account. Tuesday's closing figures were, for delivery, 99¾ to 99⅞, and 99 15/16 to 99 15/16 for the account. The final quotations on Wednesday and Thursday were 99½ to 100 for delivery, and 99 15/16 to 100 1/16 for the account.

FOR PRESENT SOWING—POST-FREE.

☞ *In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.*



Daniel's Prize Calceolaria.

Per Packet.—*s. d.* *s d.*

**AURICULA**, Daniels' Prize Alpine .. .. .. 1 0
**BEGONIA**, Tuberous-rooted, choicest mixed .. 1 6 & 2 6
**CARNATION**, choicest double, from named flowers .. .. .. ..15. 6*d.* 2 6 ,, 5 0
,, perpetual double, from named flowers .. 2 6 ,, 5 0

*From* Mr. Peter Sinclair, *Greenock.*

"You will observe by accompanying report of Greenock Autumn Flower Show competition that I carried off Two First Prizes for Carnations raised from your Seeds"

**CALCEOLARIA**, Daniels' Superb Prize ..15. 6*d.* 2 6 ,, 5 0
,, new dwarf, spotted, fine .. .. .. 1 6 ,, 2 6

*From* Rev. Dr. Thomas Smith, *Edinburgh.*

"I have had a splendid crop of seedling Calceolarias from your Seed. Some of the flowers were the most beautiful I ever saw."

**CINERARIA HYBRIDA**, from a splendid strain 15. 6*d.* 2 6 ,, 5 0

*From* Mr. M. Moody, Gardener to J. Rendall, Esq., *Wootton.*

"I must tell you the Cinerarias, the Seed of which I received from you last year, are now in bloom, and the admiration of every one; many of them are considerably larger than a crown piece.

**CYCLAMEN PERSICUM**, beautiful varieties, mixed .. .. .. .. .. .. 1 6 ,, 2 6
**DAISY**, choicest double, mixed .. .. .. 0 6 ,, 1 0
**GLOXINIA HYBRIDA GRANDIFLORA**, very choice, mixed .. .. .. .. 1 6 ,, 2 6
**PANSY**, Daniels' Show and Fancy .. .. 1 6 ,, 2 6
,, Prize Blotched, magnificent varieties .. 1 6 ,, 2 6
,, Daniels' improved striped, beautiful .. .. 1 6

*From* W. Marshall, Esq, F.R.S., *Dublin.*

"Every Seed of the two packets of Pansy you sent me grew, and I have now a magnificent bloom of the finest Pansies in the neighbourhood.

**PICOTEE**, choicest double, from stage flowers, 15. 6*d.* 2 6 ,, 5 0
**PRIMULA**, Daniels' choicest red .. .. .. 1 6 ,, 2 6
,, Daniels' choicest white .. .. .. 1 6 ,, 2 6
,, Daniels' choicest mixed .. ..15. 6*d.* 2 6 ,, 5 0
,, Fern-leaved, very choice .. .. .. .. 1 6
,, Superb double-flowered, mixed .. .. 2 6 ,, 5 0

*From* M. H. Voss, Esq., *Streatham.*

"The Primula Seed you sent me last year gained my Gardener First Prize at the Brixton Hill Show. The Plants now in bloom far surpass your Catalogue Illustrations.

**PRIMROSE**, choicest mixed, from a fine collection of brilliant varieties .. .. .. .. 2 6
**POLYANTHUS**, finest gold-laced.. .. .. .. 1 0
**SWEET WILLIAM**, Daniels' superb strain .. .. 1 0

# YOUNG'S GOLDEN CHINESE JUNIPER

## (Juniperus sinensis aurea).

"Certainly one of the foremost places amongst golden-eaved Conifers must be accorded to Mr. Maurice Young's Juniperus sinensis aurea."—*Gardeners' Chronicle*, Sept. 7, 1872.

"A foremost position, however, must be accorded to Mr. Young's New Golden Chinese Juniper."—*Gardeners' Magazine*, June 29, 1872.

"Juniperus sinensis aurea.—This variety, raised by Mr. Maurice Young, of the Milford Nurseries, near Godalming, is one of the most beautiful Conifers ever obtained. * * * This novelty is considered one of the most striking that has been introduced into England for many years."—*L'Illustration Horticole*, 1872, p. 309.

"It certainly stands in the foremost rank of golden variegated Conifers."—*Florist and Pomologist*, October, 1875, p. 232.

Awarded First-class Certificates or Medals wherever exhibited.

This beautiful Conifer has now been more than eight years before the public, and has fully borne out the highest encomiums passed on it by the Press.

Mr. Young has now to offer a limited number of magnificent specimens, from 2½ to 5 feet, at prices ranging from 10*s.* 6*d.* to 105*s.* each.

**MAURICE YOUNG,**
MILFORD NURSERIES, near GODALMING.

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FILBERTS and COB NUTS.—Fine Fruiting Bushes, 4 to 5 feet high, 3 feet through, 6*s.* per dozen, 40*s.* per 100, for cash.
J. G. HILL (late John Scott), The Royal Nurseries, Merriott, Crewkerne.

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A. M. C. JONGKINDT CONINCK begs to offer large quantities of HARDY PERENNIALS, at very low prices.
Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

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**Home Grown Vegetable Seeds.**

JOHN CATTELL'S Descriptive CATALOGUE of Vegetable and Flower Seeds for the present season is now ready, and may be had post-free on application.
Nursery and Seed Establishment, Westerham, Kent.

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SURPLUS STOCK.
QUINCE STOCKS, strong, 40*s.* per 1000.
BITTER WILLOW (for Coverts), 4 to 6 feet, 30*s.* per 1000.
POPLARS (Black Italian), 4 to 5 feet, 40*s.* per 1000.
THORNS (strong transplanted), 12*s.* 6*d.* to 15*s.* per 1000.
PINUS AUSTRIACA, 1½ to 2 feet, 120*s.* per 1000.
YEWS, English, 2½ to 3 feet, 25*s.* per 100.
ALDER, strong transplanted, 4 to 6 feet, 30*s.* per 1000.
MAURICE YOUNG, Milford Nurseries, near Godalming.

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**The Chief Bundle of the Season is now Ready.**

FORTY SEPARATE PACKETS of NEW FLOWER SEEDS, all different, for 1*s.*; double quantity for 1*s.* 9*d.* We thus eclipse all other offers, hoping to secure patronage for our miscellaneous seeds.
AGENTS WANTED to Canvass in spare time; liberal commission; experience not necessary.
W. H. HOWELL, Flackwell Heath, High Wycombe.

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## Paul's Nurseries and Seed Warehouse,

WALTHAM CROSS, HERTS.
(Adjoining Waltham Station, Great Eastern Railway.)

## WM. PAUL & SON

(Successors to the late A. Paul & Son), Established 1806,

Invite attention to the following articles, which they continue to make objects of special care and attention :—

*A.* ROSES.
*B.* EVERGREENS, CONIFERS, ORNAMENTAL TREES, CLIMBING PLANTS, &c.
*C.* FRUIT TREES, including GRAPE VINES and STRAWBERRIES.
*D.* HYACINTHS, TULIPS, and other BULBS, CAMELLIAS, &c.
*E.* Special List of the above for large Buyers.
*F.* NEW ROSES, GERANIUMS, PHLOXES, DAHLIAS, &c.
*G.* SEEDS, and every Garden Requisite.
Inspection of the stock invited.

*Priced Descriptive Catalogues free by post.*

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**COLOURED ILLUSTRATED PENNY SEED PACKETS.**

In answer to many enquiries, we beg to say we do not Sell these by Retail.

*Samples and Special Prices to the Trade on application.*

**HOWCROFT & WATKINS, Covent Garden, W.C.**

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**Cabbage Plants.**

CABBAGE PLANTS, extra strong autumn-sown Early Rainham, Enfield Market, Nonpareil, Battersea, Oxheart, Sugarloaf, and true Robinson's Champion Drumhead. 3*s.* per 1000. Red Pickling.
Brown Cos, Hardy Green Cos, and Tom Thumb LETTUCE, at 4*s.* per 1000. Cash or reference from unknown correspondents.
W. VIRGO, Wonersh Nurseries, near Guildford, Surrey.

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**Onion Seed.**

MESSRS. J. AND G. McHATTIE, SEED MERCHANTS, Chester, have a surplus stock of White Spanish, Blood-red, Strasburg, and Bedfordshire Champion ONION SEED, for which they will accept moderate prices to clear out. Also some kinds of CARROT.
Samples and prices on application.

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**Clearance of Building Land.**

ASPARAGUS PLANTS, 1-yr., 4-yr.; also 9-yr.; splendid forcing stuff. Several thousand roots RHUBARB.—Early Linnæus, Stott's Monarch, Johnston's St. Martin's, and Ruby (a splendid colour throughout).
FREEMAN AND FREEMAN, Norwich.

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TO THE TRADE.—2000 good VIRGINIA CREEPERS, 20*s.* per 100, fit 32-size pots; also a quantity of Scarlet LOBELIAS, 12*s.* per 100; Single Crowns, 50*s.* per 100 clumps; and a quantity of Double PYRETHRUMS, Crimson and White, 25*s.* per 100, large clumps. Cash with order.
J. THOMAS, Elm Grove Nursery, Brighton.

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SMITH'S BALSAMS.—SEED of the above can be obtained of Seedsmen throughout the world in 1*s.* and 2*s.* packets, and 2*s.* 6*d.* collections of nine varieties, or direct from
F. AND A. SMITH, The Nurseries, West Dulwich.
Also SEED of their choice strains of PRIMULA, CALCEOLARIA, CINERARIA, &c.
CATALOGUES post-free on application.

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G. JARRETT'S GUINEA COLLECTION of ZONALS is the best that can be purchased, containing seventy-two varieties, the cream of the new varieties raised by Denny, Pearson, Postans, George, &c. Postage or package free. Also twenty-four of the choicest new double ZONALS, 7*s.*; twelve, the pick of the new COLEUS, 2*s.* 6*d.*; twelve, ditto, FUCHSIAS, 2*s.* 6*d.*
G. JARRETT, Wickham, Newbury, Berks. Post-office Orders payable G. Jarrett, Newbury.

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SPRUCE, good and cheap, 15 to 24 inches, and 18 to 30 inches. GLEICHENIA FLABELLATA, 4½ by 3½ feet; G. DICHOTOMA, 3½ feet; G. SEMIVESTITA, 4 by 3½ feet. PHŒNOCOMA PROLIFERA BARNESII, 3½ by 2½ feet. ERICA CAVENDISHII, 4 by 3 feet; ditto, 3½ by 2½ feet. Pair of ALSOPHILA CAPENSIS, 3 feet. CYATHEA DEALBATA, 3 feet. LOMARIA GIBBA, 3 by 4 feet Pair of DICKSONIA ANTARCTICA, 4 feet. PLECTOCOMA ANDERSONI, 10 feet. DICKSONIA FIBROSA, 2½ feet. Pair of DICKSONIA SQUARROSA, 5 feet. ALLAMANDA WARDLEIANA, 2½ feet, trellis. ENCEPHALOTIS LATIFRONS, 14 leaves.
WM. TROUGHTON, Seed Merchant, 4, Church Street, near the Town Hall, Preston.

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"CONQUEROR" POTATOS.—The Subscribers introduced this Seedling Potato last Season, and those who tried it speak most favourably of it. Their previous experience induced them last year to grow a larger breadth for Seed purposes, and they can now offer their produce at the undernoted moderate prices. In form the "Conqueror" may be described as an intermediate of Paterson's Victoria and the Champion, with the great advantage of ripening three weeks earlier.
Price on Rails at Coldstream Station, North-Eastern Railway, and Gordon and Greenlaw Stations, North British Railway, 16*s.* per sack of 2 cwt., or £7 per ton. Sacks, 1*s.* 2*d.* each. A remittance should accompany each order, and early orders will have immediate attention from
HOGG AND WOOD, The Northumberland Agricultural Society's Seedsmen, Coldstream-on-Tweed; or from HOGG AND ROBERTSON, The Prince of Wales' Seedsmen, 22, Mary Street, Dublin.

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TO THE TRADE.
400,000 FIR, 2-yr., 1-yr., native Scotch.
500,000 FIR, 2-yr., 2-yr., ditto.
500,000 LARCH, 2-yr., 1-yr.
Price (now less than quoted in our Trade List) on application. The ground on which the 2-yr., 1-yr., Scotch Fir stands being required for building purposes, they will be offered cheap.
MORRISON BROTHERS, Aberdeen.

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**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock :—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy, Best bedding sorts, 6*s.* per 100, 50*s.* per 1000; 100, in twelve choice sorts, 8*s.*; or in twenty-five sorts, 10*s.*
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2*s.* 6*d.* per 100, 20*s.* per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10*s.* per 100; Madame Vaucher and Virgo Marie, two best whites, 12*s.* per 100; Master Christine, best pink, 12*s.* per 100; White Vesuvius, 15*s.* per 100; Dr. Denny, nearest to blue, fine, 5*s.* per dozen. Pelargoniums, in twelve best varieties, 5*s.* per dozen, 30*s.* per 100.
,, TRICOLORS—Mrs. Pollock, Sir R. Napier, Sophie Dumaresque, and Lady Cullum, 2*s.* 6*d.* per dozen, 18*s.* per 100.
,, SILVER VARIEGATED—May Queen (Turner's), Flower of Spring, 12*s.* per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15*s.* per 100.
,, GOLE-LEAVED—Crystal Palace Gem, 12*s.* per 100; Happy Thought, 15*s.* per 100.
,, DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15*s.* per 100; Madame Amelia Baltet, very fine white (the best), 18*s.* per 100.
,, BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18*s.* per 100.
,, Forcing, Show and French vars., 30*s.* per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5*s.* per 100, 50*s.* per 1000.
COLEUS Verschafeltii and IRESINE Lindeni, 6*s.* per 100, 50*s.* per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5*s.* per 100, 40*s.* per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10*s.* per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

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# FRANCIS & ARTHUR DICKSON & SONS.

106 Eastgate St. & The "Upton" Nurseries **CHESTER.**

**VEGETABLE & FLOWER SEEDS.**
**Seed Potatoes & Garden Requisites.**
**QUALITY UNSURPASSED, CARRIAGE FREE.**
*Illustrated Catalogues Post Free.*

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## PLANT FRUIT TREES EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.
We beg to invite Inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.
*Descriptive Priced CATALOGUE, free on application.*

**CRANSTON'S NURSERY & SEED CO.**
(LIMITED),
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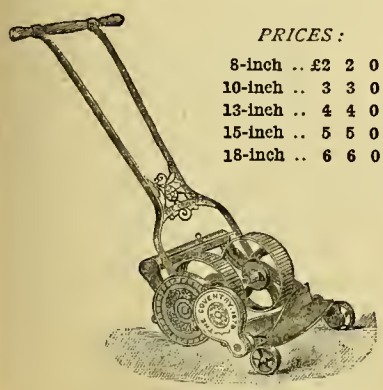

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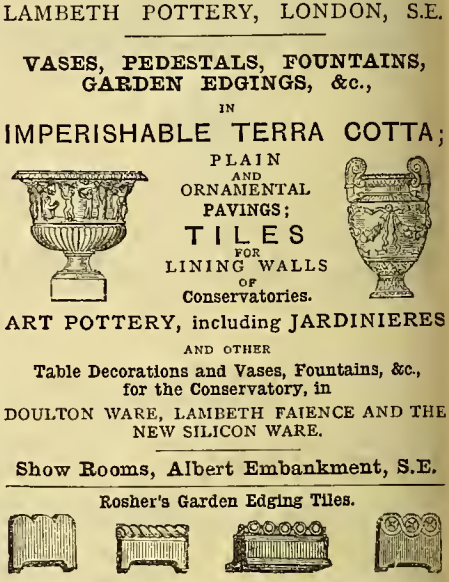

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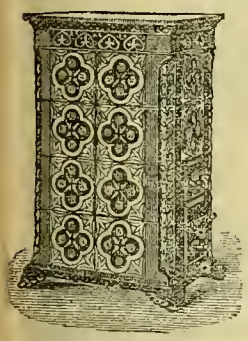

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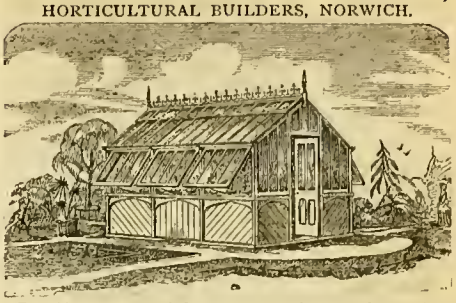

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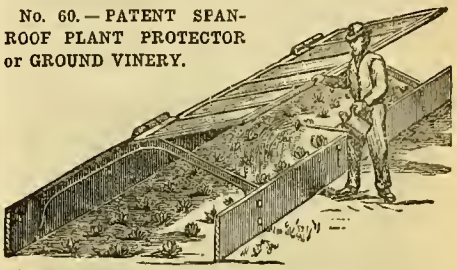

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| 6 feet long, 3 feet wide | 1 17 6 | 7 0 |
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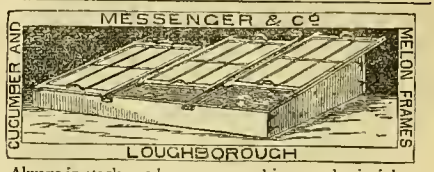


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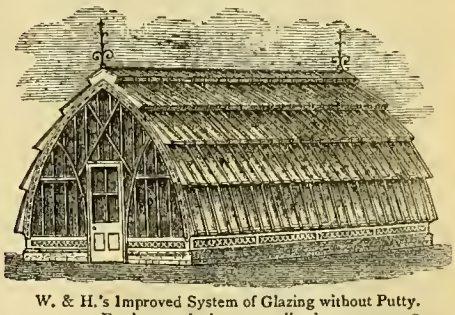

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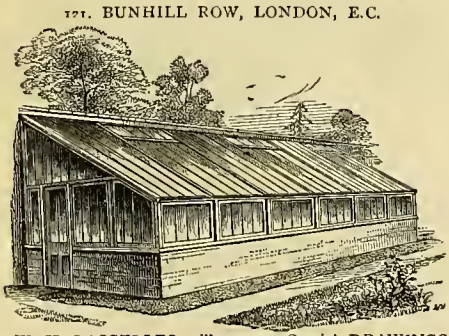

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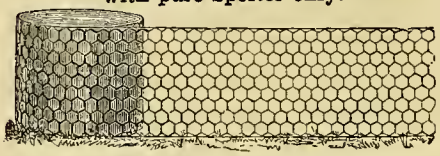

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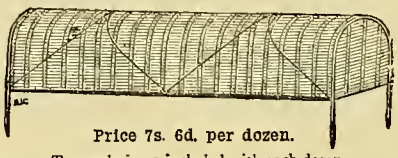

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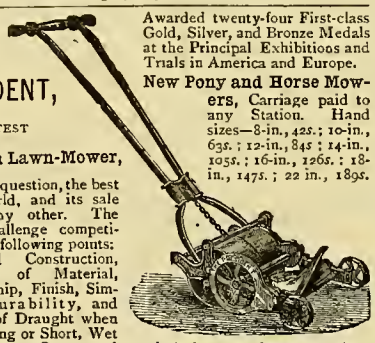

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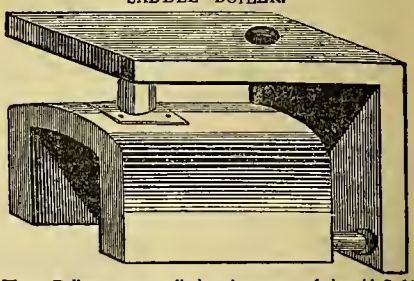

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| 20 ,, | 18 ,, | 30 ,, | 500 | 9 | 0 | 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 | 0 | 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 | 0 | 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 | 0 | 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 | 0 | 0 |
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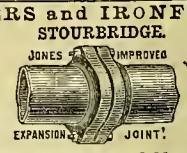


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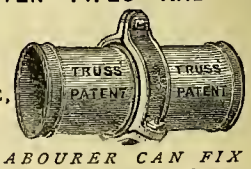


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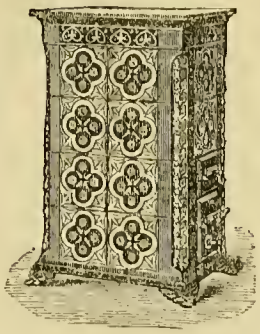

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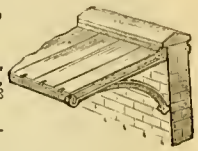

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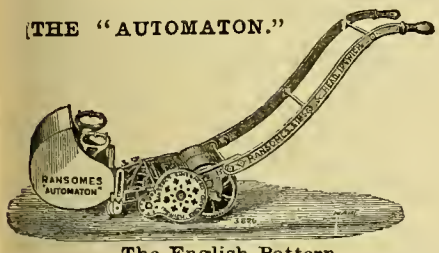
| 8-in. | for Small Lawns and Edgings.. | .. £2 | 2 | 0 |
| 10-in. | ,, use by a Lady or a Boy .. | .. 3 | 3 | 0 |
| 12-in. | ,, ,, ,, .. | .. 4 | 4 | 0 |
| 14-in. | ,, ,, Man .. .. | .. 5 | 5 | 0 |
| 16-in. | ,, ,, ,, on Level Lawns | .. 6 | 6 | 0 |

Grass Boxes extra if required.

8-in., 5*s.*; 10 and 12-in., 7*s.* 6*d.*; 14 and 16-in., 10*s.*

**THE "AUTOMATON."**




The English Pattern.

The "AUTOMATON" Lawn Mowers are thoroughly strong, well made, and durable machines, and the best suited for *general* work and *Gardeners'* use. They cut the grass perfectly, leave no ribs, but produce a smooth velvety surface on the Lawn, and are light in draught.

**PRICES, including Grass Box.**

| | | | | |
|---|---|---|---|---|
| 8-in. | for Small Lawns and Edgings.. | .. £2 | 15 | 0 |
| 10-in. | ,, use by a Lady or a Boy .. | .. 3 | 10 | 0 |
| 12-in. | ,, ,, Lad.. .. .. | .. 4 | 10 | 0 |
| 14-in. | ,, ,, Man .. .. | .. 5 | 10 | 0 |
| 16-in. | ,, ,, Man and Boy .. | .. 6 | 10 | 0 |
| 18-in. | ,, ,, Man and Boy .. | .. 7 | 10 | 0 |
| 20-in. | ,, ,, Two Men .. .. | .. 8 | 0 | 0 |
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Boots for Donkey, 20*s.* per set.

R., H. & J. also manufacture "Reversible Lawn Mowers for Small Gardens and Amateurs, and "Horse-Power" Lawn Mowers for Large Lawns, Cricket Grounds, &c.

*Illustrated Price Lists free by Post.*

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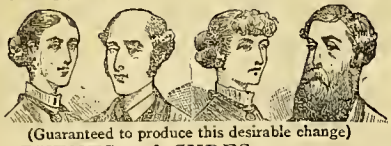

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WANTED, a SINGLE-HANDED Hard-Working GARDENER, thoroughly competent in Vegetables and Fruit, very little Glass; married, and without children; place near Dorking. Wife to look after Poultry, and to take care of House during absence of the family. Wages 21*s.* per week, cottage, and garden; assistance given when necessary.—Apply, by letter only, with copies of certificates of character from two last places, also age, to L. B., 78, Cornwall Gardens, Queen's Gate, London, W.

WANTED, a WORKING GARDENER.—An industrious man, who thoroughly understands his work; used to Cows and Poultry; and Wife as good Dairywoman—without children. Comfortable cottage found.—Address, stating experience, C. CROCKER, Esq., Wargrave, Henley-on-Thames, Oxon.

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WANTED, a WORKING FOREMAN, for a General Nursery. Preference given to a man with some knowledge of Glass.—Apply, stating age and full particulars as to character and ability, to W. RUMSEY, Joyning's Nurseries, Waltham Cross, N.

WANTED, an Inside FOREMAN PROPAGATOR. Must know Stove and Greenhouse Plants well, and be able to propagate and grow them successfully; must also be a good Salesman. Good references required. None but competent men need apply. State age.—Apply to S., *Gardeners' Chronicle* Office, W.C.

WANTED, on an extensive Market Garden Farm in Kent, an active intelligent man as Working FOREMAN.—Reply, in own handwriting, stating wages expected, to H., Crayford, Kent.

WANTED, AT ONCE, a steady industrious MAN for Jobbing Work. Must be a good All-round Gardener. Wages 21*s.* per week.—LE TALL AND DAVIES, Woodhouse, Sheffield.

WANTED, a young MAN, who has a knowledge of Soft-wooded Propagation, and can take charge of Houses. To an energetic, persevering Man, liberal and progressive wages will be given.—Apply, stating age, wages expected, and references, to ROBSON AND BUSH, Beechfield Nursery, Bowdon.

WANTED, IMMEDIATELY, a young MAN, to Grow Plants and Cucumbers for Market, and to occasionally wait upon customers. State wages required, age, reference, &c., to F., J. Bruce, High Street, Oakham.

WANTED, a young MAN (under the Foreman), who has had a few years' experience in the propagation of Coniferæ, Roses, and other Outdoor Nursery Stock.—Apply, stating wages, and with reference, to WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

WANTED.—J. TOWERS, Denton Hall, Grantham, requires a young MAN, under his Foreman, well up in Grape Thinning and the Tying of Specimen Heaths.

WANTED, a young MAN, as Second Hand in the Houses.—Apply to Mr. EDWARDS, Florist, Upper Norwood, Surrey.

WANTED, a young man as IMPROVER in the Houses and Outside. Wages 12*s.* per week, bothy, milk, &c.—State age to Mr. GEO. HELMAN, The Gardens, Crown East Court, Worcestershire.

WANTED, a youth, as IMPROVER in House Department of Nursery.—Address, in own handwriting, stating experience, age, and wages required, to R. PARKER, Exotic Nursery, Tooting, S.W.

WANTED, THREE or FOUR young MEN, for General Work in the Houses.—J. REEVES, Acton, W.

THE LIVERPOOL HORTICULTURAL COMPANY (John Cowan), Limited, are in WANT of a SECRETARY, who must have a good knowledge of Florist and Seed Business, and must also be a good Accountant and Correspondent. Preference will be given to a man who is prepared to take a pecuniary interest in the Company. A substantial guarantee will be required.—Apply, stating full particulars, including salary expected, and giving references, to JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool.

WANTED, a JUNIOR CLERK, who has had a few years' experience in the Nursery and Seed Business. Apply, stating wage, and with references, to WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

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GARDENER (HEAD).—The ADVERTISER will be glad to treat with any Gentleman requiring a good practical man in a place of trust. First-class references.—X. V. Z., Mr. Miller, Pembury Grange, Tunbridge Wells, Kent.

GARDENER (HEAD).—JAS. TRIGGER, The Gardens, Milton, Peterborough, can with confidence recommend his Foreman (Henry Aubertin) to any Nobleman or Gentleman requiring the services of a good general man.

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GARDENER (HEAD), where two or three are kept.—Age 23; practical in all branches of the profession. Good character.—W. R., Mrs. Marshall, The Cedars, Lower Sydenham, Kent.

GARDENER (HEAD).—ROBT. FRISBY, for the last three years and three months Head Gardener to Sir F. H. Bathurst, Bart., is open for engagement. First-class recommendations.—Clarendon Park, Salisbury.

GARDENER (HEAD), where an experienced man is required to manage a good Garden.—Age 40, married. Good recommendations.—M. D., 18, Smeaton Road, Merton Road, Wandsworth, S.W.

GARDENER (HEAD).—Age 37, married, no family; steady, energetic, and trustworthy. An excellent Grape Grower, also a good Plantsman, and well up in every other department of Gardening. Excellent references.—JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool.

GARDENER (HEAD).—Age 39, married; seventeen years in present place, and now only leaving in consequence of the death of his employer. Thoroughly well up in all branches of the profession, and can give the highest testimonials.—M. C., *Gardeners' Chronicle* Office, W.C.

GARDENER (HEAD).—HY. PARR, The Gardens, Givon's Grove, Leatherhead, Surrey, can with confidence recommend his Foreman, Edwin Brown, to any Lady or Gentleman requiring the services of a good practical man. No Single-handed place accepted.—Address as above.

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GARDENER (HEAD, WORKING).—Age 26, single; fourteen years' good general practice—five years as Foreman. Can be highly recommended. No single-handed place accepted.—W. S., The Gardens, Worplesdon Place, Guildford, Surrey.

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GARDENER (HEAD, WORKING), where three or more are kept.—Age 30, married, two children; good experience in General Routine of Gardening, Early and Late Forcing of Fruit, Flowers, and Vegetables. Four and a half years' excellent character from last situation.—J. F., 15, Crown Court, Covent Garden, London, W.C.

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FOREMAN, in a Gentleman's establishment.—Age 23; understands Forcing. Good Plantsman in General. Eight and a-half years' experience.—H. HOWELLS, Merestead, Lyndhurst, Hants.

FOREMAN, in a Nobleman's or Gentleman's establishment.—Age 28; fourteen years' good general practice. Can be highly recommended by WM. MEADS, Beckett Gardens, Shrivenham, Berks.

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JOURNEYMAN, in a good establishment.—Age 23. Can be well recommended.—State wages and particulars to W. L., Gardener, Hazlewood House, Shooter's Hill, Kent.

JOURNEYMAN, in the Houses, in a good establishment.—Age 22; six years' experience. Two years' character from last place.—R. CLARK, Staveley, Chesterfield.

TO GARDENERS.—A young man (age 18) desires a situation under a Foreman. Bothy preferred.—F. READ, Spinfield Gardens, Great Marlow, Bucks.

TO GARDENERS.—A. HARDING, Orton Hall Gardens, Peterborough, can confidently recommend Alfred Quincey (age 21) to any Gardener requiring an active and industrious young man. Bothy preferred.

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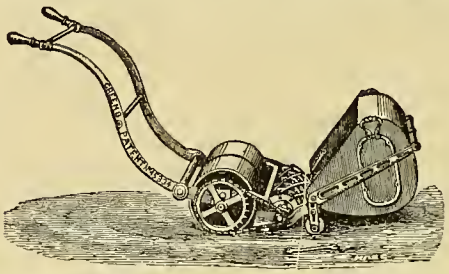
Can be worked by a Man.



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By a Man and Boy.

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| To cut 26 inches ... ... ... ... ... | £14 0 0 |
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| To cut 30 inches ... ... ... ... ... | 18 0 0 |
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**For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.**

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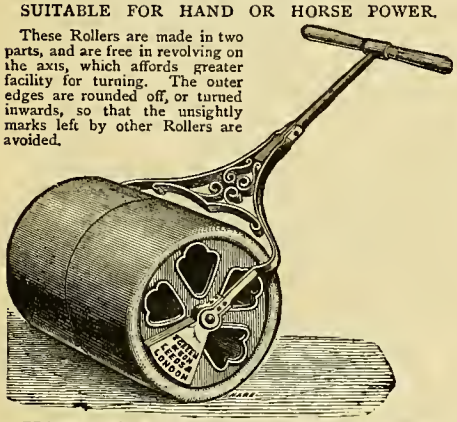
These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks left by other Rollers are avoided.



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| 30 in. by 36 in. .. | 13 0 0 | 30 in. by 60 in. .. | 19 0 0 |
| 30 in. by 42 in. .. | 15 0 0 | 30 in. by 72 in. .. | 22 0 0 |

Weight Boxes extra, and Special Quotations made for Rollers 3, 3½, and 4 feet diameter, fitted with Shafts for One or Two Horses.

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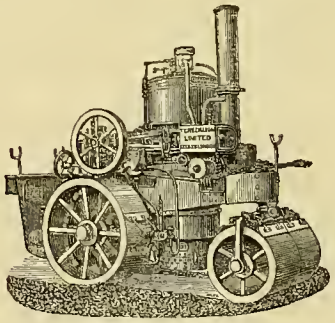

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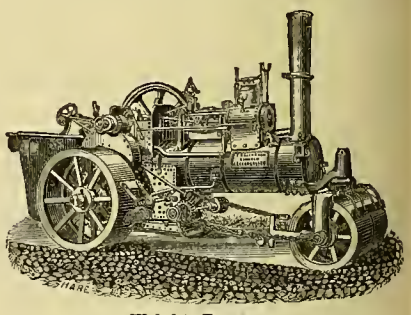

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Editorial Communications should be addressed to "The Editors ;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, March 19, 1881.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 378.—Vol. XV. { New Series. { SATURDAY, MARCH 26, 1881. { Registered at the General Post-office as a Newspaper. { Price 5d. Post Free, 5½d.

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*NOTICE.—The Double-page Plate of DAFFODILS, Companion Plate to the POET'S NARCISSUS, published on October 16, 1880, will shortly be issued.*


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*THE GARDENERS' CHRONICLE,*

Volume XIV., JULY to DECEMBER, 1880.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

The FIRST EXHIBITION of SPRING FLOWERS will take place on WEDNESDAY, March 30. Gates open at 1 o'Clock. Tickets to be obtained at the Gardens only, by Vouchers from Fellows of the Society, price 2s. 6d. each.

THE HORTICULTURAL EXHIBITION to be held in connection with the Essex Agricultural Society's Show at Southend-on-Sea will take place on WEDNESDAY and THURSDAY, June 15 and 16, when SILVER CUPS and PRIZES to the value of about ONE HUNDRED and THIRTY POUNDS will be offered for Plants, Fruit, Flowers, and Vegetables. No Entrance Fee will be charged to Exhibitors. ENTRIES CLOSE JUNE 1. The Schedule of Prizes (which will be published next week), Entry Forms, and full particulars, may be obtained of

Mr. JOHN TAYLOR, Jun., Hon. Secretary.
22, Cambridge Terrace, Southend-on-Sea, Essex.

FARNINGHAM ROSE and HORTICULTURAL SOCIETY.

The ANNUAL EXHIBITION of this Society will be held at Farningham, on WEDNESDAY, June 29, 1881.
Schedules are now ready, and may be obtained of the Secretary,
Farningham. F. BURNSIDE, Esq.

COLCHESTER and EAST ESSEX HORTICULTURAL SOCIETY.

The SHOWS are FIXED for JUNE 29, at Witham; and SEPTEMBER 7, at Colchester.
W. L. SLANEY, Secretary, Colchester.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.

The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1881, will Open, as usual, the Friday before Whit Sunday (June 3). INTERNATIONAL HORTICULTURAL EXHIBITION of 1881 will Open on August 24. THREE THOUSAND POUNDS in PRIZES at the above Exhibitions. For Schedule, &c., apply to the undersigned.

BRUCE FINDLAY,
Royal Botanic Gardens, Manchester.

SUNNINGDALE NURSERY, Direction of, see *Gardeners' Chronicle*, March 19, 1881.

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WANTED, strong Standard Cider and other APPLE TREES; also ASH, 3 to 4 feet.
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SEED POTATOS.—Late Rose, 7s.; Trophy, 12s.; Radstock Beauty, 12s.; Pride of Ontario, 12s.; Suttons' Magnum Bonum, 9s.; River's Ashleaf, 10s. 6d.; Schoolmaster, 16s per cwt. Terms cash.
HY. MINCHIN, The Nurseries, Hook Norton, Oxon.

POTATOS.—For Sale, 300 to 400 Bushels of Scotch Champion; also some American Rose, very good for eating or for Seed. Apply to
F. ANDREWS, Roxfords, Binstead, Alton.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion, Rainham, Enfield Market, and Red Pickling, in any quantity. Apply to
Mr. T. DAVIES, Tangley, Guildford, Surrey.

TERRA-COTTA WINDOW BOXES. (See illustration in the *Gardeners' Chronicle* of February 26 p. 276.) Prices on application.
JOHN MATTHEWS, Royal Pottery, Weston-super-Mare.

## SALES BY AUCTION.

**8000 Lilium auratum, just received from Japan in very fine condition.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 28, at half-past 12 o'Clock precisely, an importation of 8000 fine Bulbs of LILIUM AURATUM, just received from Japan in the finest possible condition; also several importations of JAPANESE LILIES, including 2000 Lilium Krameri, and a quantity of unnamed species, some new and rare, of which Drawings will be shown; a consignment of 2000 TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, 3000 GLADIOLI, 200 fine clumps of IRIS KÆMPFERI, and EULALIA JAPONICA from New Jersey; an importation of 1500 Double American TUBEROSES, sixteen cases of BELLADONNA LILIES, &c.
On view morning of Sale, and Catalogues had.

**Imported Orchids.**

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 29, at half-past 12 o'Clock precisely, an importation of ORCHIDS, including fine plants of Dendrobium lituiflorum, Cœlogyne occelata, Dendrobium Devonianum, and a quantity of rare PALMS, &c., by order of Mr. W. B. Freeman. An importation of CATTLEYA SUPERBA and ONCIDIUM LANCEANUM, in fine condition; some good plants of DENDROBIUM SUPERBIENS, D. BIGIBBUM, and D. HILLII; strong plants of CALANTHE VEITCHII, a quantity of WOOD ORCHID BASKETS, &c. Also, by order of Mr. W. Howard, of Southgate, fine plants of LAPAGERIA ALBA and RUBRA.
On view morning of Sale, and Catalogues had.

**Hardy Plants and Bulbs.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 30, at half-past 12 o'Clock precisely, a choice assortment of HARDY ORNAMENTAL CONIFERS, consisting of Cupressus stricta, Picea nobilis, P. Nordmaniana, Cryptomeria elegans; KALMIA LATIFOLIA, RHODODENDRONS, &c.; also a great variety of HARDY HERBACEOUS PLANTS, such as Carnations, Pinks, Sweet Williams, Violets, &c.; choice GLADIOLI, LILIUMS, TIGRIDIAS, and other bulbs for present planting, &c.
On view morning of Sale, and Catalogues had.

THURSDAY and FRIDAY NEXT.

**The First Portion of the Celebrated Collection of ORCHIDS of JOHN DAY, Esq., TOTTENHAM.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY and FRIDAY NEXT, March 31 and April 1, at half-past 12 o'Clock precisely, the first portion of this splendid COLLECTION of ORCHIDS, comprising, amongst other fine things, the following:—

| | |
|---|---|
| Masdevallia Dayana | Aerides Schröderi |
| ,, velifera | ,, Veitchianum |
| ,, (Bull's blood) Harryana | ,, Fieldmeii |
| Lælia anceps rosea | Angræcum Ellisii |
| ,, ,, alba | ,, sesquipedale |
| ,, ,, Dawsoni | Cattleya exoniensis |
| ,, autumnalis atrorubens | ,, Bluntii |
| ,, Jongheana | ,, labiata |
| ,, elegans, in variety | Calanthe Textoni |
| Phalænopsis amabilis | Cymbidium eburneum |
| ,, grandiflora | ,, tigrinum |
| ,, Schilleriana | Cypripedium Spicerianum |
| Odontoglossum crispum (in great variety) | ,, Warnerianum |
| ,, Andersonianum | ,, Stonei |
| ,, Coradinei | ,, var. platytænium |
| ,, Ruckerianum | Dendrochilum filiforme |
| ,, nævium majus | Dendrobium superbiens |
| ,, vexillarium (in great variety) | ,, Yeitchianum |
| pulchellum majus | Epidendrum Cooperianum |
| | ,, syringothyrsus |

On view morning of Sale, and Catalogues had.

**Zygopetalum Gautieri.**

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 7, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, St. Alban's, the grandest lot ever imported of this rare and extremely beautiful species. The specimens are growing in Tree Ferns from 3 to 6 feet high, some of them perfectly covered with plants, and in flower. They have been collected regardless of expense, and are really fine. The whole of the importation, consisting of some eighty stems, will be offered. The Sale will contain other large importations. Further particulars of these in next week's *Gardeners' Chronicle*.
On view morning of Sale, and Catalogues had.

**Orchids in Flower or Bud.**

MR. J. C. STEVENS' next SALE of FLOWERING ORCHIDS will take place on FRIDAY, April 8, and he will be glad of entries not later than THURSDAY, March 31.
Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

**Flowering Orchids.**

MR. J. C. STEVENS begs to announce that he has fixed the following days for SALES of ORCHIDS in flower or bud:—

| | |
|---|---|
| FRIDAY, April 8 | WEDNESDAY, July 13 |
| TUESDAY, April 26 | FRIDAY, August 5 |
| TUESDAY, May 10 | WEDNESDAY, August 24 |
| FRIDAY, May 20 | FRIDAY, September 16 |
| WEDNESDAY, June 1 | FRIDAY, October 14 |
| WEDNESDAY, June 15 | |
| WEDNESDAY, June 29 | |

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

MONDAY NEXT.

**Important Sale of Orchids in Flower and in Bud, in the City.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, in the large Estate Room at the Mart, Tokenhouse Yard, E.C., opposite the Bank of England, on MONDAY NEXT, at half-past 11 o'Clock, 300 lots of Established ORCHIDS, all in flower or bud, comprising selections from some of the most noted collections in the neighbourhood of London.
On view morning of Sale. Catalogues at the Mart, and 8, New Broad Street, E.C.

**Lilies and Iris Direct from Japan.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, 3000 very fine bulbs of LILIUM AURATUM, L. EXIMEUM, L. ALBUM KRÆTZERI, and TWO NEW LILIES (drawings of which will be produced), together with 100 clumps of rare and beautiful IRIS, just arrived from Japan in splendid condition; and a small importation of L. NEILGHERRENSE.
Catalogues at the Mart, and 8, New Broad Street, E.C.

**Important Sale of a First-class Collection of** CARNATIONS, PICOTEES, PINKS, CLOVES, a superb assortment of 400 Standard and Dwarf ROSES, selected FRUIT TREES, hardy CONIFERÆ, SHRUBS, AMERICAN PLANTS, SEEDS, a COLLECTION of GREENHOUSE PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on TUESDAY NEXT, March 29, at 12 o'Clock precisely.
On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 8, New Broad Street, E.C.

**Edgware, N.**

THE BEST SEASON FOR TRANSPLANTING.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Whitchurch Rectory, Edgware, ten minutes' walk from the station, on THURSDAY NEXT, March 31, at 12 o'Clock, the remarkably well grown NURSERY STOCK, comprising a great variety of Handsome Lawn Trees, and a splendid Collection of other Coniferæ and Evergreen Shrubs, which have all been carefully transplanted and prepared for removal, and are well adapted for Ornamental Planting.
May be viewed. Catalogues had on the Premises, and of the Auctioneers and Land Agents, at their New City Offices, 8, New Broad Street, E.C., and Leytonstone, E.

**Established and Imported Orchids.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, E.C., on MONDAY, April 4, about 400 lots of Established and Imported ORCHIDS. Further particulars next week.
Catalogues (when ready) at 8, New Broad Street, E.C.

MESSRS. RAFFETY AND SON will SELL by AUCTON, at High Wycombe, on TUESDAY, March 29, a Lean-to CONSERVATORY, with wrought iron frame and circular-shaped top, 22 feet 6 inches long, 9 feet 6 inches wide, and 12 feet 6 inches high; and TWO ORNAMENTAL FOUNTAINS—the property of the late Mr. Alderman Hayden. May be viewed any day.

**Enfield, Middlesex.**

The GORDON NURSERIES and TWO FREEHOLD VILLAS, let at rentals and estimated rentals of £121 16*s.*; situate at Chasedale, Enfield, Middlesex, a few minutes from two Railway Stations.

MR. ARTHUR JACKSON will SELL by AUCTION, at the "George Hotel," Enfield, Middlesex, on WEDNDSDAY, March 30, at 7 o'Clock in the Evening precisely, by the direction of the Proprietor, who is retiring from business through ill-health, the following valuable Properties, comprising a well-built Brick and Slated FREEHOLD RESIDENCE, containing Parlour, Kitchen, Scullery, five Bedrooms. In the rear of property are three SPAN-ROOFED GREENHOUSES, 61 by 12; together with LEAN-TO, 30 by 12, Heated with Hot Water; 1400 feet Iron PIPING, BOILER built by Thames Bank Iron Company. Also Two VILLAS adjoining, producing £46 16*s.* Property has a frontage 45 feet by 245 feet depth.
Particulars and conditions may be had of ALBERT GOUGH, Esq., Solicitor, Waltham Abbey, Essex; and of Mr. ARTHUR JACKSON, Auctioneer, 25, Liverpool Street, E.C., and Enfield.

**Enfield Highway, Ponder's End, and Nag's Head LANE, ENFIELD, MIDDLESEX.**
By direction of Executors.
VALUABLE FREEHOLD and LEASEHOLD PROPERTIES.

MR. ARTHUR JACKSON has received instructions from the Executors and Trustees of the will of the late William Mitchell, Esq., to SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on WEDNESDAY, April 20, at 2 o'Clock precisely, in various lots, the following valuable PROPERTIES:—
A substantially brick-built FREEHOLD RESIDENCE, at Enfield Highway, with every convenience, suitable for a moderately-sized family.
About 40 acres of productive MARKET GARDEN LAND, in a high state of cultivation, of which about 16½ acres are planted with choice varieties of Fruit Trees, now well established; together with an extensive range of outbuildings. About 7 acres are most eligible, and now ripe for building operations.
A valuable FREEHOLD BRICKFIELD, situate in Nag's Head Lane, Enfield, containing 4 acres, of which about 2 acres of the deep beds of clay are unworked.
THREE FREEHOLD DWELLINGS and 1½ acre of FRUIT LAND, situate in the high road at Ponder's End, now also ripe for building operations.
THREE LEASEHOLD DWELLINGS and BLACKSMITH'S SHOP, also at Ponder's End.
THIRTY-ONE FREEHOLD exceedingly well-built brick and tiled DWELLINGS in St. James' Terrace and Old Road, Enfield Highway; let to excellent tenants at rentals amounting to £369 4*s.*
A FREEHOLD BRICKFIELD at the Old Road, containing about 5 acres; well adapted for a building estate.
Also about 57 plots of FREEHOLD BUILDING LAND, in St. James' Road and the Old Road.
Particulars, conditions, with plans, may be had ten days previous to the Sale, of J. R. RIGNALL, Esq., Solicitor, Enfield; at the Mart, Tokenhouse Yard; and of Mr. ARTHUR JACKSON, Auctioneer, Land and Estate Agent, 25, Liverpool Street E.C., and Enfield Middlesex.

**Weybridge.**

CLEARANCE SALE of a choice selection of Exotic, Indigenous and Rare PLANTS, GARDEN TOOLS, FRAMES, WIRE HURDLES and FENCING, INDIA-RUBBER HOSE, HORSE, Two PIGS, Two CARTS, HARNESS CARPENTER'S EFFECTS, and numerous other items.

MESSRS. STANLEY ROBINSON AND WALTON will SELL by AUCTION, on the Premises, Fir Grove, close to the Railway Station, on THURSDAY, April 7, at 11 for 12 o'Clock precisely, by order of Mrs. J. K. Field, whose Lease of the premises has just expired.
May be viewed day preceding and morning of Sale, and Catalogues had on the Premises, at the "Stag and Hounds," and the "Hand and Spear" Hotels, Weybridge; and at the Offices of the Auctioneers, Poultry Chambers, 11, Poultry, London, E.C.

## NOTICE OF REMOVAL.

**Messrs. PROTHEROE and MORRIS**

Beg to inform their numerous Clients that, owing to the Premises, 98, Gracechurch Street, E.C., being required by the Corporation of London for City Improvements, they have now

**Removed to More Commodious Offices,**
AT
**8, NEW BROAD STREET, E.C.,**
*Where all Communications are to be Addressed.*

**To Nurserymen and Florists.**

In consequence of the death of WILLIAM PAUL, Nurseryman and Florist, Crossflat and Greenlaw Nurseries, Paisley, Scotland, his

BUSINESS, including GOODWILL, STOCK-in-TRADE, and TENANTS' GREENHOUSES and FRAMES, is for SALE.
Crossflat Nursery extends to about 6 Acres, with Dwelling-house. The Stock of Trees, Shrubs, and Plants, is extensive and valuable, and comprises a large stock of Pansies and Pinks, for which the deceased was so well known. Greenlaw Nursery extends to about 16 Acres, occupied principally as a Market Garden. Rents moderate. Business large and long established. Highest or any offer may not be accepted.
Apply to GEORGE HART, Solicitor, Paisley, Agent for deceased's Executrix, who will receive written offers till Monday, April 4, 1881.

TO BE DISPOSED OF, a FLORIST and SEED BUSINESS, with a good connection. The Shop is well situated in a principal street of Wolverhampton. The stock of sundries and fixtures to be taken to. This is a capital opportunity for a man who thoroughly understands the business.—For particulars apply to C. SHAW, Finchfield, Wolverhampton.

TO BE SOLD, with Immediate Possession, a First-class Old-established NURSERY and SEED BUSINESS, in thorough working order, in the leading thoroughfare, five miles south of London; owing to failing health of proprietor. Any one with a fair amount of capital will find this a profitable investment. Apply, in first instance by letter only, to
B. F. S., Messrs. Nutting & Sons, Seed Merchants, 60, Barbican, London, E.C.

**Special Offer.**

FREDK. GEE begs to offer, for cash, the following Bedfordshire-grown PLANTS, POTATOS, SEEDS, &c.:—

**POTATOS.**

Fine samples, grown on new, light, and heavy land; can be highly recommended to those who require a change of seed:—

| | Per Peck. of 14 lb. | Per Bush. of 56 lb. | Per Cwt. | Per Ton. |
|---|---|---|---|---|
| | s. d. | s. d. | s. d. | £ s. |
| Early Ashleaf Improved, fine stock .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Early Myatt's Prolific, splendid sample .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Early and Late Rose, splendid sample, great croppers .. .. .. .. .. | 1 0 | 3 0 | 5 6 | 5 0 |
| New Burbank Seedling, and Washington, fine kidneys, great croppers; stock now limited .. .. .. .. .. .. | 2 0 | 7 0 | 12 0 | 11 0 |
| Beauty of Hebron (true), splendid cropper, fine quality; stock now left very limited .. | 2 0 | 7 0 | 12 0 | 11 0 |
| Golden Shaw (true), early; scarce .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Climax and Peerless, very productive, and good quality .. .. .. .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Snowflake, splendid quality, scarce, fine sample .. .. .. .. .. .. | 1 6 | 5 6 | 10 0 | 9 0 |
| Rector of Woodstock, fine stock, much recommended .. .. .. .. .. .. | 2 0 | 7 0 | 13 0 | 12 0 |
| Model, fine, much recommended .. .. | 1 6 | 5 0 | 9 6 | 9 0 |
| Schoolmaster (true), extra fine, quality not to be surpassed .. .. .. .. | 2 6 | 9 0 | 16 0 | 15 0 |
| Paterson's Victoria (true): finest white Regents | 1 6 | 5 0 | 9 0 | 8 0 |
| Magnum Bonum (Sutton's true).—An extra selected stock of this valuable variety, splendid seed size, clean sample. Undoubtedly the best disease-resister and heaviest cropper in cultivation .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Scotch Champion (true), very fine. An extraordinarily productive and wonderful disease-resisting variety, of fine quality .. | 1 3 | 4 0 | 7 0 | 6 0 |

**CABBAGE PLANTS—those now left are small.**

All the Standard varieties at 3*s.* per 1000 (of 1200); Red Picklers, at 5*s.* per 1000.

LETTUCE Plants, Hardy Green and others (scarce), 1*s.* per 100 7*s.* 6*d.* per 1000.

PRICKLY COMFREY, true Caucasian, crown sets, 2*s.* 6*d.* per 100, 20*s.* per 1000.

Bags, to hold 2 or 3 bushels of Potatos, charged 6*d.* each; other packages lowest prices. Special prices to very large buyers.

Many other kinds can be supplied cheap and good.

Cheap Early SPRING FLOWERING ROOTS, such as DAISIES, WALLFLOWERS, PYRETHRUMS CARNATIONS, PICOTEES, &c. See CATALOGUE.

HERB ROOTS, SAGE and THYME, very fine plants also RHUBARB for planting; and ASPARAGUS PLANTS. See General CATALOGUE of all kinds of superior Bedfordshire-grown Seeds, Plants, and Roots on application to

FREDK. GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

SEED POTATOS.—We have to offer fine samples of the following varieties:—

| | |
|---|---|
| Myatt's Prolific | Aylesbury Kidney |
| Scotch Champion | Manhattan |
| Magnum Bonum | Woodstock Kidney |
| Grampian | Porter's Excelsior |
| Schoolmaster | Rector of Woodstock |
| Snowflake | Red Emperor |
| McKinlay's Pride | |

Prices on application.
JOSEPH TREMBLE AND SONS, Victoria and The Cast Nurseries, and 1, Market Square, Penrith.

WILLIAMS' for AMARYLLIS and all other Bulbous Plants. For many years these Nurseries have been celebrated as possessing the finest collection of Amaryllis in the country.

WILLIAMS' for LILIUMS. Consignments of LILIUM AURATUM are now being received in splendid condition.

WILLIAMS' for PITCHER-PLANTS, including all the old and well known varieties, as well as several novelties of B. S. Williams' own introduction.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

CHEAP and GOOD.
The usual discount to the Trade.
VINES, good planting canes of Black Hamburgh, Buckland Sweetwater, and Lady Downe's, 3s. each.
MORELLO CHERRIES, dwarf-trained, 2s. 6d. each.
AUCUBA JAPONICA, 2½ feet, very bushy, 15s. per dozen.
CEDRUS DEODARA, splendid specimens, 4 to 4½ feet, 36s. per dozen.
THUYA AUREA, 2½ feet, well furnished, dense specimens, 5s. each.
THUYA GIGANTEA, 5 feet, 30s. per dozen.
COTONEASTER MICROPHYLLA, fine, 5s. per dozen.
CHESTNUT, Horse, 9 to 10 feet, stems 8 inches in diameter 1 foot from the ground, 20s. per dozen.
PRIVET, oval leaf, 1½ to 2 feet, 50s. per 1000.
SPRUCE, fine, well furnished with good roots, 3½ feet, 16s. per 100.
The EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Canna (Iridiflora) Ehemanni.**

HOOPER AND CO. offer good plants of this splendid Canna (quite unequalled by any known species), at 7s. 6d. and 10s. 6d. each.
HOOPER AND CO., Covent Garden, London, W.C.

ORCHIDS.—The largest stock in Europe. Thousands of these beautiful Plants to select from, at 10s. 6d., 15s., and 21s. each, at
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

TWELVE ORCHIDS, Valuable Winter-flowering Sorts, 21s.—The cheapest collection ever offered. All well established plants of Epidendrums, Odontoglossums, Oncidiums, Cypripediums, Dendrobiums, and other free-flowering and beautiful sorts, in 4-inch and 5-inch pots, strong, and well grown. Will not require repotting for a year. Packages gratis for cash. (Double size, extra strong, 42s per dozen.)
J. H. LEV, Royal Nursery, West Croydon.

**Pelargoniums—Pelargoniums.**

JAS. HOLDER AND SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

**Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.**

MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

**Why give more than 9s. per Cwt. for**

MAGNUM BONUM POTATOS, when a splendid sample, true, can be obtained at that price? Bags gratis; terms cash.
The EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

**Clematis coccinea.**

HOOPER AND CO., offer good plants of this pretty Scarlet Clematis, at 5s. each.
HOOPER AND CO., Covent Garden, London, W.C.

**Forest Trees, &c.**

MONRO BROS., Inverness, N.B., would draw attention to their superior stock of NATIVE SCOTCH FIR, LARCH, &c. They have also in stock Champion and other varieties of POTATOS. Prices on application.

**To the Trade.**
MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.
Seed Growing Establishment, Wisbech.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

LAPAGERIAS.
WHITE, extra strong, 42s. each; do., 31s. 6d. each smaller, 21s. each
RUBRUM, strong, 10s. 6d. each.
ROSEA, strong, 7s. 6d. each.
Price to the Trade on application.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 3½ feet.
SCOTCH.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted.
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and general remarks; free for a penny stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SEED POTATOS.—A quantity of Magnum Bonum, warranted true, grown on red land by the undersigned. Particulars and sample on application.
RICHARD ROBBINS, The Hollies, Kenilworth.

NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties will be sent out April 12. Full particulars and testimonials free on application to Messrs. JONES AND NORTH, Hope Nursery, Lewisham, Kent.

# CARTERS'
## PERMANENT and BEAUTIFUL LAWNS, &c.

AWARDED

**NECESSARY IMPORTANT CAUTION.**

**Visitors to the Paris Exhibition, and Others intending to purchase the best Lawn Grass Seeds, should procure their supplies from the First Prize Winners.**

**CARTERS' GOLD MEDAL LAWN GRASS**
In sealed packets, price 1s. (post-free, 1s. 4d.), 1s. 6d. and 2s. 6d. per packet.
(A 1s. 6d. packet will sow 1 rod of ground).
Price per Bushel .. .. 25s.
Price per Acre (of 4 bushels) .. 90s.
ORDINARY LAWN GRASS .. .. 20s. per Bushel
20s. value Carriage Free.

LAWNS and HOW to MAKE THEM.—See CARTERS' PRACTICAL GARDENER. Price 1s.; post-free, 1s. 4d. (Winners of the only Gold Medal for Lawns, Paris, 1878.)

*Carters*

The Queen's Seedsmen, and by Royal Warrant to H.R.H. the Prince of Wales.
237, 238, High Holborn, London, W.C.

SUTTONS' MAGNUM BONUM (about 12 tons), MYATT'S EARLY ASHLEAF (about 14 tons), and other early kinds. All first-class samples, and raised from seed supplied by some of the leading seedsmen. Apply to Mr. MORTON, Botcherby, Carlisle.

**To the Trade.**

ACER NEGUNDO.—Stocks, fine, 3 to 4 feet, 4s. per 100; 4 to 5 feet, 6s. per 100, or 40s. per 1000; 7 to 8 feet, straight, 8s. per 100, 60s. per 1000.
THORN QUICK, transplanted, fine, 2½ to 3 feet, 20s. per 1000.
W. C. SLOCOCK, Goldsworth "Old" Nursery, Woking.

FLOWER SEEDS in PENNY PACKETS.—One hundred of the most showy, popular, and beautiful varieties, including finest double ASTER and Ten-week STOCK, Scarlet LINUM, MIGNONETTE, NEMOPHILA, SWEET PEAS, CONVOLVULUS, Dwarf NASTURTIUMS, CLARKIA, COLLINSIA, CALLIOPSIS, &c., post-free, 8s. 50 packets, including as above, post-free, 4s. 2d.; 25 ditto, 2s. 2d. Each packet contains sufficient seed for making two or three nice patches. Excellent for distribution amongst cottagers or children. All the varieties are easy of cultivation.
DANIELS BROS., The Queen's Seedsmen, Norwich.

FOR SALE (grown on best district Perthshire), about 100 Tons each, VICTORIA POTATOS, warranted pure Seed, and CHAMPIONS, extra quality.
W. S. HUNTER, Seed Merchant, Leith.

GRAPE VINES and ORCHARD-HOUSE TREES in POTS.—GRAPE VINES, extra strong, short jointed and well ripened: Planting Canes, 3s. 6d. to 5s. each; extra strong Fruiting Canes, 7s. 6d. to 10s. 6d. ORCHARD-HOUSE TREES, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs.
Descriptive Price LIST for 1d. stamp.
RICHARD SMITH AND CO., Nurserymen, Worcester.

JOHN AND GEORGE McHATTIE, SEED MERCHANTS, Chester, can still offer choice samples of the following POTATOS, for Planting:—
PATERSON'S VICTORIA.
SNOWFLAKE.
SCHOOLMASTER.
EARLY OXFORD.
GRYFFE CASTLE.
DALMAHOY.
RED BOG.
SCOTCH CHAMPION.
MAGNUM BONUM.
VEITCH'S ASHLEAF KIDNEY.
MYATT'S PROLIFIC.
RIVERS' ROYAL ASHLEAF.
PORTER'S EXCELSIOR.
All carefully hand-picked. Prices on application. Quality unsurpassed.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881. Extra strong SEAKALE, 2s. 6d. per dozen.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Reduction in Price of**

MAGNUM BONUM POTATO.—Guaranteed produce of Seed purchased of Messrs. Sutton & Sons; true, free from frost or disease, and in dry condition. 1 cwt. sample Bag sent carriage paid to any Station or Port in England or Wales, on receipt of Post-office Order or Cheque for 8s., or 1 ton for £6 15s., carriage paid, and Bags free.
J. T. SMITH, Potato Merchant, Wisbech, Cambs.

WORMLEIGHTON'S SEEDLING.—This splendid new variety of Potato obtained the First Prize, as the best Seedling Potato not in Commerce, at the Great International Potato Show, held at the Crystal Palace, in September last. Price 2s. 6d. per pound, 7 lb. 15s. 100 other choice kinds in stock.
DANIELS BROS., The Queen's Seedsmen, Norwich.

EVERGREEN HEDGES, in great variety very cheap.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Cheap Offer of Fruit and Other Trees, SHRUBS, HERBACEOUS and SPRING BEDDING PLANTS.**

T. L. MAYOS, having to give up two portions of his Nurseries this Spring, offers the above at 25 per cent. off Catalogue Prices for Cash. Orders will be executed in rotation until stock is sold. CATALOGUES Free. Apply, Highfield Nurseries, Hereford.

W. B. ROWE AND CO. (Limited) have to offer:—
PEARS, Horizontal Trained, Fruiting.
" Standard, good.
VEWS, English, 2 to 3 feet.
PRIVET, Oval-leaved.
" Common, 2-yr. struck.
ASPARAGUS, 1-yr.
HOLLIES, Seeding, fine.
STRAWBERRY PLANTS.
FIR, Spruce, 1½ to 5 feet.
Barbourne Nurseries, Worcester.

VIOLAS, 20,000 fine strong plants:—
" cornuta, white } 5s. per 100, 45s. per 1000.
" " Queen of Blues, }
Cash only. Carriage and package free.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

**The Best Potatos for Seed are grown in Dumfriesshire.**

OUR STOCK of SEED POTATOS, which is second to none in the Kingdom, contains all the leading varieties, at very moderate prices. Special quotations for large quantities. Price LIST on application.
KERR AND FOTHERINGHAM, The Royal Seed Establishment, Dumfries.

ASPARAGUS.—Strong 2-yr., for planting, 3s. 6d. per 100.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.
EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

WILTSHIRE SNOWFLAKE.—A splendid new Seedling Potato, raised by Mr. Jas. Lye, Clyff Hall, Market Lavington; it obtained First-class Certificate at Devizes in November last, and reported by the Royal Horticultural Society as a most promising variety: *vide Gardeners' Chronicle*, November 20, 1880. Price 1s. per pound, 7 lb. 6s. 100 other choice kinds in stock.
DANIELS BROS., Seed Merchants, Norwich.

**New Roses for 1881.**
SURPLUS NURSERY STOCK.

LIST of NEW ROSES, and other Roses in Pots, now ready. Prices and Particulars of Surplus Nursery Stock, also now ready. Both sent gratis and post-free to applicants.
EWING AND CO., Eaton, Norwich.

**To the Trade.**

NUTTING AND SONS having now posted their Annual Wholesale Agricultural CATALOGUE to all their friends, if not to hand, on application another shall be immediately forwarded.
NUTTING AND SONS, Seed Merchants, 60, Barbican London E.C.

**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—

VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy, Best bedding sorts, 6s. per 100 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.

LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.

PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.

" TRICOLORS—Mrs. Pollock, Sir R. Napier, Sophie Dumaresque, and Lady Cullum, 2s. 6d. per dozen, 18s. per 100.

" SILVER VARIEGATED—May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.

" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.

" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.

" BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.

" Forcing, Show and French vars., 30s. per 100.

CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.

COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.

AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s per 1000.

TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.

Packing included. Terms cash.
Cemetery Nursery, Gravesend.

**Onion Seed.**

MESSRS. J. AND G. McHATTIE, SEED MERCHANTS, Chester, have a surplus stock of White Spanish, Blood-red, Strasburg, and Bedfordshire Champion ONION SEED, for which they will accept moderate prices to clear out. Also some kinds of CARROT.
Samples and prices on application.

SURPLUS STOCK.
QUINCE STOCKS, strong, 40s. per 1000.
BITTER WILLOW (for Coverts), 4 to 6 feet, 30s. per 1000.
POPLARS (Black Italian), 4 to 5 feet, 40s. per 1000.
THORNS (strong transplanted), 12s. 6d. to 15s. per 1000.
PINUS AUSTRIACA, 1½ to 2 feet, 120s. per 1000.
YEWS, English, 2½ to 3 feet, 25s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming.

A. M. C. JONGKINDT CONINCK begs to offer large quantities of HARDY PERENNIALS, at very low prices.
Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

RHODODENDRONS, hardy late blooming, nice healthy young plants, from £5 to £7 10s. per 100.
CLEMATIS, best named varieties, 63s. to 75s. per 100.
MAURICE YOUNG, Milford Nurseries, near Godalming.

COCOS WEDDELLIANA.—Fresh Seed, just to hand, in splendid quality, 15s. per 100; 120s. per 1000 seeds.
PINUS GRENVILLEÆ.—See *Gardeners' Chronicle*, January 22, for description of this new Pinus. 5s. per ounce.
ANTHURIUM ANDREANUM.—Price on application.
F. SANDER AND CO., Seed Growers, St. Albans.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Samples and Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**Spring Planting.**
SEEDLING and TRANSPLANTED FOREST TREES.
PLANTS for GAME COVERTS,
ORNAMENTAL TREES and SHRUBS,
FRUIT TREES, &c.—The immense stock of the above is in splendid condition, and special offers for large quantities will be made when desired.
CATALOGUES free on application.
The LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh.

# YOUNG'S
# GOLDEN CHINESE JUNIPER
## (Juniperus sinensis aurea).

"Certainly one of the foremost places amongst golden-leaved Conifers must be accorded to Mr. Maurice Young's Juniperus sinensis aurea."—*Gardeners' Chronicle*, Sept. 7, 1872.

"A foremost position, however, must be accorded to Mr. Young's New Golden Chinese Juniper."—*Gardeners' Magazine*, June 29, 1872.

"JUNIPERUS SINENSIS AUREA.—This variety, raised by Mr. Maurice Young, of the Milford Nurseries, near Godalming, is one of the most beautiful Conifers ever obtained. * * * This novelty is considered one of the most striking that has been introduced into England for many years."—*L'Illustration Horticole*, 1872, p. 309.

"It certainly stands in the foremost rank of golden variegated Conifers."—*Florist and Pomologist*, October, 1875, p. 232.

Awarded First-class Certificates or Medals wherever exhibited.

This beautiful Conifer has now been more than eight years before the public, and has fully borne out the highest encomiums passed on it by the Press.

Mr. YOUNG has now to offer a limited number of magnificent specimens, from 2½ to 5 feet, at prices ranging from 10s. 6d. to 105s. each.

**MAURICE YOUNG,**
MILFORD NURSERIES, near GODALMING.

"CONQUEROR" POTATOS.—The Subscribers introduced this Seedling Potato last Season, and those who tried it speak most favourably of it. Their previous experience induced them last year to grow a larger breadth for Seed purposes, and they can now offer their produce at the undernoted moderate prices. In form the "Conqueror" may be described as an intermediate of Paterson's Victoria and the Champion, with the great advantage of ripening three weeks earlier.

Price on Rails at Coldstream Station, North-Eastern Railway, and Gordon and Greenlaw Stations, North British Railway, 16s. per sack of 2 cwt., or £7 per ton. Sacks, 1s. 2d. each. A remittance should accompany each order, and early orders will have immediate attention from

HOGG AND WOOD, The Northumberland Agricultural Society's Seedsmen, Coldstream-on-Tweed; or from HOGG AND ROBERTSON, The Prince of Wales' Seedsmen, 22, Mary Street, Dublin.

Contractor to Her Majesty's Government. By appointment to H.R.H. Prince of Wales.

# POTATOS.

## Best and Cheapest House in Berkshire for all kinds of Seed and Eating Potatos.

LARGE STOCKS of the above, comprising every variety worth growing.

SPECIAL OFFERS:—

**100 Tons Scotch Champions**, good seed size, no waste in cutting, in quantities not less than 1 ton. Price £4 10s. per ton. Can supply from either light or heavy soils.

**50 Tons Seed Size Victorias**, at £5 per ton.

**Also**, large quantities of the **well known Berkshire Favourite**, for present consumption; recommended by thousands as the best obtainable variety at this time of the year: £5 5s. per ton. All free on Rail.

*CATALOGUE of both kinds, GRATIS and POST-FREE, on application to*

**C. FIDLER, Potato Grower, Reading.**

## Choice Rare and New Hardy Perennials.

ILLUSTRATED CATALOGUE

of above, for the present year, is now ready, and includes so many Rare and Choice Plants that it should be in the hands of every Lover of HARDY PERENNIALS. Fine selections of BAMBOOS and ORNAMENTAL GRASSES, AQUATIC and BOG PLANTS, CLIMBING and TRAILING PLANTS, GLADIOLUS, &c., are added. Also collections of PERENNIALS adapted for almost any position.
Post-free on application.

**THOMAS S. WARE,**
HALE FARM NURSERIES, TOTTENHAM, LONDON.

GEO. JACKMAN & SON,
(ESTABLISHED 1810,)

**Cultivators of**
FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
ROSES, RHODODENDRONS,
*Conifers and Hardy Climbers.*

**THE CLEMATIS**
A SPECIALITY.

*Descriptive Priced Catalogues free.*
**WOKING NURSERY, SURREY.**

## Strawberries! Strawberries!

All the Leading Kinds, Guaranteed True to Name, in Pots and from Ground.

*List of Sorts and Prices on application to*

**CRANSTON'S NURSERY & SEED CO.**
(LIMITED),
KING'S ACRE, near HEREFORD.

## PLANT FRUIT TREES
## EVERYWHERE.

There can be no better investment on Land than well-stocked Orchards and Gardens of Fruit Trees.

We beg to invite Inspection of our extensive Collection of Fruit Trees, to the cultivation of which we have for years given special attention. The whole of our Trees will be found remarkably healthy and perfectly grown.

*Descriptive Priced CATALOGUE free on application.*

**CRANSTON'S NURSERY & SEED CO.**
(LIMITED),
KING'S ACRE, HEREFORD.

# ROOTED CUTTINGS
## (Choice Varieties with Names).

FREE AND SAFE BY POST. FREE AND SAFE BY POST.

Our fine collection of Choice Florists' Flowers has received some grand additions during the past season, and we have much pleasure in offering the following in well rooted healthy cuttings, which, by our improved system of packing, can now be sent by post with perfect safety to any part of the British Isles. The selection of varieties must in all instances be left to us.

| | Per doz.—s. d. |
|---|---|
| CHRYSANTHEMUMS, New Varieties of 1880, of Continental origin, and including some novel and splendid sorts | 6 0 |
| " Large-flowered, superb exhibition in curved and reflexed varieties | 4 0 |
| " Japanese " " very fine sorts | 4 0 |
| " Pompon " " " | 3 0 |
| " Popular varieties, from different classes | 2 6 |
| COLEUS, Six brilliant new varieties offered by us for the first time; highly recommended, the set, one of each, 4s. 6d. | |
| DAHLIAS, new and select, including new varieties of 1880; very choice | 5 0 |
| " Show varieties, very fine, from our magnificent collection | 3 |
| " Fancy " " " | 3 6 |
| " Pompon or Bouquet, a charming assortment | 3 6 |
| " Bedding, fine dwarf varieties | 3 6 |
| FUCHSIAS, new varieties of 1880, English and Continental, including some magnificent double flowers; very fine | 6 0 |
| " Very fine exhibition varieties, single and double | 4 6 |
| " Good showy varieties, single and double | 2 6 |
| " Very choice mixed, without names | 1 6 |
| GERANIUMS, ZONAL (PELARGONIUMS), choice new varieties of 1880, Denny's, Pearson's, Lemoine's, &c. | 12 0 |
| " New varieties of 1879; very fine | 7 6 |
| " Superb exhibition varieties, carefully selected from our fine collection | 6 0 |
| " Extra choice sorts | 4 0 |
| " Double-flowered new varieties of 1880, very fine, with large handsome trusses of beautiful flowers, that continue for a long period; highly recommended | 12 0 |
| " Double-flowered very choice varieties | 4 0 |
| " White, Madame A. Baltet, splendid double white, 6d. each | 5 6 |
| " Ivy-leaved, Double, newest and choicest sorts, including new varieties of 1880; very fine trusses of charmingly beautiful flowers | 10 0 |
| " Ivy-leaved, Single varieties, excellent for hanging-baskets, &c. | 2 6 |
| MIMULUS, Daniels' superb large-flowered | 2 6 |
| PHLOX, HERBACEOUS, new and select, including new varieties of 1880 | 6 0 |
| " very choice varieties from our superb collection | 3 6 |
| PENTSTEMONS, very select, including new varieties of 1880 | 5 0 |
| " Choice sorts from our very fine collection | 3 0 |

*From* R. J. HAMILTON, Esq., *Tunbridge.*

"Enclosed please find Post-office Order in payment of account for Rooted Cuttings, all of which have turned out splendidly, especially the Chrysanthemums, which are very fine."

*From* Mr. W. D. PENNY, *Nairn, N.B.*

"I am very glad to say that the Rooted Cuttings I had of you in the Spring turned out very well indeed; not a single failure in the lot."

Cheques or Post-office Orders to

# DANIELS BROTHERS,
## TOWN CLOSE NURSERIES,
## NORWICH.

## FRESH EUCALYPTUS SEEDS.

The *Gardeners' Chronicle*, No. 350 (1880), says, on Eucalyptus at Chiswick:—"From this bed one might make a selection of ornamental leaved plants of no ordinary character that could be planted out-of-doors in summer, and utilised withindoors in autumn and winter." Should be sown now.

A selection of fifteen finest kinds, 2s., 10s. 6d., and 5s. 6d. single species, 2s. 6d. and 1s. 6d. per packet, post-free.
F. H. DAMMANN, Seedsman, Goerlitz, Germany.

**TO THE TRADE.—SPECIAL OFFER.**
VINES—VINES—VINES.

W. G. CALDWELL AND SONS can still supply strong FRUITING CANES of the following varieties, at 4s. 6d. each; Planting Canes, 3s. each:—

| | |
|---|---|
| Alnwick Seedling, | Foster's Seedling, |
| Black Humburgh, | Lady Downe's, |
| Duke of Buccleuch, | Madresfield Court, |
| Gros Colmar, | Trebbiano, |

The Nurseries, Knutsford, Cheshire.

**THE LARGEST ROSE GARDENS IN ENGLAND.**

## CRANSTON'S NURSERIES.
(ESTABLISHED 1785.)

*New Rose Catalogue for* 1880-81 now ready and may be had post-free on application.

**Awarded over 60 First Prizes for Rose Blooms this season.**

CRANSTON'S NURSERY and SEED CO. (LIMITED), King's Acre, Hereford.

**Pyrethrums, Double-flowered, in Pots.**

ROBERT PARKER begs to announce that he can supply the above-named by the dozen, hundred, or thousand, in nearly 100 named varieties, from 9*s.* per dozen upwards. Descriptive LISTS forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

TWELVE ADIANTUM CARDIOCHLÆNA for 12*s.*—This rare Fern is a grand rival of the beautiful A farleyense, and forms a fine companion for it. Grows 3 feet high, fronds 3 feet over, and of a beautiful glaucous-grey colour. Strong plants, raised from spores for the first time, are now offered at one-fifth of all other Nurserymen's Catalogues. Equally valuable for Cutting, Decoration, or Exhibition. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, West Croydon.

**Larch and Scotch Firs.**

T. HUNTER, NURSERYMAN, Barnard Castle, offers excellent Transplanted LARCHES, 15 to 24 inches, 15*s.* per 1000; Scotch FIR (Native), 2-yr., 2-yr. transplanted, at 15*s.* per 1000; Black Italian POPLARS, 4 to 5 feet, 20*s.* per 1000. Samples on application.

BEAUTY of NORFOLK.—Choice new Seedling Potato, of extra fine quality. This may be described as a late Beauty of Hebron, being of the same habit of growth and quality, but more robust, and ripens a fortnight later, is a good disease resister, and first-class for Exhibition. Per pound, 1*s*; 7 lb., 6*s.*; 14 lb., 10*s.* 6*d.* 100 other choicest kinds in stock.
DANIELS BROS., Seedsmen to H.R.H. the Prince of Wales, Norwich.

**Grapes this Year.**

FRUITING CANES, thoroughly ripened without bottom-heat, 7*s.* 6*d.* to 10*s.* 6*d.* each. PLANTING CANES, 3*s.* 6*d.* to 5*s.* each. Leading kinds.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**Rose Blooms.**

EDWIN HILLIER offers Tea-scented ROSE BLOOMS, 3*s.* 6*d.* per dozen. Not less than two dozen sent, and for cash only.
TELEGRAPH CUCUMBER SEED, true, 18 seeds for 1*s.*
The Nurseries, Winchester.

MAGNUM BONUM POTATOS (a true variety).—A few tons for Sale, price £4 per ton on Rail. Terms Cash.
W. VALES, The Gardens, Needham Hall, Wisbech.

**30,000 Finest**

SHOW and FANCY PANSIES in Cultivation, in over 300 most beautiful and distinct varieties, to dispose of at 20*s.* to 25*s.* per 100. Also most superb collections of all the newest and best ANTIRRHINUMS, PENTSTEMONS, PHLOXES, VIOLAS, MIMULUS, &c., of which priced Catalogue for 1881 of 53 pages—which should be in the hands of all growers of these popular flowers—will be sent on application.—J. FORBES, Buccleuch Nurseries, Hawick, N.B.

IMPORTED AURATUMS have lately arrived in better condition than any received this year. Sound bulbs give the best possible results if planted up to middle and end of April. W. GORDON will, until then, offer this lovely Lily at the low price of 6*d.*, 9*d.*, 1*s.*, and 1*s.* 6*d.* each, subject to liberal discount to the Trade. For LILY and ORCHID LIST apply to W. GORDON, City Office, 10, Cullum Street, E.C.; Nurseries, Twickenham, Middlesex.

**The Chief Bundle of the Season is now Ready.**

FORTY SEPARATE PACKETS of NEW FLOWER SEEDS, all different, for 1*s.*; double quantity for 1*s.* 9*d.* We thus eclipse all other offers, hoping to secure patronage for our miscellaneous seeds.
AGENTS WANTED to Canvass in spare time; liberal commission; experience not necessary.
W. H. HOWELL, Flackwell Heath, High Wycombe.

**Offer of Surplus Stock of**

SEED POTATOS, for cash with order only. Selected Myatt's Short-top Ashleaf, £4 15*s.* per ton; Early Rose, £2 10*s.* per ton; Alpha, 4*s.* per cwt.; Magnum Bonum, £5 per ton. Four Bushel Bags, 1*s.* 2*d.* each.
RICHARD CRUST AND SON, Nurserymen, Spalding.

FERNS from Devonshire, Cornwall and Somerset. Best time to plant. Instruction Book for Making Rockery, Planting Ferns, &c., with each 5*s.* order. Fourteen Named Varieties, 7*s.* per 100; Small (post), 2*s.* for 30. Fine ASPLENIUM FONTANUM, SEPTENTRIONALE, and HOLLY FERNS, 1*s.* each; the three, 2*s.* 6*d.* 1000 varieties of BRITISH and EXOTIC FERNS. Catalogue 2*d.*
Established 25 years.
E. GILL, Lodging-house Keeper, Lynton, Devon.

NEW SEEDLING POTATOS.—Gordon's Royal Kidney Regent, and Gordon's Victoria Regent, were raised from Seedlings three years ago, and have hitherto resisted disease. The former is a Second Early, and this year yielded over 10 tons per acre. The latter is not unlike Paterson's, but rougher skinned; it boils equally well, and is a much heavier cropper, having yielded 13 tons per acre.
Further particulars, with price, may be had on application to Mr. JOHN GORDON, Balmuchy, Fearn, Ross-shire, N.B.
Messrs. DRUMMOND AND SONS, Stirling, have authority to take Orders.

SURPLUS STOCK.
ASH, Mountain, 2 to 3 feet, and 6 to 12 feet.
LABURNUM, 4 to 7 feet.
POPLAR, Black Italian, 4 to 6 feet.
" Ontario, 10 to 15 feet.
" Abele, 10 to 15 feet.
QUICKS, Thorn, 2-yr. 2-yr.
PINUS CEMBRA (transplanted 1880), 4 to 7 feet.
ARBOR-VITÆ (transplanted 1880), 2 to 3 feet.
CUPRESSUS LAWSONIANA (transplanted 1880), 2 to 5 feet. Prices on application.
JOSEPH TREMBLE AND SONS, Victoria and The Castle Nurseries, Penrith.

TO POTATO PLANTERS.
Fine selected seed, 1*s.* 3*d.* per peck, 4*s.* per bushel, 7*s.* per cwt. Bags free.

| | |
|---|---|
| Schoolmaster | Late Evergreen |
| Mammoth Pearl | Early Ohio |
| Myatt's Ashleaf | Pride of America |
| Extra Early Vermont | Triumph |
| Red-skin Flourball | Magnum Bonum (Suttons') |
| Feltham's Milky White | Hanworth Superior |
| Fluke Kidney | Early Rose |
| Late Rose | Paterson's Victoria |
| Trophy | Improved York Regents |
| Beauty of Hebron | " Red Regents |
| Manhattan | Victoria Regents |
| Rivers' Royal | Snowflake |
| Headley's Nonpariel | White Rose |
| Ruby | |

JERUSALEM ARTICHOKES, 1*s.* per peck.
Orders executed in strict succession until stock is exhausted. Nett cash with Order.
H. FELTHAM, Potato Grower, Eaton, Norwich.

**To the Trade.**

R. AND A. MORRISON beg to call the attention of the Trade to our Advertisement below, and to assure them that our stock of LARCH and SCOTCH FIR, of which we always make a specialty, is this season very large and very fine. Our LARCH are very healthy, not a speck of bug being on them last summer; of 2-yr. Seedlings we can offer 1,000,000; of 1-yr. 1-yr. upwards of 1,200,000; and of the sizes from 12 to 30 inches, as advertised, we have upwards of 1,500,000 still to offer. Our Scotch FIR are guaranteed true native Highland Scotch Pine, grown from seed specially collected for us in the forests in the North of Scotland, and taken out in our own kilns in the nursery. Of the different sizes advertised we have still to offer upwards of 3,000,000.
Arrangements may be made for paying carriage to Carlisle.

**Special Trade Offer.**

R. AND A. MORRISON, The Nurseries, Elgin, beg to offer the following:—
LARCH, 2-yr., fine, 4*s.*; 1-yr. 1-yr., very fine, 6*s.*; 12 to 18 inches, 12*s.* 6*d.*; 18 to 24 inches, 17*s.* 6*d.*; 18 to 30 inches, 20*s.* per 1000.
FIR, Scotch (Native), 1-yr. 1-yr., 6*s.* 6*d.*; 2-yr. 1-yr., 7*s.* 6*d.*; 1-yr. 2-yr., very fine, 8*s.* 6*d.*; 2-yr. 2-yr., 12*s.* 6*d.* per 1000.
PINE, Austrian, Laricio, and montana, 2-yr. 1-yr., 7*s.* 6*d.*; 2-yr. 2-yr., 10*s.* per 1000.
ALDER, transplanted, 18 to 24 inches, 10*s.* 6*d.* per 1000.
ELM, Wych, 2-yr., 2*s.* 6*d.* per 1000.
MAPLE, Norway, 2-yr. 1-yr., very fine, 10*s.* 6*d.* per 1000.
POPLARS, argentea, fine, 18 to 24 inches, 21*s.*; 24 to 36 inches, 30*s.* per 1000. Balsam, 18 to 24 inches, 10*s.* 6*d.*; 24 to 36 inches, 15*s.* 6*d.*; 3 to 4 feet, 21*s.* per 1000. Black Italian and White Egyptian same sizes and same prices.

**Important to Market Gardeners, Farmers, and SEEDSMEN.**

ALL KINDS of AGRICULTURAL, GARDEN, and FLOWER SEEDS of best quality, particular attention being paid to all Stocks of Seeds suitable for Market Gardeners, Farmers, &c.
PRIMULA FIMBRIATA, Red and White, extra choice Covent Garden strain.
PRIMULA ALBA MAGNIFICA and CHISWICK RED.
CALCEOLARIA, extra choice, splendid colour and good habit.
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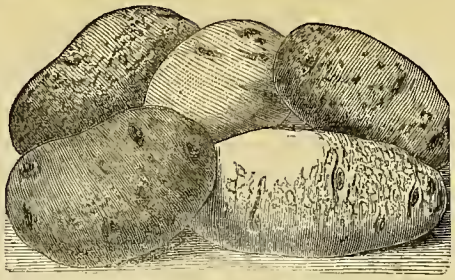

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5/- per Packet. CULVERWELL'S GIANT MARROW PEA.
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**"Journal of Horticulture," November 18, 1880.**—"A First-class Certificate was awarded for Bouvardia 'Dazzler' (W. Balchin, Hassocks' Gate, Sussex), an attractive and floriferous variety of vigorous habit, bearing fine clusters of moderately large flowers, the limb of which is a deep scarlet, and the tube of a rosy tint."

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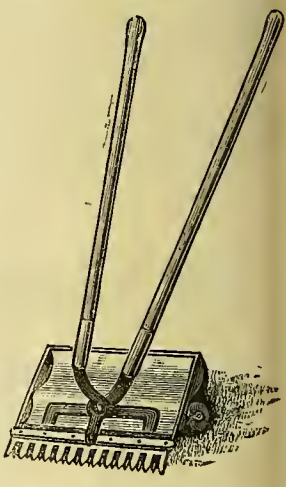

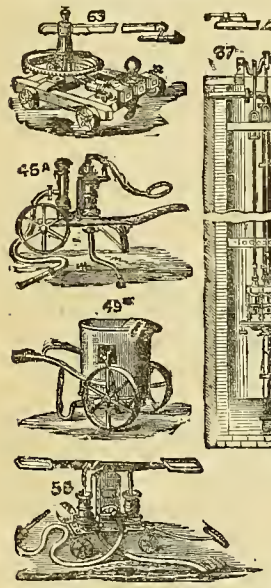

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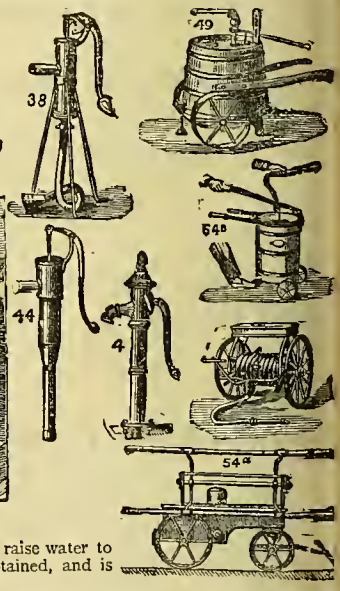

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THE
# Gardeners' Chronicle.

*SATURDAY, MARCH* 26, 1881.


## THE TULIP.*

Gesner, of Zurich, born in 1516, was not only the first to make known the splendours of the Tulip, but he was also the first upon record who formed a museum of natural history, and the first botanist who distinguished the generic characters of plants, and thus prepared the way for grouping species in accordance with their more striking affinities. Gesner records that he first saw the Tulip in the beginning of April, 1559, at Augsburg, in the garden of Councillor John Henry Herwart. In 1611 they first appeared in Provence, in France, in the garden of the celebrated Peiresc. The Dutch obtained their first supply from Constantinople. The first that were planted in England came, according to Hakluyt, from Vienna, having been obtained thence by Carolus Clusius. In some of the books Clusius is put before Gesner as the discoverer of the Tulip, but Beckmann very properly describes Clusius as having only collected and described the then known species. Gesner travelled to obtain plants for his own botanic garden at Basel, and also subjects for the painters and engravers he maintained at his own expense.

Turning to the literary representatives of the gardens of Northern Europe, I find the first proper reference to the Tulip to be in the *Historie of Plantes* of the famous Rembertus Dodoens, published in 1578. At page 213 of the large edition, and page 240 of the small edition, which has no figures, we find the Tulip described as the Tulpia or Lilionarcissus, and thus we are compelled to confront the problem comprised in its name. What is to be understood by the term Tulip, or Tulipan, or Tulpia? In Richardson's Dictionary occurs the definition "Tulipan, the Dalmatian cap;" and Cotgrave is cited to justify the term "tulipist," as applied to lovers of Tulips, which we should allow in the present day without a scruple, on the same ground that we allow "rosarian," as applied to a lover of Roses. It is as clear as can be desired that tulipan is the equivalent of turban, and that this flower takes its name from its resemblance to the head-dress of the East. Herein we have hints innumerable for the students of costume, and especially for those who design the dresses for the pantomimes of the present and the near future.

In Dodoens there are two classes of Tulips described, which are distinguished as large and small, and I think it will puzzle the botanists to distinguish them clearly according to modern nomenclature. It is sufficient to say that they are described as of many colours and as differing in size only. A rude guess would make them representatives of our present early and late sections; the tall sort being Tulipa Gesneriana, the reputed parent of the late Tulips, the other, T. oculus solis, the reputed parent of the early Tulips But rude guesses are not to be desired, and we may have in the two sections recognised in 1578 the early Tulips as the

* The substance of an address, by Mr. Shirley Hibberd, before the Royal Horticultural Society on March 22.

largest, and the Van Thol, or Tulipa suaveolens, as the smaller kind. When we come to Gerard, 1597, we feel that we are on solid ground. He calls it the "Tulipa, or the Dalmatian Cap," and describes it as "a strange and forraine flower, one of the number of the bulbed flowers, whereof there be sundrie sorts, some greater, some lesser, with which all studious and painefull herbarists desire to be better acquainted, because of that excellent diuersitie of most braue flowers which it beareth." Gerard describes fourteen sorts under a general classification of Præcox, Serotina, and Media, the "timely" (or early), the "later," and "flowering between both the others." The solid ground of Gerard acquires a vast extent in Parkinson, 1629, who enumerates 140 kinds, his classification being the same as that of his great predecessor, comprising early flowering, mean flowering, and late flowering. Parkinson gives us thirty figures of varieties, in some of which we see the "flame" and the "feather" in a fair state of development, affording delightful promise of the glories that were soon to be revealed and that were to turn the brains of the Dutchmen, and by the follies of the great Tulip bubble, or Tulip mania, prove their consanguinity with the English, who can enjoy a bubble as well as any people in the world, whether it be a South Sea bubble or a railway bubble, or an inordinate passion for investing in "Turks." The fact is, when John Parkinson was engaged in preparing these figures the bubble was being blown, and it was floating high in the sickly atmosphere of a fool's paradise in the year 1634, and did not burst until 1637. I will quote a few particulars from Munting's extracts from the account books of the traders, for the purpose of introducing some other matters that I think will interest you, and perhaps surprise as well as interest our friends the florists. For one root of a variety called the Viceroy the following articles were offered, namely, 2 lasts of Wheat, 4 lasts of Rye, four fat oxen, three fat swine, twelve fat sheep, 2 hogsheads of wine, 4 tons of beer, 2 tons of butter, 1000 lb. of cheese, a bed, a suit of clothes, and a silver beaker: the aggregate value of these articles being 2500 florins. In 1636 Henry Munting sold to a merchant at Alkmaar a Tulip root for 7000 florins, but before it could be delivered the price had fallen, and by agreement the merchant paid 10 per cent., so that Munting pocketed 700 florins for nothing; but it is recorded he would rather have delivered the root for the 7000 florins. One man made by this trade a little fortune of 60,000 florins in the course of four months; so we may conclude that the Dutch people were as much excited about Tulip roots in 1634 as the English people were about railway scrip in 1845. But I quit this part of the subject by saying that the florists were in no way, or only in a shadowy way, mixed up with this folly. The speculators were noblemen, farmers, pedlars, sailors, and chimney-sweeps. They knew nothing and cared nothing for Tulips, and they very rarely saw the bulbs they traded in, and probably many were bought and sold that never existed, the mere names serving as materials for speculation.

It is a very interesting question however as to what particular class of Tulips gave rise to the morbid excitement, and fed it with such few floral facts as were absolutely needful. It is a singular fact that definite information on this point is very difficult of attainment, for the writers who should be able to speak authoritatively will be found to differ; some asserting that the Tulips of the Tulip mania were late Tulips, and others with equal confidence declaring that they were early Tulips. The Rev. William Hanbury, in his great work on *Planting and Gardening*, in two folio volumes, 1771, p. 859 of the first volume, says without hesitation, "The early species were the sort of Tulips that were so much coveted in the above-mentioned period, and for the bulbs of which, singly, such extravagant prices were given." The list in Parkinson's *Paradisus* long ago suggested to me that the famous Tulips of the seventeenth century comprised the two great divisions; for he wrote so near the time of the outbreak of the mania, and figured and described the several sections then recognised with such evident appreciation of the high merits of each, that it could not be expected the tide of public favour should suddenly contract to one narrow channel to compass only one class of these splendid flowers. I am now enabled to say without hesitation that the famous Tulips of the middle of the seventeenth century comprised both early and late varieties, and moreover I can declare to you that some of the most famous of that day are at this day in cultivation, and are much prized for their beauty! In my endeavour to solve the riddle I have been greatly assisted by Mr. J. H. Krelage, of Haarlem, who possesses a remarkably fine collection of books, pictures, and miscellaneous memoranda illustrative of the history of the Tulip.

To sum up the results, the Tulips of the bubble period were of all classes, but the principal were of the sections now known as early and late. A variety known as Zomerschoon, which was sold for 1010 florins, is still in existence; it belongs to the late rose class. The celebrated Admiral Liefkens was a late rose. Admiral Van Enkhuizen was a late rose. The mighty Semper Augustus must of course have special attention; of this it is said there were at one time only two roots available for commercial purposes, for one of which an offer was made of 4600 florins, a new carriage, two grey horses, and a set of harness. For the other a man agreed to give for a bulb 12 acres of land. Well, and what sort of thing was Semper Augustus? I asked my friend the Rev. F. D. Horner if he could give me any distinct idea of the style and complexion of Semper Augustus, and he replied indefinitely, but making a very good guess, as will be seen. He says, "I have pictured him in fancy's eye as a rough bizarre of spattery flame, and with skips in feather, long in the cup and thin in petal, foul in stamen, and perhaps base in base—in fact, with a touch of all the faults and blemishes which we have led the Tulips through to purity and beauty." Mr. Krelage is enabled to say, by means of the drawings in his possession, that the original Semper Augustus was a late rose; but there was, he adds, "a Bizarre of this name which exists yet at present, and of which some bulbs were lately offered to me by some of my friends here."

So far as to the late Tulips of the speculative period. Now for the early ones. The early Tulip we know as Lac Van Ryn was of the number, and was sold for 175 florins. The Geil en Rood, which was sold for 235 florins, was an early Tulip. A very rectified form of Wit en Rood borde, which was sold for 2000 florins, was an early Tulip. Thus we may see that the two leading classes of Tulips were about equally favoured, and the case, as presented by Parkinson in his classification of 140 varieties, is fully justified by the facts at our command. It is to be hoped, however, that those severe florists who turn up their noses at early Tulips will, for the future, abstain from so distressing the muscles of their noses, as also from making known their possible lack of catholicity, for history has decided that the early Tulips have some technical merit, and it is always folly to oppose the stream that carries with it all the wrecks of time that are gifted with any degree of buoyancy.

### The Points of a Tulip.

Having treated the subject thus far historically let us now hastily regard it from the floral or artistic point of view. Between the clear self yellow or white of a Pottebakker and the feathery pattern of a fine show Tulip the difference is so great that it really does not need to be pointed out. But when we quit the elementary stage, and plunge into details, the parallel holds good, and it is about as hard to understand the details of the Tulip fancy as the intricacies and involutions of expression in English literature. But it must be added that the hardness is softened by its sweetness. It is a laborious task to master all that is required to be known by one who would pass judgment authoritatively on florists' Tulips, and it is not less hard—perhaps more hard—to acquire the knowledge and judgment required for the criticism of English authors, from Chaucer downwards.

The early Tulips are judged by form and colour and general effectiveness, but the late Tulips are judged by a most severe judgment as to their form and the symmetry and purity of their markings; and an immensity of knowledge is required for the performance of the arduous task in a satisfactory manner. I shall not trouble you with details of the mode of judging, but I must tell you that in the late Tulips some very strange characters are required, such as flames and feathers, of which we see but little in the early Tulips; consequently, at this stage of the story we come upon another of the peculiarly interesting points in the history of the Tulip; it is that which the florists term the "breaking" of the self-coloured flower into one variegated with stripes and lines that are known as flames and feathers. The florists have perhaps said enough in respect of this wonderful process, but the biologists have not even yet, in their ardent search after illustrations of evolution, taken hold of the fact as of scientific interest. In order to get near to the subject we will first go far away from it. I will therefore ask you to suppose that you have a race of cattle, or horses, or dogs, that are born of a particular colour—say a perfect mouse colour—and that, like all proper cattle, horses, or dogs, they retain this colour, and so become mature and even aged without a change. It is a most easy matter to entertain this supposition. But suppose that one of these pets, now in its twentieth year, was seen yesterday in its accustomed mouse-coloured garb, but this very day it comes forth to be fed and fondled, all unconscious of the fact, that instead of being of its accustomed mouse-colour it is now gorgeously decorated with blue and yellow stripes, or with great spots of crimson and grass-green, or with solemn patches of black and white and dove colour. How we should stare, and what terrible questions we should propose to the naturalists! And this is very nearly what takes place in the breaking of the Tulip. We sow the seeds, and the plants that arise therefrom produce in due time their flowers. But these flowers have but one colour, and they may be called selfs, but as a rule they are called "breeders." Now these mouse-coloured cattle, or one-coloured Tulips, are carefully scrutinised, and those that are considered deficient in form or substance are destroyed, the very finest of the breeders only being retained for further cultivation. The hope of the florist from this moment is to see his selected breeders "break"—his hope is to see the blue stripes and scarlet spots spread suddenly over the coats of the mouse-coloured cattle, as we see people change colour and costume in a pantomime. As a matter of course, all kinds of methods and tricks have been resorted to for the promotion of the much-desired "breaking," but only one secret has Nature and time ever revealed to the anxious watcher over a bed of breeders. Yes, there is one secret, and I see that the florists are ready to accept it with thankfulness, and it would be unjust therefore to keep them waiting one moment longer. To realise fully the capabilities of a breeder Tulip, we have only to exercise patience. If we are not patient Nature will not move in our behalf, and if we are patient she will be none the less immovable, but will just take her own time, and when her time arrives the self-coloured Tulip will abandon its self-colouring and appear with flame or feather, or both combined, a gratifying and glorious reward for the pains and patience of its possessor.

It may appear from this statement that the art of man has but little to do with the characters of the flamed and feathered, or, as we sometimes term them, the "rectified" Tulips. But here we encounter another of the curious features of this fascinating subject; for although the tulipist cannot by any science or any trick compel his breeders to break—and they will do it when they are in the humour, or perhaps never do it at all—nevertheless, the kind of break that may occur, and the style and fashion of the flower throughout are under his control, and if he does but co-operate with Nature, and as little as possible stand in the way of her normal working, he may ensure the production of a race of flowers of a type determined by himself. To sum up this matter, we must bring to bear upon the production of Tulip seed a certain amount of science and taste, and having done this, we must wait for the results.

## SMOKE.

The great smoke case of Glencorse, to which we lately called attention, has been terminated (unless, indeed, the decision be appealed against in the House of Lords) by a verdict in favour of Lord Glencorse, and against the Shotts Iron Company. The object of the action was not to obtain damages, but to prevent the Company from calcining ironstone within a radius of one mile of his estate at Glencorse, the plantations of which, it it was alleged, have been injured by the sulphurous fumes given off in the calcining operations. Any one familiar with the effects of smoke on vegetation, even of such comparatively innocuous smoke as issues from a kitchen chimney, would, *à priori*, agree with the decision of Lord Rutherfurd Clark as to the effects of the dense volumes belched forth from ironworks. But, on the other hand, it must be borne in mind that a large number of first-rate authorities—chemists as well as gardeners and foresters—came to the conclusion that the bad state of the plantations was not dependent on their proximity to the ironworks, but upon other assigned causes. Where the evidence was so very conflicting it is not for those who have no personal knowledge of the facts of the case to pass an opinion; we may, however cite from the *Scotsman* portions of the summing up:—

The Judge "interdicts and prohibits defenders in all time coming from calcining ironstone or iron ore, or burning blaze on any parts of the lands of Penicuik within 1 mile of pursuer's lands; and finds the pursuer entitled to expenses. It was admitted that there was no question of law between them, and he (the Judge) had only to decide the question of fact whether the pursuer's estate has been injured by the calcining operations carried on by the defenders. The evidence is very voluminous and very conflicting. The case of the pursuer is, that prior to 1877 the trees on his estate were remarkably thriving; that the first appearance of injury to the plantations was in the summer of 1877, immediately after the calcining in the end of that year; that the injury has increased and is increasing very rapidly; and that it is wholly due to the calcining. A large number of witnesses of skill support this view, and say that the injury from calcining is of the most marked and obvious kind. As the Lord Ordinary understood them the defenders did not dispute that the plantations went back in 1877, but attributed that to the cold and wet seasons of 1876-77. With respect to the Coniferæ which were most injured it was said that their condition was due to overcrowding, want of drainage, bad soil, climate, and planting under deciduous trees, especially Beeches; but they allege that, while such decay as exists is due to these causes, the plantations within the last few years have improved on the whole. They bring a great body of witnesses in support of their averments. These witnesses depone that there is not the slightest trace of injury from calcining. It is not disputed that sulphurous acid, and sulphuric acid when present in sufficient quantity, are injurious to vegetable life. The question is, whether these acids, or either of them, reached the pursuer's land in such quantities as to injure vegetation. That the smoke from the kings comes upon the pursuer's land is not capable of dispute. The pursuer's plantations had been very frequently subjected to the influence of the smoke, and particularly at those places where injury has been observed. It is proved that the smoke, if the weather is calm, hangs about the places which it has reached, and takes considerable time to dissipate. In the opinion of the Lord Ordinary, it is proved that the calcining operations of the defenders were capable of injuring the pursuer's lands; and he is, therefore, disposed to accept the evidence of those who say that they do injure them, rather than the evidence of those who say that they do not."

It would seem as if a committee of experts could have easily settled this matter and laid a report before the Judge, in place of which we have highly competent witnesses and honourable men turned into advocates for one side or the other. At any rate, if the two sets of witnesses had been allowed conjointly to investigate and report on the matter, we doubt not substantial justice would have been done at much less cost, and in a manner more calculated to secure respect than is afforded by the fact of eminent and honourable men swearing to diametrically opposite conclusions.

## New Garden Plants.

Cymbidium Devonianum, *Paxt.* (Mag. x., 98).

For many years this has been a great desideratum of mine. I have now a good part of a fresh inflorescence, and a bulb with two leaves at hand, all kindly sent by Mr. F. W. Moore, Director of Glasnevin Botanical Garden, Dublin, and the industrious son of our lamented friend. [We understand that the plants were sent to Glasnevin by Mr. W. Howard, of Southgate.]

The strong bulb is very short and inconspicuous, with some withered leaf-bases, and two fully-developed leaves, with long channelled, narrow petioles, a lanceolate, oblong, acute blade, of a rather coriaceous substance, having no projecting nerves underneath excepting the keeled middle one, and surpassing 1 foot in length, nearly 3 inches wide at the broadest place. The inflorescence is a nodding raceme with some scariose brown basilar sheaths. The flowers are numerous, ascending, exceeding a little those of Cymbidium aloifolium. Sepals and petals light brown, with dull mauve-purple streaks and blotches. The lateral ones are decurved. The lip is almost rhomboid, white, with numerous dark purple lines and blotches, the acute, reflexed, anterior part totally of a fine dark purple. Column ochre-coloured, with some brown shade, and with a blunt angle at each side of the stigmatic hollow.

I had nothing in my herbarium but an inflorescence, a leaf and a nice water-colour sketch, all presented by my excellent friend, Gustav Mann, who found the plant in the Sikkim Himalaya. Undoubtedly the same thing grows in the very Khasia hills where Gibson discovered his plant. There is a specimen collected by Dr. J. D. Hooker, and Dr. T. Thomson under 225 Cymbidium in Dr. Lindley's herbarium, without flowers, and with a single fruit. Finally, I saw some years ago at Mr. Bull's, between those endless thousands of Orchids collected by Mr. Freeman, plants which were no doubt this. I wonder whether any have flowered.

I have only to add that all the specimens I have seen had much longer petioles than the one represented in Paxton's *Magazine*, perhaps in consequence of a keen artistic licence. *H. G. Rchb. f.*

*Postscript.*—This is now before me, from Mr. W. Bull himself, who, as I stated in a previous note about the Glasnevin plant, introduced it from Assam. I have now a fine inflorescence, which has three broad reddish-purple sheaths at the base, which are covered all over with minute ochre-coloured spots. The rhachis is ochre-coloured, with light reddish reticulations. The lip differs in colour: instead of having the fore part quite purple the apicular part is white with purple spots, and then there is a wide band of purple before the two small tumours. *H. G. Rchb. f.*

Calanthe Sandhurstiana, *P. H. Gosse.*

I already alluded to this magnificent plant when speaking of Calanthe bella. It is very like Calanthe Veitchii, and is indeed of the same descent, yet it boasts a beautiful eyespot on its lip. The peduncle at my hand has its forty-one grand flowers dispersed over more than half a metre of length of the peduncle. It is said to have stronger bulbs than Calanthe Veitchii. Messrs. Veitch sent me this glorious thing, raised by Mr. P. H. Gosse, F.R.S., St. Mary Church, Sandhurst, Torquay, a most ardent naturalist. *H. G. Rchb. f.*

## VIOLETS AT CRICHEL.

Knowing a little of the fame of Mr. Beck, Lord Allington's able gardener at Crichel, as a successful cultivator of Violets, I made a special journey to the place to see them for myself, and, like the Queen of Sheba of old, I can truly say that half was not told me of the splendour of the display which, I believe, has been an annual one at Crichel for many years. The season is now at hand when gardeners will be giving the requisite attention to the work of propagating stock for the present year, and a few remarks may therefore not be out of place upon the subject.

At Crichel the stock appears to be raised by layering the runners upon the old plants, thereby securing a gain in point of time, and well-rooted plants ready to plant out early in the season. They are planted out upon a west border for the summer, and are strictly attended to during the growing season by way of keeping the plants clear of runners and free from red-spider, their natural enemy in hot weather.

As a rule Violets are not attended to in summer as they should be, owing to inadequate labour; and so work, however important it may be to future results, has to fall behind in order to secure a superficial appearance of good management. Where time cannot be found to layer the runners upon the plants before the flowering season is over, and the pits or frames, as the case may be, are required for other purposes, the stock might with advantage be raised by inserting the runners into boxes filled with leaf-mould and sharpened with a small proportion of rough sand. In this way strong well-rooted plants are secured earlier in the season than by trusting to the common way of propagating upon open borders.

But there is something more than this to account for Mr. Beck's great success in Violet culture, and I believe it is this:—Making full allowance for superior skill and management, it is well known that there are certain conditions under which all plants succeed better than others. It is here that Mr. Beck's foresight has enabled him to choose a winter situation for Violets which is the very best that has ever come under my notice. The spot selected is a cosy warm corner enclosed by a "sloping bank facing the south and east." Into this bank two commodious ranges of brick pits are fitted, into which the plants are put about the end of September or beginning of October. It will be observed that the object of the two aspects is to secure a succession of flowers, an object which is realised to the full. The pits have a quick pitch, and are substantial and well glazed, commanding a full degree of warmth and light.

From 12 to 15 inches of the old soil is removed every year, and a fresh compost, consisting of generous open soil, well sharpened with road-scrapings or coarse sand, added. The plants when planted are brought into close contact with the light, and when in full flower (as I saw them only a few days ago) present a sloping bank of vivid blue, which will attract the attention of any one having the sense of smell a long time before they approach it. The peculiarity of the plants at Crichel is their "miniature size, and their extreme floriferousness." Mr. Beck told me that during the late royal visit of the Duke and Duchess of Connaught, in January, he had the curiosity to make a rough calculation of the number of flowers that were open at the time, and that they ran up to the handsome figure of 9000. The varieties grown are the Czar, Marie Louise, Neapolitain, and Belle de Fontenay. *Visitor.*

## LATE GRAPES.

Among black Grapes that may be had in use up to Christmas there can, I think, be no question that Hamburghs are the best, they being sweet and luscious above all others, but unfortunately they cannot be kept beyond the time mentioned without many going to decay, and the remainder losing much of their flavour. Of late years there have been many claimants to public favour, the most recent being Gros Colmar, which, although a fine noble-looking fruit that may take and sell well in the market, is not likely to become very popular among private growers, as its quality is not such as will give satisfaction in a first-class dessert. This, at least, is the opinion I have arrived at after tasting it grown in different places side by side with Alicantes, which, taken all in all, are about the finest and most showy winter Grapes in existence, as not only are the bunches handsomely formed and large, but the berries always finish up with a deep bluish-black bloom that gives to them a most inviting appearance. The flavour, too, of Alicantes is far superior to that of Gros Colmar, and the Vines are most prolific bearers, as, while even small and young, the shoots frequently show three or four bunches, and sometimes as many as that from a bud, so that there need never be any fear of obtaining a crop, besides which they will ripen in a house with Hamburghs, as they require less heat than most of the others.

Lady Downe's will keep later, as the bunches will hang plump and fresh up to May, and are therefore valuable on that account. But to get them to do this it is necessary to prune early and give the Vines a long season, and assist them with fire-heat at both spring and autumn, or they will not have time to finish the fruit. The starting early is a great gain, for if Grapes are not thoroughly matured by the end of September there is generally little chance of effecting it after, as they lack saccharine matter, which only the aid of the sun can impart. Mrs. Pince is a good Grape when grown in light dry soil, but it seldom colours well, and this defect tells much against it. As yet I have had no experience of Alnwick Seedling, but from the berries Mr. Bell kindly sent me I should judge it to be a very promising kind, as they were of a deep jet black, carrying a fine bloom, and the flesh firm and good, and I have seen bunches of it since that were remarkable for finish.

Gros Guillaume used to be thought highly of, but this is a kind that requires different treatment to most

others to get it to fruit freely, as it does not bear at all well grown on the spur system, and the only way to insure a crop is to run up young rods annually, and get them well ripened. West's St. Peter appears to have gone partly out of cultivation, but although this is the case, it is one of the best black Grapes known, as it is of superior flavour to most of the others, and always colours up well, its only weak point being that it is a little small in the berry. If I were only to grow one of the many black sorts for late work it would most certainly be the Alicante, and for a second Lady Downe's, but to do the last-named well it should have a house to itself where it can be treated after the manner necessary for Muscats, when it may be had good and in a condition in which it will hang.

Among the whites there are none to equal Muscat of Alexandria, but to keep them on into March they must be finished up, so as to assume that rich amber tint so characteristic of this variety when of first-class quality, as they never acquire their rich flavour without it. Heat, light, and time are the essentials to put the colour in the skins, and Vines should therefore be started by April at latest, and receive every encouragement during the summer by early closing, and as autumn sets in it is a great help to the fruit if the leaves are tied or pushed aside whenever found to overshadow the bunches.

Next in point of merit to the last-named is Raisin de Calabre, which, although not thick in the skin, as most late Grapes are, keeps well and is of good flavour. Trebbiano is much superior to Tokay or Syrian, both of which are poor; and Pearson's Golden Queen, which, from having such a thick skin ought to hang well, has been very disappointing with me this year having become discoloured in the berries, which appear to perish inside. Up to that time the bunches were handsome-looking and might have passed for well-grown Muscats, which they greatly resemble. *J. S.*

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The Brisbane Botanic Garden.—*Nature* hears that Mr. Walter Hill is about to retire from the Curatorship of the Brisbane Botanic Garden, in connection with which his name has become widely known. It is rumoured that the gardens will be placed under the management of a board.

## PLAN FOR LEICESTER PARK.

In preparing the design for laying out the proposed new park at Leicester four principal objects were kept in view—viz., to provide a carriage drive as long as the grounds would possibly admit, with footpaths on either side; also a number of pleasantly shaded walks for pedestrians; to secure a lake sufficiently large to admit of boating in the summer and skating in the winter, with enjoyable walks on its margin; and to leave a considerable open space in the centre of the park in which cricket and other games can be played if desired. Beyond this vantage points had been arranged for at A A (fig. 78), where it was proposed to plant shady trees, and from which points commanding views would be obtained over the different parts of the park. The carriage-drive was to have been considerably over a mile in length, and it was proposed to make it 30 feet wide, with foot-paths on either side 9 feet wide. The minor walks, which vary in width from 6 to 9 feet, would have been 3¼ miles in length.

A shady walk was arranged on the top of the embankment, and by the River Soar it was intended to widen this embankment with spare soil from other parts, and to plant it on either side with ornamental trees and shrubs.

There was to have been a walk on the south-east side of the park commencing at one of the principal entrances and leading, for the most part, through the plantation up to the refreshment-rooms, which were to have been situated in the southern corner of the park. A flower-garden was to have been placed in front of the refreshment-rooms, and on its outer circle it was intended to plant a double row of red-twigged Limes, with a walk in the centre where visitors might sit and take their refreshments in the shade—the walk to be continued from the back of this on to the embankment, and carried round to the north-east entrance. Rooms for ladies and gentlemen were to be arranged in the immediate vicinity of the refreshment-rooms, and the band stand in tolerably close proximity; walks were to have been arranged to cross the open space in the park where thought necessary to abridge distances.

It was proposed to have a Rose garden on the north-west side of the park, and near to it a garden for Rhododendrons, with walks encircling them.

The lake, about four acres in extent, was designed so as to have an ornamental effect, and also with a view to its appearing as large as possible. It was to have been bounded on one side by the carriage-drive, and on the other side by pleasant walks, and planted with groups of shrubs and some of the rarer kinds of specimen plants. On the side of the carriage-drive it was intended to plant groups of Rhododendrons and other American plants chiefly—in fact, to make the lake and its margin as interesting a feature as possible; for although the park is enclosed on three of its sides with canal and the river, no water would be seen in the park but the lake, which it was intended should be made of an uniform depth of 3 feet, which would be sufficient for boating in the summer, and safe for skating in winter. It was proposed that the water should be taken from the River Soar, as near the weir as practicable, through an iron pipe fitted with a valve to regulate the supply. The carriage-drive would have been carried over a narrow portion of the lake by a rustic bridge, from whence one of the best views of the lake would be obtained. The boundary of the park, and some beds in the centre, were intended t be planted with the ordinary kinds of deciduous and evergreen shrubs, and a considerable number of such trees as Limes, Elms, Chestnuts, Planes, Acers, and Poplars, were to be planted in various parts of the grounds, so as to produce shade in the quickest space of time, together with a number of Coniferous trees planted in groups outside the carriage-drive, &c., with specimen plants of the choicer kinds in all available places, as indicated on the plan. The small peninsula marked 10 on the plan was to have been planted with Weeping Willows, as well as the three spaces on the weir. A large space for manure, composts, and tool-sheds was provided for near the eastern entrance (14 on plan), and a reserve garden on the north side of the weir. *Geo. Eyles, Landscape Gardener, 10, Mortlake Road, Kew.*

References to Plan:—1, entrance gates; 2, Rose garden; 3, 3, lakes; 4, flower garden; 5, refreshment rooms; 6, avenue of Lime trees; 7, ladies' waiting room; 8, gentlemen's ditto; 9, band stand; 10, peninsula to be planted with Weeping Willows; 11, 11, 11, spaces on the weir, ditto; 12, 12, path on river bank; 13, reserve garden; 14, yard for tools, manure, &c.; 15, River Soar; 16, sloping bank to river; 17, sloping bank to weir pool; 18, bridge; 19, 19, canal; A A, vantage points, proposed to be planted with shady trees. The isolated trees on the plan are deciduous, those grouped are coniferous.

Fig. 76.—Plan for Leicester Park: section on line *i* to *k*, p. 397.

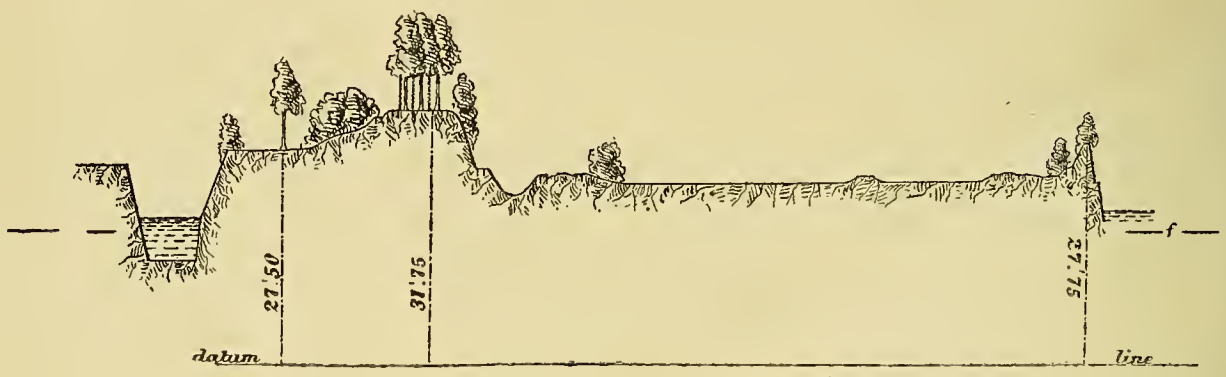


Fig. 77—Plan for Leicester Park: section on line *e* to *f*, p. 397.

## GREENHOUSE FLORISTS' FLOWERS.

Azaleas.—The earliest of these are now in flower, and others are fast coming on to succeed them, but with careful management the flowers remain twice as long in good condition now as they do later, when the weather is hot. Weak guano water is a good aid to any plants that may happen to be pot-bound, but care must be taken not to make it too strong, else the small hair-like roots will be injured by it. Those that have done flowering should be placed in a warm house to make their wood, so that the flower-buds may set early for next season's forcing. Any plants in bloom must be shaded from the sun, as they are very easily injured thereby. By judicious shading, and attention to ventilation, it is astonishing how long plants last in beauty. I need not again urge the great importance of keeping all the leaves perfectly clean—free from thrips and red-spider.

### Calceolarias.

Where large specimen plants are required the plants should now be well tied out, and this should be constantly attended to as the plants advance in growth. Rapid growth is now being made, and as the weather is much warmer, greenfly spreads rapidly if there is any of it on the leaves; indeed, it is better to fumigate now as a precaution. Younger plants in small pots should yet be potted on into the pots in which they are to flower before they become pot-bound. This class of plants require good drainage. Some growers recommend syringing the leaves regularly, but this does not improve the appearance of the plants, and it is not necessary as they can be kept in the best health without it.

### Chrysanthemums.

The object of exhibitors of Pompon specimen plants is to get them up into good-sized plants early in the season; with this object in view the early propagated plants (that will now have filled the 60-sized pots in which they were potted with roots) should be potted on without delay, if not already done, as advised for the large-flowering section last month. Keep the plants close to the glass; free them from greenfly by fumigating, and admit air very freely, removing the lights when the weather is fine.

### Chinese Primulas.

The best varieties, from which to save seeds, should be marked and set aside in a light airy position. As the double varieties go out of flower they should also be placed in a similar position, and be kept rather dry at the roots, in order that they may be in good

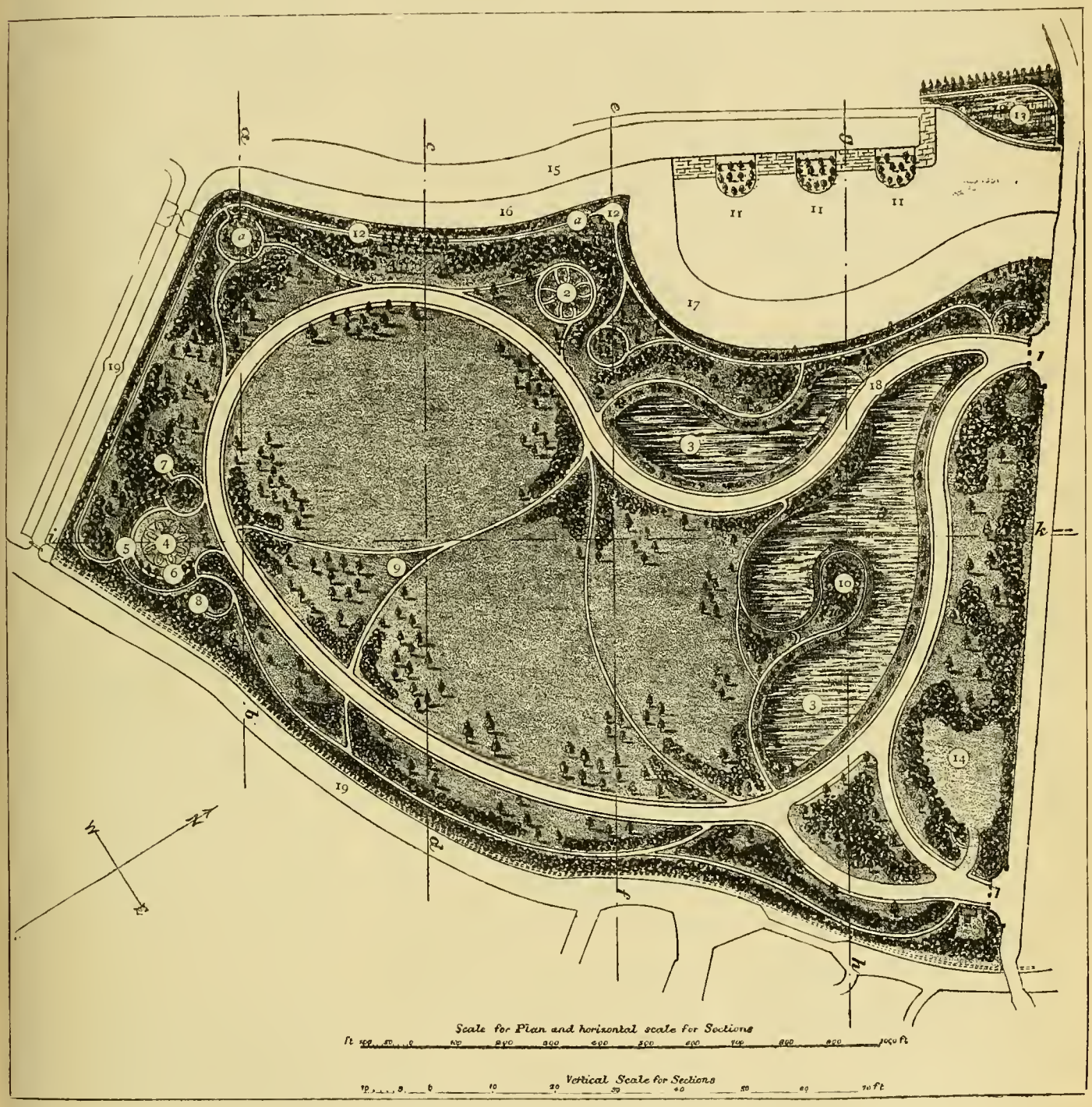


Fig. 78.—Proposed plan for the park at Leicester. (see p. 396.)

condition to take cuttings from. The plants still form a beautiful feature in the greenhouse, but they are not valued so much now as they are earlier in the season.

Cinerarias.

Large specimen plants will now be coming into flower, and as the first blooms open, tie out and arrange the flower-trusses, so as to form a compact and regular head of bloom. Give weak manure-water at every alternate watering, and shade from the sun during the hottest part of the day. If it is intended to keep any plants to flower very late, they should be removed to a lean-to house facing the north. If the plants are in small pots, and well filled with roots, they require more water in proportion; all such plants as these and Calceolarias suffer sadly if they become over-dry at the roots.

Cyclamens.

These are now in full beauty, and the plants merely require a sufficient supply of water and liquid manure occasionally. As the flowers fade, if it is not intended to save seeds, the stems should be pulled out from the crown, instead of cutting them. If it is intended to save seeds, place the selected plants in a similar position to that assigned to the Chinese Primulas. Sow seeds in a gentle bottom-heat in the forcing-house, if this has not yet been done; but I find if seeds are sown in January, and the plants grown on in heat, they will produce a goodly display of bloom within the twelvemonths.

Hyacinths.

The plants that have been grown on in the greenhouse without any more artificial heat than just enough to keep out the frost, will now be in flower. The spikes should be neatly tied to wire supports, which may be placed so that they cannot be seen; the bells should also be arranged with a pointed stick so that they may form symmetrical spikes. As the plants go out of bloom they should be placed first in cold frames, and ultimately out-of-doors, and be supplied with water until the foliage becomes yellow, when they may be shaken out of the pots, and the bulbs cleaned and dried.

Zonal Pelargoniums.

The plants should now be in an airy house, and well exposed to light and air; as they naturally flower later than the stage Pelargoniums it will be necessary, if they are to be exhibited at the same time, to push them on with a little heat, but this ought to be accompanied with sufficient ventilation. See instructions as to repotting, &c., at p. 238.

Petunias.

Seeds may now be sown of these, if this was not done in the early part of the month. They may be sown on light sandy soil, and the pots or pans placed either in a forcing-house or hotbed. Continue to put in the healthy growing points of the young plants as cuttings; they strike root very quickly in a gentle bottom-heat. Pot off into small pots those already rooted.

Verbenas.

These require very similar treatment to Petunias. The seeds may yet be sown; they speedily vegetate, and the plants make very rapid growth. Those intending to exhibit cut blooms in the summer ought to select the strong healthy points of the early spring-struck plants, and insert them in a fine soil in a hotbed. The plants should be grown on steadily after being potted off in cold frames. If it is intended to exhibit plants, these should be grown on from earlier struck cuttings; but in this case also spring raised plants are the best.

Fuchsias.

The earliest growths of these should also be selected and propagated in a hotbed, potting each plant off singly in small pots as soon as they are rooted. The old plants, if they are just starting, should be turned out of the pots in which they have wintered, and be repotted after removing a considerable portion of the old soil from the roots. This plant likes a rich compost, but it must be an open one — good loam four parts, rotten manure one part, leaf-mould one part, and some crushed bones, with bits of charcoal as large as Hazel nuts. Healthy plants of the best varieties of Fuchsias are a good feature in any garden. Young plants propagated now make fine flowering examples in August and September. *J. Douglas, Loxford, Ilford, E.*

## Orchid Notes.

The Broomfield Orchids. — Mr. Robert Warner's collection of Orchids is one of the oldest that we know of. He has been a cultivator of this class of plants for many years, and his name as such stands prominent amongst the lovers of these beautiful plants. For a number of years it has been our privilege to visit this collection, but never before have we witnessed such a magnificent display of Orchids in bloom at Broomfield as there is at the present time. There is a house 60 feet in length and about 18 in width, on entering which a gorgeous sight presents itself such as we shall not soon forget. The whole length of the side and middle tables was one mass of the beautiful flowers of the Odontoglossum (of which Mr. Warner has all the known species and varieties that can be collected), and of many of the bright coloured Masdevallias, which produced a most unique effect. Among the long drooping spikes of the white O. Alexandræ, O. Pescatorei was also well represented with its branching spikes, and O. triumphans was very conspicuous with its golden-yellow and crimson flowers. O. Hallii had very long spikes, and the beautiful variety we saw here is one of the best for producing a good effect amongst the various others of its genus. O. Andersoni, of which there were several varieties, also some very fine varieties of O. cirrhosum with their white and spotted flowers, were also conspicuous. There were also many varieties new to us, some of them being very distinct. Mr. Warner looks forward to being the fortunate possessor of many more new and distinct forms of the same genus, as he has about 8000 O. Alexandræ that have not yet bloomed in this country, he having employed a collector to search the best localities, and he has also received many from various other sources. The collection of Masdevallias is well cultivated—not a spot to be seen on the leaves, which are very broad, and the flowers produced are of exquisite colour. Mr. Warner is equally enthusiastic about procuring the best varieties of these plants, in order to produce the desired effect in making his Orchid-house look gay, and to form as they do such a good contrast amongst the Odontoglots; the foliage of these plants is of a dark green colour, which assists in showing off their beautiful flowers to the best advantage. Never in our experience have we seen a better grown collection of Odontoglots than Mr. Warner possesses.

Thunias.

This is a genus of very beautiful Orchids, and as they are easily grown and can be maintained in good health in any ordinary stove no collection of hothouse plants should be without them. Our plant-houses are too much overdone with "foliage" plants, and the encouragement they receive everywhere at country shows still further tends to the more full development of Crotons, Pandanads, Palms, &c. Flowering plants, as a rule, require much more attention than those grown merely for their foliage, and many of them, and those the most beautiful, are much subject to insect pests. Except aphis, which can easily be destroyed by dipping the plants in soapy water or by fumigating, Thunias are not much trouble in that way. Their cultural requirements are also of the simplest kind. They ought to be repotted once a year, and now is the time to do it. Ours have been potted to-day (March 18). During the last four or five months the pots containing the plants have been placed aside in a corner of the stove to rest; they remain quite dormant, and receive no water. About the beginning of March they are watered with tepid water to saturate the compost, and very soon fresh growths start from the base of the old stems; following the appearance of the growths are the fresh rootlets, and the time to repot is just before these appear; they are very brittle and are sure to be injured in the potting. When our plants were turned out it was seen that from one or two of them roots were starting freely. We shake all the old soil from the roots, and part the stems singly. Only the previous year's stems will be alive; the older stems are dead, and should be removed. Some persons pot the plants in turfy loam; they will grow and flower in this, but not nearly so well as they do in equal parts of turfy peat and sphagnum, with broken potsherds and bits of charcoal added to it. I also fill the pots half full of drainage. Water must not be administered very freely, until it is seen that the roots are running through the compost, when liberal supplies must be given. The plants will produce their flowers in June, July, and August, and these are produced on terminal racemes on the present year's growths. The species grown here are T. alba, which with us is the latest to flower, and is the least attractive. The flowers are pure white, except the lip, which is marked with purple lines. T. Bensoniæ is a very beautiful species, with much larger flowers, of a bright purple colour, and it also lasts a considerable time in beauty. T. Marshellii blooms earlier than the others, and is very attractive; its flowers are large, white, except the lip, which is marked with yellow, like Cœlogyne cristata. When the flowering period is over water is still applied, but not so freely, and as the leaves become yellow in the autumn it is entirely withheld. These fine Orchids can be recommended to those who do not grow a collection, as besides their easy culture they do not get out of order like Cattleyas and other members of the great Orchid family. *J. Douglas, Loxford, Ilford.*

Cattleya citrina.

"W. M." asks what wood is the best on which to grow Cattleya citrina? It will succeed for a few years on almost any kind of wood. Its roots will run freely and appear to be well satisfied so far as root-hold goes on any of the following kinds:—Acacia, Teak, Box, Birch, Pear, Apple, Thorn, Yew, and Mulberry. To these may be added Oak and the lower portion of Tree Fern stems. The plants should be securely fastened with wire to the blocks and suspended leaves downwards. Some growers go even farther than this, by hanging the block parallel with, and with its back nearly touching the roof glass, so that every portion of the plant is shaded by the block. It is well to try this charming plant many ways, for few can boast of growing and flowering it well for half-a-dozen years. A light airy position in the cool-house is thought by most growers to be the best place for this plant, while others believe firmly in the sun-heat and light of the Mexican-house, and some grow it in the vinery. I would advise "W. M." to try it in the cool-house. The block should be dipped for the present about every three days. Later on, when we get more light and heat and as more roots are pushed along the block, a daily dipping must be given. The flowers are produced from the apex of the newly made up growth, and will open more kindly in the intermediate-house. *J. C. Spyers, Burford Lodge, Dorking.*

Flowers of Hybrid Orchids and Frost.

I received during the severest frost a box from Mr. W. Bull containing fine flowers carefully packed as is usual in the two neighbouring establishments at Chelsea. A strong wooden box contained the flowers packed in moss, and the box was covered with a thick layer of cotton, which was finally enveloped in strong paper. Microstylis chlorophrys, Odontoglossum Lindeni, cirrhosum, cirrhosum gemmatum, came in the finest state possible. On the contrary, the flowers of three Odontoglots regarded as hybrids—viz., two varieties of O. mulus and a critical one (578)—had greatly suffered from the chill, notwithstanding Mr. Bull's great care. This is a very curious fact, worthy of further observation. We like to think of hybrids as strong as are "Equus mulus." Here, however, is an instance that one of the most delicate Bornean Orchids bore the frost better than what we consider as hybrids of Orchids from the high Cordilleras. *H. G. Rchb. f.*

Orchids at the Pine-apple Nursery.

In this establishment the rare Odontoglossum hebraicum is now flowering; the ground colour of the sepals and petals is pale primrose, the Hebrew-like marking reddish crimson. The plants here were imported amongst a lot of O. Alexandræ, O. Alexandræ luteolum, and O. gloriosum. It is a handsome kind, and one of the scarcest of this favourite family. In the same house near it was an extraordinarily fine form of Oncidium cucullatum, the lip almost as large as that of O. Lanceanum, the spotting very deep and distinct. The collection of cool Orchids here is in especially fine condition. Amongst Odontoglossums numbers of the following are in bloom:—O. Hallii, O. Hallii xanthoglossum, O. Alexandræ (many forms), O. gloriosum, O. odoratum, O. Cervantesii, O. luteo-purpureum, O. Horsmanii, O. triumphans, O. Roezlii, O. Roezlii album, O. Pescatorei, O. maculatum. Other Orchids in flower were Dendrobium Wardianum, D. luteolum, D. nobile, D. nobile Burmese dark-coloured variety, D. heterocarpum, Bifrenaria aurantiaca, Oncidium sarcodes, O. Cavendishianum, Cypripedium Haynaldianum, C. Boxallii, C. villosum, Epidendrum ellipticum, E. Stamfordianum, Cœlogyne ocellata, &c.

# Garden Operations.

## PLANT HOUSES.

Stoves.—The plants in this department will now be making good progress, with the aid of brighter weather and more sunshine. Close early on all favourable opportunities, allowing the house to rise to 85° or 90°, and keep the plants well syringed both back and front, as no mere slight sprinklings will avail if the cultivator is determined to keep insects in abeyance. A night temperature of from 65° to 68° will be sufficiently high, even a few degrees less will be better when experiencing a biting wind and keen frost. Now that the sun has greater power, thereby causing the temperature of the stove to rise rapidly, the effects of which are soon felt among the more tender foliaged plants, the blinds ought to be got in readiness and fixed without further delay. It is a good plan to group the plants in such a manner that those which require the most shade can be accommodated without detriment to those requiring less, or scarcely any, except in the hottest weather. Among the former may be classed Alocasias, Anthuriums, and Marantas; among the latter, Crotons and the majority of flowering plants. I have found the blinds most serviceable at this season of the year on windy and frosty nights. If let down at nightfall and drawn up early in the morning, 4° or 5° may be gained in the temperature of the house in this way. Allamandas will now be growing fast. If they are required to be had in full flower at any given time this can be best ensured by stopping all the shoots about eleven or twelve weeks previously—a remark which will also apply to Bougainvillea glabra; a more even growth is thereby obtained and a simultaneous crop of bloom. Ixoras should be stopped in like manner, allowing them sixteen weeks or a trifle more if a high temperature cannot be maintained. I. coccinea does not succeed so well under this treatment. Epiphyllum truncatum in its numerous varieties, should now be placed in the stove to make growth. They will thrive well under this treatment till the warmer weather returns. If it is desired to increase the stock, this can be readily done at almost any time of the year by cuttings, but if required as small standards by grafting, perhaps this is the best season at which to perform it. As a stock, the Pereskia is chiefly used, but I consider Cactus speciosissimus a far better one since it requires no staking. If it is required to retard the blooming of Anthurium Scherzerianum, the plant should be removed to a temperate-house before the spathes are too far advanced. Medinilla magnifica will now be coming into flower, and occasional doses of liquid manure will be beneficial. Where any mealy-bug exists, watch closely, for if allowed to gather about its large corymbs of flower, they will soon be spoilt.

Ferns and Ferneries.—The majority of Ferns will now be developing new fronds. If the older ones are becoming shabby or happen to be infested with scale, they should be thinned out without delay, before the insects can get settled on the young growths. Watch closely against the inroads of slugs and snails, which will soon make havoc, especially in the case of Adiantums and also of Thamnopteris Nidus. Of this latter Fern they are very fond, and will in one or two nights disfigure the plant for months to come. Where this Fern has to be repotted the compost should be made as rough and fibrous as possible, consisting of peat such as would suit Orchids, with the addition of some broken crocks and charcoal to aid in keeping the mass as open and porous as it can be had. The greater number of Ferns will now require attention in shading on bright sunny days. Some kinds succeed best with a moderate amount of sun, such as those Adiantums and some other Ferns which in the early developed stages of growth assume a somewhat bronzy and reddish character. In the fernery, where the plants are turned out in the soil, the same should be overhauled without delay, renewing the soil wherever possible, and filling up with fresh plants where any may have died or have become exhausted. I would strongly advise the addition of some of the ornamental foliaged Begonias among the Ferns, and another good plant is Ligularia Kæmpferi argentea; these will succeed well where a minimum temperature of about 40° can be maintained in the winter. A good carpeting or undergrowth can be made with Selaginella denticulata [Kraussiana]. Tree Ferns in active growth should have abundant supplies of water. Do not on any account allow them to become dry at the root; this omission will cause the fronds to come up crippled, whereby the plants would be disfigured for the season. Plants of the climbing Lygodiums should have the frond disentangled frequently, as they grow very rapidly, and are apt to entwine themselves together to the future detriment of the plants. L. scandens makes a beautiful specimen when trained on a balloon trellis: it also looks well as a pillar Fern. Any Ferns that it may not be necessary to shift will, if they have become pot-bound, be greatly benefited by occasional doses of weak guano-water. Attend to the stock of such Ferns as I have previously recommended for the conservatory, and shift any that may require it before they are removed to that structure.

Conservatory.—Give close attention here now there is a good supply of bloom, removing all decaying flowers and faded plants at every opportunity. Shading will now be requisite for the prolongation of plants in bloom, especially Camellias. *James Hudson, Gunnersbury House Gardens, Acton, W.*

## FRUIT HOUSES.

Pines.—It is of considerable importance that Pines should be kept scrupulously free from insects, as, unless this is done, high-class cultivation will never be attained. White-scale and mealy-bug are the most detestable pests, and next in order comes the brown-scale, which, however, is not so difficult to get rid of. The two former can only be eradicated by the destruction of all the plants affected. It will be wise practice under these conditions to resort to rigid measures of extermination, instead of doing it by halves; for if only a few germs are left, or one single plant overlooked, this will suffice to contaminate a whole collection. Before establishing a fresh lot of plants, let the houses and pits be thoroughly disinfected by sulphurous fumes strongly applied when the compartments are vacant, when every insect will be destroyed. This is the only reliable remedy. Although these plants are naturally clean when in good and robust health, yet on the other hand, if growing in close proximity to filthy plants, the insects will soon make themselves visible, even though the plants are in the highest state of luxuriance. When procuring fresh kinds, subject them for a couple of months to quarantine before admitting them into the general stock; and if the new-comers are obtained with a *bonâ fide* guarantee that they are clean, they will save much anxiety and risk. As much valuable space is at disposal in the shape of shelves and other vacant places near the glass, this may be utilised by growing Calanthes and Eucharis, or any other plants that are known to be clean; but this should be strictly adhered to. Towards the end of the month raise the temperatures all round. With increased light and longer days, plants in all stages of growth will make rapid progress. Keep fruiting houses at from 70° to 73° by night, according to the state of the weather, and by day from 80° to 85°. Close the houses early in the afternoons, and make the most of every ray of sunshine; damp each compartment as soon as it is closed, then syringe the plants from the back of the houses towards the front, this causes the moisture to rise over the roof, thereby steaming the glass; this prevents the plants from burning, although they are subjected to a high temperature, and the plants are quite safe at 90° or 95°. This not only greatly accelerates the growth of the plants, but also diminishes the use of fire-heat. Keep succession plants at 65° to 70° by night, with a rise to 75° to 80° by day. Rooted suckers for later potting may be kept at 60° to 65°, with a rise of 10° by day. The early closing and damping as above indicated applies to plants at all stages. The young leaves in succession plants often stick together; these should be carefully disentangled by the hand or a stick, and those leaves that touch the glass should likewise be hauled down with care. *D. Wilson, Castle Hill, Devon.*

### Vines.

During the present bright and favourable weather Vines in the earliest house will swell rapidly; keep them still at a night temperature of 68°, raising it early in the day to 80°, and giving a little air early and increasing it as the temperature rises. Close early in the afternoon, and damp paths and border several times daily to keep the atmosphere moist and genial. Keep the evaporating pans constantly filled with manure or guano water, which will benefit them greatly. If any signs of red-spider appear paint the pipes when very hot with sulphur after the house is closed in the evening but put on air early the following morning. When the border requires water give a copious watering with tepid manure-water, enough to thoroughly soak every particle of the soil. Succession houses in bloom should have a drier atmosphere until they are set; tap the rods several times daily to disperse the pollen, and any shy-setting varieties had better be impregnated with pollen obtained from the Black Hamburgh. Muscat of Alexandria in bloom will be better kept at a night temperature of 70°, with a rise of 10° by day, closing the house early, and allowing it to run up to 95° with bright sunshine; if at all shy in setting fertilise them with Hamburgh pollen, but in the case of healthy Vines this is not necessary. We usually damp the Muscat-house when in bloom early in the morning, so that it dries up before mid-day, and then again at closing time, and they invariably set as freely as Black Hamburghs, by tapping the rods several times daily. The varieties Mrs. Pince and Muscat Hamburgh are better fertilised with Black Hamburgh pollen, or there will sometimes be many small berries. Late Muscats, Alicante, and Lady Downe's, which were started on March 1, and are breaking, keep to 65° at night, raising the heat gently until it reaches 70° when they are in bloom, with a rise of 10° by day, always bearing in mind to force in the daytime, when there is the greatest amount of light; stop them at three or four joints beyond the bunch, according to the space there is on the trellis, keeping only sufficient foliage to cover it thoroughly without crowding, for a fair amount of sturdy foliage is much better than a greater quantity if not fully exposed to the light. Now is a good time to prepare borders for permanent vineries, and if both inside and outside borders are used (which is the best plan) they can now be planted in inside borders, but if outside borders only are used they will be better planted early in May. If planted out of pots they will be better to break a few inches long, and then the soil carefully removed from the roots and laid straight in the new-made border, which had better be made 6 feet wide inside and out, and then gently trod to make it solid, or young Vine eyes put in square turfs as recommended in previous Calendars when about 2 feet high can be taken, turf and all, and planted where they are to remain; then keep the house moist and close for about a week until they start to root in the new soil, then gradually admit air and let them make plenty of foliage the first year without stopping them. Any late houses of Black Hamburghs in a bad state can still be top-dressed if seen to at once, using the compost previously recommended for borders. Attend to pot Vines swelling, and see that they have plenty of tepid manure-water, as if well drained they will take a liberal supply of water, but if plunged in rotten dung and leaves they will not require so much as when standing on a dry surface. Vine eyes in turf squares and pots, after they have made roots and begun to grow, will require plenty of water, and if in pots should be shifted on before the roots become pot-bound. Grapes hanging in the fruit-room keep dry and cool, as, if the weather continues warm and dry, fire-heat can be dispensed with. *Joshua Atkins, Lockinge Gardens, Wantage.*

## HARDY FRUIT GARDEN.

Brighter weather and lengthening days are beginning to exert their influence on wall trees, notwithstanding the rather low night temperatures of last week. Apricot blossoms are here and there opening, and a few Peach blooms are commencing to show colour; so the work of protection must be attended to without further delay, if the earliest blooms, which are frequently the boldest and most promising, are to be saved from the probably evil effects of the uncertain temperatures of this variable month. Affix temporary coping boards to walls devoted to those trees, to which either single or double nets can be fixed, adding more folds of netting should the state of the weather demand it; in most cases, however, a doubled net will be found to be sufficient to check rapid radiation of heat, and to preserve a safe temperature. Heavier protecting material must not be allowed to remain over the trees for any length of time, but must be rolled up (or let down, as the case may be) every day on which the weather is not extremely bad. Where walls are much swept by winds, owing to their position and from lack of shelter at their extremities, a few upright boards set at intervals against the walls will be found of great assistance in breaking its force, and may be retained until the foliage is well advanced. Any dressing for the shoots of wall trees, or for the walls themselves, in order to keep in check red-spider, aphis, and mildew, whether applied with a brush or from the garden engine, cannot be well used whilst the trees are in bloom; therefore, if this operation has been delayed, lose no further time. Continue to graft Apples, Pears, Plum, Damsons, &c. Where any Strawberry quarter remained unmulched it would be well to see to them at an early date; and should any work recommended to be done in previous Calendars be behind let it be completed as speedily as possible. Should favourable weather prevail the covering of Figs may be removed, and the pruning proceeded with where the operation has not been completed in the autumn. Spring pruning has the advantage of allowing the retention of those shoots on which the embryo Figs have been least affected by the frost, but has the disadvantage of inducing bleeding if too long delayed. Shoots that have borne fruits and are not required for extension may be cut out, and also remove or spur-in, according to the over-crowded or thin state of that portion of the tree under operation, all shoots of a weakly growth and unfruitful appearance. No shoots that have not now round plump buds containing the embryo Fig can produce fruits sufficiently early to ripen in the open air in this country, consequently all such growths can be cut out if not required for the general furnishing of the trees. After the loosened branches have been pruned let them be secured very firmly to the wires with tar-cord, or, nailed to the walls with good strong list, as the limbs of Fig trees become very weighty when covered with their massive foliage, on which wind takes a powerful hold, taxing the strength of the most durable materials. *R. Crossling, St. Fagans.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | Mar. 28 | Sale of Lilium auratum and other bulbs, at Stevens' Rooms.<br>Sale of Orchids in flower and Japanese Lily bulbs, at the Auction Mart, by Protheroe & Morris. |
| Tuesday, | Mar. 29 | Sale of Imported Orchids, at Stevens' Rooms.<br>Sale of Pinks, Carnations, Roses, &c., at the City Auction Rooms, by Protheroe & Morris. |
| Wednesday, | Mar. 30 | Royal Botanic Society's First Spring Show.<br>Glasgow and West of Scotland Horticultural Society's Show.<br>Sale of Hardy Plants and Bulbs, at Stevens' Rooms. |
| Thursday, | Mar. 31 | Paisley Florists' Society's Spring Show.<br>Sale of Nursery Stock, at the Whitchurch Rectory, Edgware, by Protheroe & Morris.<br>Sale of the first portion of Mr. Day's collection of Orchids by Mr. J. C. Stevens. |
| Friday, | April 1 | — Continuation of Sale of Mr. Day's Orchids. |

THE SOWING OF SEEDS is one of those things that every one possessing land, from a square yard to a large estate, thinks he can do as well or better than any one else; still it is not too much to affirm that it is seldom done so well as it might be. And yet the whole subject of seed sowing may be said to lie in a nutshell, thus:—sound seeds, suitable beds, timely sowing, proper covering, and protection. Of course it is the merest truism to affirm that no skill in sowing can make up for lack of quality in seeds; and this lack of quality, notwithstanding adulteration penalties, is still very common. It is not needful to mix cooked or worthless seeds of the same or different species to produce indifferent seeds; a mere lack of care in selection, roguing, harvesting, or storage, may produce any amount of seeds of a very low quality. The rage for cheapness and the strenuous efforts made to meet it in many quarters are totally incompatible with the growth of seeds of the highest quality The whole of the processes involved in the production of good seeds are expensive. The skill to select the best strains, and constant attention needful to keep them true, costs much time and money. Good soil is also needful to give good seeds, and the whole circle of its sowing, cultivation, harvesting, cleaning, sampling, storage, packing, and sale, is an expensive one. From the time it reaches the earth as a seed crop, till it returns to it again as a produce crop, it costs money. Many people complain of the dearness of seeds. Those conversant with the capital, skill and labour devoted to its growth often marvel at the cheapness of good seeds; but whatever the actual price of the latter may be they are cheapness itself contrasted with what are called cheap seeds.

Some cultivators seem to imagine that if they have only a great weight or bulk of seeds for their money all will be well. There cannot be a greater mistake. The value of seed is the exact number of healthy plants it can produce. The percentage of growing seeds in samples varies as widely as from 10 to 95 per cent. Supposing seeds that yielded only 10 per cent. of living plants sold at a quarter of the price of seeds that yielded 95 per cent. of bad seeds, the good seeds would still be more than nine times cheaper than the inferior. Nor does this express all the difference in favour of the good seed, for the inferior probably only yielded a half or a quarter of a crop, though the rent of land, rates, cost of tillage, culture, and probably harvesting were just as high for the poor crop as for the best. In fact, some of these items, such as hoeing, weeding, &c., are often highest on the worst crops, for when the crops fail the weeds multiply and thrive the more.

These are a few of the considerations that should induce every one to sow in their gardens and on their farms the best seeds only; but how to get them—that is the question. The answer is less difficult than many imagine. Deal only with the best and most respectable seedsmen, and be willing to pay a good price, for the dearest seeds are invariably the cheapest in the end. Even the best may not always grow, for in some seasons it is impossible to furnish perfect seeds, and millions are killed by being sown in beds no better suited for them than a pillow or mattress of Furze is to their cultivators.

This leads to the second point of success—suitable seed-beds. To be so they should be dry, fine, and warm; some would add other qualities, such as richness, moisture, &c., but these three requirements are, on the whole, the most essential. There are few soils so poor as to be unable to bring forth seeds, which, indeed, take little from the earth at all, and in the open air in our climate the earth is mostly too moist rather than otherwise for the mere germination of seeds. On the other hand, to cast small seeds into a swamp—and such many badly drained gardens are in the spring—is to invite and ensure their destruction.

The soil should be fine as well as dry, and this almost of necessity. Seeds have great mechanical difficulty in striking root into a hard clod, and to cover small seeds with clods is to bury them alive until they perish or a season is lost. Few things are more essential to a good seed-bed than a fine sweet mellow soil. And then it should be warm; a certain amount of heat is essential to germination, consequently, especially in the early part of the year, the sunniest spots in the garden, sheltered as well as sunny—and if sloping gently to the south or west all the better—should be chosen for the sowing of all delicate seeds. Should such not be available it will be far better to sow them under glass. A temperature of 45° to 50° is probably the most favourable for the vigorous development of most hardy seeds. If they have more heat the germs draw up into weakness, if much less they are apt to be chilled and stunted at starting, which they seldom get over afterwards. Timely sowing is also important. Nothing is gained, but a crop and a season are often well nigh lost by sowing too soon. The damp, cold ground is about the worst possible and most dangerous granary for the safe keeping of garden seeds. Better far keep them in paper bags or in drawers till the earth is warm enough to receive and promptly develope them into growth. Neither should seeds be sown too late; the excess of heat brings them up with a rush, and the speed is so great that the strength of the plants is left behind.

The proper covering of seeds is a vexed question that has hardly yet been settled by men of science, while almost every practical man has his own rule-of-thumb modes and degrees of covering. Two facts, however, are brought out very prominently. One is, that seeds are long-suffering in the matter, and will manage to grow at various depths from nudity to several inches of earth; the other is, that most seeds are covered to excess. All covering is in a sense unnatural—Nature sheds all her seeds on the surface, though by various devices she often contrives to bury them to a greater or less depth. This is at least a strong argument for flat sowing. The depth of one or two diameters of the seeds is a rule which may be applied with safety to all seeds. For one seed that perishes from exposure to the air, probably a thousand are buried alive under an impenetrable barrier of earth.

The protection of seeds is the last, and one of the most important, points about their sowing. It seems as if it were forgotten at times that seeds are sown to grow, and not merely to get rid of them; for they are not seldom cast into beds already crammed full of the seeds or roots of weeds, and the germs and perfected forms of slugs, grubs, worms, and other insect pests. The first are ready to smother the garden seeds in the germ, the last waiting to devour the first growth of the seeds and eat up their substance bodily. Almost as well cast valuable seeds into the sea as into such nests of weeds and dens of insects. Seeds should be protected from all such danger by insuring that the beds are clean before they are cast into them. The seeds may also be protected by various dressings, so as to make them invulnerable to the attacks of insect pests below, and birds or other seed pilferers above-ground. Sprinklings of paraffin oil have proved effective for both purposes. This oil, however, varies so much in strength that unless it is carefully used it kills the seeds while rendering them unpalatable. The simplest and surest remedy is a coating of red lead round the seeds. The simplest mode of applying it is simply to wet the seed and dust it with dry lead, turning over the seed until the whole is coated. It is thus impregnable as the old warriors in their iron coats of mail—nor slug nor bird nor mice will touch it, while the lead neither hinders germination nor weakens the vital power of the germ.

These instructions in seed sowing may read somewhat tediously, but they are simple and easy in practice; and if generally carried out they would go far to abolish the perpetual grumblings about bad seeds, and to prevent those failures of crops which are among the greatest drawbacks to the pleasure of gardening. It is hardly too much to assert that nine out of ten of these failures arise from bad sowing rather than worthless seeds. How many seeds or tender germs do the slugs destroy annually? A few days after the snow that fell on December 18 had disappeared, a row of fresh green Lettuces charmed our eyes and excited hopes of an early salad—a most cheering prospect in the midst of the wreckage of so many promising vegetables. They were not looked at for three days—on looking for for them then they could not be seen. On closer exmination it was found hosts of small black slugs had grazed them off as clean as a hungry flock a field of sweet Turnips.

Supposing seeds had been sown in such a bed assuredly few or none of them would have ever appeared, and the seedsman might have been saddled with the blame due only and alone to the ravenous slugs.

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—— AZARA GILLIESII.—The genus Azara is little known outside botanic gardens; nevertheless it includes a few species of evergreen or half-evergreen shrubs of much interest and considerable beauty. Of A. microphylla, one of the prettiest of hardy evergreens, we gave a figure and description, 1874, vol. i., p. 81, and we now give a figure (fig. 79) of A. Gilliesii, with its drooping branches, long slender leaf-stalks, and Holly-like leaves. The flowers are in axillary panicles, and are of a creamy yellow colour. According to Mr. SMITH's observation the flowers mature their anthers before their pistil (proterandrous), and hence the stigma of any given flower must be fertilised by pollen from some other flower (cross fertilisation). Up till last year we might have spoken with some confidence as to the hardihood of this species, but at Kew, at any rate, the shrub succumbed to the frost, and we can in consequence only recommend it to be planted in the South of England, in Ireland, the west coast of Scotland, or other favoured spots; but for winter gardens, corridors, and the like, it would be well adapted. The plant is a native of Chili, and belongs to the Bixaceous order.

—— THE PHYLLOXERA LAWS. — Nurserymen must be careful what testimonials they print. We have just read of one case wherein one of our enterprising nurserymen prints testimonials from customers at the Cape, acknowledging the receipt of plants from England by post. The case is instructive, as showing how readily these absurd laws may be broken; and, as in the present case, the plants were not Vines, and not in the least likely to be the means of introducing the Vine-louse, we confess our objections to law-breaking are not so strong in this as in other cases, but for all that it is well to be on the safe side, and our nurserymen may be interested in knowing that any one introducing plants, or any portion thereof, into the Cape is liable to a penalty of £500 or two years' imprisonment. When the excitement of the Transvaal business is over, the authorities at the Cape may find time to distinguish between prudent precautions and mischievous meddling. We are glad to see so

FIG. 79.—AZARA GILLIESII. A, YOUNG FLOWER, FROM THE SIDE; B, FLOWER FURTHER EXPANDED; C, COROLLA, FROM BELOW, MAGN. (SEE P. 400.)

very competent a witness as Mr. Riley stating :—"I do not hesitate to declare that it is going beyond the bounds of reason to prohibit the importation of anything more than Grape Vines or Grape cuttings from countries or districts where the Grape Phylloxera is known to occur."

—— Heleniopsis umbellata.—This is a Liliaceous plant of tufted habit, with rosettes of oblong acuminate leaves, from the centre of which rises a flower-stalk provided with appressed leafy bracts, and supporting an umbel of pale pink stellate flowers. The species is Japanese, and is in bloom in the nurseries of Messrs. Veitch.

—— Apples.—Thousands of barrels of Apples have been arriving in our markets this season from America ; but two serious complaints are made—one, that the fruit is so badly packed that a large proportion of it is much bruised ; and the other, that a practice, unfortunately not unknown in Covent Garden at Strawberry time, prevails in some cases of putting some good Apples at the top and bottom, and of filling in the bulk with inferior samples. Our American friends might well peruse an article by Mr. Powell in the *American Gardeners' Monthly*, entitled "How to Save your Apples." The sum of the writer's recommendations may be thus given : Gather carefully, handle gently, sort attentively, store in cool dry stores, use judgment in sending the right sorts to market at the right time. We quote the writer's final recommendations in his own words :—"Handle Apples like eggs, and they will not decay. Lay them into the basket ; lay them out of it ; lay them into their bins or barrels. Never drop, toss, nor roll about your fruit, and you will be able to answer, 'They are keeping finely in my cellar—hardly any rotten ones.'"

—— The American Aloe (Agave).—Eighty years ago a flowering specimen was a profitable possession to its owner, if we may judge from an advertisement in the *Times* of August 27, 1800. The plant was to be seen in the neighbourhood of Ball's Pond, near Islington, and is thus described :—"A large American Aloe, having upwards of 2300 blooming buds, supposed to be more than was (*sic*) ever before produced from one plant in England, which, with the regularity of the chandelier branches (thirty in number), gives it the appearance of one of the most wonderful productions of Nature. Admittance 1*s*."

—— The Weather of 1880.—Mr. Edward Mawley, one of the secretaries of the National Rose Society, has published a series of observations on the weather of 1880, as observed near Croydon, on the plan of his former report on the weather of 1879. Mr. Mawley's record is so well put together and so valuable, that we hope it will be continued from year to year. The manner in which the author condenses his array of facts into well-ordered summaries is excellent. The pamphlet is published by Messrs. Bemrose.

—— The Winters of 1879-80 and of 1880-81.—Under the direction of the Royal Horticultural Society information has been collected with reference to the effects of the winter of 1879-80. The results have not as yet been made public, so that it seems very desirable that the effects of the winter through which we have just passed should likewise be noted. In some places, we fear, the destruction has proved greater even than in the preceding winter. The importance of having as full a record as possible of the effects of these two winters is so great that we trust every effort may be made to complete it.

—— Germination of Welwitschia.—The Welwitschia is certainly not an infant prodigy, whatever it may develope into—and it does develope into one of the oddest of created things. But in the seedling stage, in which it may now be seen at Kew, it might pass muster for the seedling of a Sycamore. It is a pity to uproot an old tradition, but it cannot be helped, for it is certain that the two huge leaves of this plant are not, as has been supposed, the persistent cotyledons, on the contrary they are produced above and at right angles to them.

—— New Zealand Veronicas.—These are excessively variable, and puzzling to determine. Among them is one, V. salicornioides, introduced we believe originally by the late Mr. W. Gorrie, and which might pass muster at a little distance for a dwarf Retinospora. It is a small, much branched bush, with very tiny yellow leaves looking at first sight much more like a Conifer than a Veronica. Another New Zealand Veronica, V. Traversii, which we hoped was hardy, seeing that it passed the winter of 1879-80 unscathed at Kew, has succumbed this year ; which is a misfortune, as it was a handsome bush. Perhaps by the sea-coast it may have survived.

—— Florida Oranges.—Vast areas in the south-eastern peninsula of the United States have long been devoted to the culture of Oranges, but of late, as the facilities for exportation have increased, the cultivation has been greatly extended. Some samples lately sent us by Mr. Bullen, of Glasgow, were of remarkably rich flavour, superior in this respect to the bulk of those we receive from the Azores.

—— The Queen and Stoke Park, Slough.—A correspondent at Windsor writes to the *Times* :—"Her Majesty has visited Stoke Park, near Slough, Bucks, the residence of Mr. E. J. Coleman, with the view, it is believed, of purchasing that picturesque and historical demesne. The Queen, accompanied by Princess Beatrice, and attended by the Hon. Horatia Stopford, was conducted through the various apartments, which are furnished with much taste and adorned with rare and valuable collections of statuary and paintings. The mansion has, at considerable cost, been improved by its present owner, Mr. Coleman, while the deer park is one of the oldest in England. Her Majesty, it was understood, was greatly pleased with the interior of the house, which has since been visited by Lieutenant-General Sir H. and Lady Ponsonby, Lord Torrington, and Colonel Sir J. M'Neill. The price asked for the mansion, sculpture, paintings, furniture, and land, is said to be £250,000, the value of the house and demesne, without the furniture and works of art, being set at £180,000."

—— The Cultivation of Fibrous Plants in Mauritius.—Recent reports from Mauritius say that a good deal of attention is now being directed to the cultivation of fibrous plants. Agave fibres, it is pointed out, are already exported to some extent ; Rhea grass (Bœhmeria nivea) has been cultivated in the island with success, but the difficulty of extracting its fibres has discouraged its growth. It is reported that a chemist of the neighbouring French colony of Reunion, M. Rennaud, has discovered a process for obtaining, at a trifling cost, the fibres not only of the Rhea grass but of the Agave and all other textile plants. If such be the case, a new and important class of industry will be opened up in Mauritius.

—— Destruction of Fruits by Birds in New Zealand.—We have heard a good deal of late about the ravages caused by rabbits in the Australian and New Zealand Colonies. We now learn that at Nelson the yield of fruit has been considerably affected by the great increase of fruit-eating birds, the paraquets and blackbirds swarming about the orchards in myriads. In one particularly fine garden of 1½ acre, where the yield has hitherto been exceptionally good, there is not this year a vestige of fruit of any kind, from Apples to Currants, so thoroughly have the birds completed their work of destruction.

—— Scrophularia chrysantha.—In the herbaceous department at Kew this charming oriental species of Figwort is now flowering freely. It has urceolate bright yellow corollas and light green leaves. At first sight the resemblance between S. chrysantha and our naturalised S. vernalis is rather striking ; but the former, besides being a neater, smaller grower, has larger flowers, with exserted stamens, whilst in the latter the stamens are included. Either as a pot or border plant, the subject of this note is well worth growing. We believe a figure of it will shortly appear in the *Botanical Magazine*.

—— The "Breaking" of Tulips.—We demur to Mr. Hibberd's dictum (p. 394), that "the biologists have not even yet, in their ardent search after illustrations of evolution, taken hold of the fact as of scientific interest." It may be so as far as the Tulip is concerned, but the case of the Tulip in no wise differs from the same phenomenon as witnessed in other flowers, and Darwin, Wallace, Müller, Lubbock and others must, indeed, have written in vain if they have not succeeded in throwing some light on a matter which puzzles the florist, but for which the botanist now-a-days readily finds, at least, a partial explanation in the phenomena of reversion and in the reciprocal relation of insects to flowers. Gaily coloured or sweetly scented flowers imply, broadly speaking, insect visitations ; insect visitations bring about cross fertilisation ; cross fertilisation secures variety ; variety ensures that some forms shall be better than others to survive in the battle of life. The processes in Nature may be slow, but they are sure ; the florist does but hasten them for his own purposes. On the other hand, the dull-coloured scentless flowers offer less attraction to insects, or it may be that the flowers do not open properly ; many of the wild Tulips, even though brightly coloured, are rarely ever seen open, and so access to insects is, to some extent, prevented, and then the flower is self-fertilised ; that is to say, impregnated with its own pollen. In such a case we should expect less variation in the seedlings, and consequently a greater relative stability and permanence of character in the offspring. In these two circumstances, then, speaking broadly, viz., variation in the form of reversion to some ancestral condition, and variation according to the needs of the plant in its adaptation to circumstances, the breaking of Tulips may find its cause.

—— Pitcairnia corallina.—This extremely curious, as well as beautiful Bromeliad is now flowering in the famous establishment of Sir George Macleay, at Pendell Court, under the care of Mr. Green. It is a rare and striking species, with plicate leaves (almost like those of a Curculigo), deep green above and farinaceous beneath ; these measured from 4 to 6 feet in length by 6 inches or more in breadth. The long racemes of deep scarlet blossoms spring from the base of the tufted Maize-like leaves. Mr. Green's spike is nearly 2 feet long, and bears about seventy of the beautifully coloured, large, wax-like flowers. It was introduced to European gardens from Choco, in New Grenada, by Mr. Linden ; and Mr. Green exhibited his plant at South Kensington on Tuesday, where it was awarded a Botanical Certificate.

—— The International Horticultural Exhibition at Manchester.—A second edition of the schedule of prizes is issued, in which a little alteration is made in the special prizes offered by the General Horticultural Company. In class 219, instead of six kinds of Grapes being required, it is changed to two or four kinds ; and in class 220, instead of "six other kinds of Grapes," it is "six other kinds of fruits." Special prizes are also offered by Messrs. Paul & Son for Apples, and for vegetables by Messrs. Webb & Sons. Schedules may be had on application to Mr. Findlay, the Botanic Gardens, Manchester.

—— Myriophyllum proserpinacoides.—This is the plant which, since its introduction to Kew about three years ago, has been known provisionally as Herpestes reflexa. It is flowering in the Cambridge Botanic Garden, and by reference to Mr. Baker, of the Kew Herbarium, its correct name has been ascertained. The extremely graceful appearance presented by its slender stems and finely pectinated leaves is now well known, owing to the general recognition of its beauty and the great facility with which it is propagated ; but with this is associated very minute flowers, interesting, however, under the microscope, as the sepals appear to be represented by a tuft of hairs, each formed by cells in single rows. This is of the female flowers, which up to the present are the only ones produced. Though coming from Brazil this plant flourished last year in an open-air pond at Cambridge up to the time of its being enclosed in thick ice. It is flowering in the Cactus-house.

—— Amaryllis and Nerines at the Pineapple Nursery.—This nursery has long been famous for bulbous plants : amongst these Amaryllis and Nerines especially are cultivated in very large quantities ; of the former in a stock of some 8000 there are 5000 blooming plants. The undeservedly neglected but beautiful genus of Nerins is alike present in very large numbers : noticeable among them are N. venusta, N. flexuosa, N. humilis, N. hu ni is angustifolia, N. coruscans major, N. rosea, N. undulata, N. pudica, N. pulchella, N. Fothergillii, and N. Fothergillii curvifolia, the latter unmistakable from the decided inward curve the leaves have at the extremities. To these must be added Mr. O'Brien's

three fine hybrid Nerines—elegans, bright pink; cinnabarina, yellowish-orange; and atrosanguinea, blood-red; these three varieties all form leaves before blooming. Some bulbs of N. filifolia planted out have stood through the winter without any protection, and now appear in better condition than those wintered inside.

—— Violets.—Mr. E. Bland, gardener to Mrs. Graham Smith, at Cranbourne Court, Winkfield, Berks, sends us some bunches of splendidly-grown Sweet Violets, which show how completely he has mastered their cultivation. They consist of Victoria, The Czar, Odoratissima, Marie Louise, and the old Neapolitan, with a few blooms of the double white Belle de Chatenay, which appear to have been gathered from less vigorous plants. The most striking of these for its size, and for the deep purple colour of its flowers, is Victoria, which—though the colour has perhaps a little more of red in it—is in the same way as The Czar, but beats it hollow. Odoratissima is rather a paler purple, finely shaped, and very fragrant. Of the doubles Marie Louise is the most effective, its bright purple being still further brightened up by the white centre; this, too, is deliciously sweet, as is the Neapolitan, in which the colour is of a mauve-purple. The fresh bold healthy appearance of these flowers shows that they have fared well during their growth; in fact, we never saw finer samples of Violet blossoms.

—— Patron Saints.—How is it that Irishmen seem to hold the memory of St. Patrick in such high esteem, whilst the majority of the English people seem by contrast to be almost universally ignorant of the natal day of their great patron, St. George? Perhaps some will find an explanation of this divergent sentiment in the fact that whilst the bulk of the Irish nation are Catholic the English people are Protestant. But that does not fully satisfy the enquirer, because both Scotch and Welsh, Protestants of Protestants, make as much fuss at the proper time over the memory of St. David and St. Andrew as the light-hearted Celts do over their beloved St. Patrick. But not less curious in connection with this matter is the divergence shown in the choice of national emblems. On the past, as on every other St. Patrick's Day, Irishmen in our towns might have been seen wearing the triune Shamrock in their coats, the little pieces of gold skin being added to lend that lustre which Nature fails to furnish. Wherever flowers are sold there was to be seen the Shamrock, arrayed in green and gold, inviting attention from all "thrue pathriots;" and the "thrue pathriots" forthwith bedecked themselves with Trefoil. Englishmen, however, boasting as they can of the saintly champion who conquered the dragon, have also good reason to be proud of their national emblem, the Rose; but whilst Nature permits Shamrock to be sufficiently abundant in March, it does not give us Roses in April, even though they be not wanted till the 23d o the month. Did we Britishers but desire to display our national emblem then, we should find only thef flowers grown in warmth available for our decoration; and therefore we might well demur that such a floral decoration should fall on such an uncanny season rather than in July, when Roses are so abundant that we might wear not merely button-holes, but bouquets. Alas! so unsentimental are Englishmen that they care no more for the memory of St. George than for the man in the moon. They do, however, love Roses rather for their own sakes than as emblems. The Scotchman has his hardy Thistle; but even that is rather out of season on the 30th of November, and he therefore moistens St. Andrew's memory in whiskey. The Welshman has nothing better than the Leek; but with the true Cambrian that pungent vegetable suffices to aid him in keeping St. David's memory green.

—— Tulipa altaica.—This is the earliest Tulip in the Cambridge Botanic Garden, and its brilliant red colour, which is perhaps not surpassed by any, shows it to be a very fine and desirable species. It has not long been introduced to cultivation by Dr. Regel, by whom it was figured in his *Gartenflora*, t. 942. A native of the Altai Mountains, at from 1000 to 6000 feet.

—— Millet's "Angelus."—Potatos in a picture! The idea is too absurd—at least for the æsthetes of the Maudlin school; or, indeed, for Art critics of any kind almost. Poor Millet was, without doubt, a fine painter, but in his life found few of those encouragements that some artists now receive. Perhaps the Potatos were for contemporary critics too utterly contemptible, for he endeavoured to sell his beautiful "Angelus" in vain till M. Van Praet paid him a very low price for it. But now that the poor painter has gone, and the Maudlins no longer damn his reputation, the magnificent sum of 160,000 fr. is necessary to purchase; but, alas! of this amount neither the defunct painter nor his descendants may reap any benefit. Longfellow, in his beautiful poem, *King Robert of Sicily*, tells how

> "He heard the angelus from convent towers,
> As if the better world conversed with ours;"

and it would seem as if Millet wished to pourtray the same thought as passing through the minds of the poor peasant and his wife, who, engaged in the laborious occupation of lifting a crop of Potatos—the which as lifted are lying all around on the ground—hears the melodious notes of the "angelus" floating from the convent tower through the air, and with deep religious reverence cease their labours, and for the moment become absorbed in prayer. Truly for them, humble as was their station and occupation, did the better world converse with ours. More ambitious artists might have woven in with this incident surroundings of a brilliant hue—a garden of Roses glowing in rich and glorious tints; a vineyard full of greens and purples, with peasants arrayed in gay but improbable attire; a cornfield all aglow with the golden grain lit up by the evening sunshine or its setting brilliance, with many reapers in harmonious dresses, and making a very attractive scene. All this would have been forcible and striking, but theatrical, and perhaps unreal. The picture of the two poor peasants, man and wife, amidst their Potatos, suddenly ceasing from their labour on hearing the evening bells sounding the call to prayer, and joining in the general thanksgiving for the bounteous mercies bestowed upon them, is, if simple, also real, and full of devotional sentiment.

—— Anemone apennina var. blanda.—There are some hundreds of blossoms in full beauty of this charming spring Windflower, both on the rockery and also in the bulb beds in the York Nurseries. It flowers fully fourteen days or more earlier than the ordinary form.

—— Products of Greece.—In the report of the British Vice-Consul at Santa Maura, Greece, on the trade and commerce of that island during the years 1878-79, under the head of agriculture we learn that the cultivation of the land is conducted on the most primitive system, machinery and implements of modern invention being unknown, notwithstanding that very creditable progress has been made within the last few years. The natives are both able and anxious to turn the advantage of the soil to full account, but for the want of capital, and in the absence of an agricultural bank that would make advances on easy terms, the power of reclaiming waste land is in the hands of the wealthier owners of land exclusively. In consequence of this, small owners have for the present to content themselves with improving their property within their limited means. The staple produce of the island consists of Olive oil, Currants, and wine, Wheat, Barley, and Maize, all the principal cereals, the produce of which is equal to about five or six months' local consumption. Potatos, nuts, Hemp, and Flax are also produced. The cultivation of the Currant vine has proved a complete success since its introduction into this island some twenty years ago. Olive trees on ground fit for the cultivation of this vine are rooted up to make room for it. The produce is steadily increasing, and it is expected that in a few years not less than 5,000,000 lb. of Currants will be available for exportation.

—— Tobacco Culture in India.—The cultivation of the "fragrant weed" is being attempted with greater or less success in most of our tropical possessions, but, as *The Colonies and India* remarks, in none of them does the industry promise such important results as in India. Notwithstanding the fact that Havana cigars are placed in the highest rank, the produce of the neighbouring island of Jamaica is only just beginning to find its ways into the English markets; and in the same way although from the other end of the world, Manilla cheroots are regarded as standards of excellence, none of their competitors have achieved the same distinction. Australia and South Africa, again, have long been growing their own Tobacco; but, owing to defective modes of cultivation and faulty methods of manufacture, the produce has never been regarded as other than of inferior quality. In India, however, owing to the series of careful experiments which have been carried on for several years under the direction of the Agricultural Department of the Government, Tobacco has been produced of a quality equal to any grown in America or Cuba. In this, as in all other agricultural operations, "climate is everything;" and the regularity of the seasons in India, bringing the certain sunshine which is so necessary for the finer sort of "sun-cured" tobacco, has, together with care and scientific and practical skill in selection of seed and soil, and in the growth, collection, and cure of the leaves, been the secret of the excellence of Indian Tobacco. Two farms provided by the Government at Ghazipur and Pusa, in the North-West Provinces, and recently transferred to private management, have been very successful, the tobacco selling in England at 5*d.* to 7*d.* per pound. It is stated that 4½*d.* is a paying price, and that every 1*d.* over that figure yields a profit of 50 rupees per acre.

—— A New Sugar-cane Pest.—In Mr. Consul Carden's report on the trade and commerce of Havana and the Island of Cuba for 1879 is the following report of a new Sugar-cane bug which made its appearance near Matanzas. It is stated that the fears of its ravages entertained at the time proved to be somewhat exaggerated, and the insects disappeared after a short time, having confined their depredations to a very limited area. The report is as follows:—"The new cane bugs that are rapidly spreading over the estates around Matanzas have been examined by several learned persons, who classified them into two different families. According to them one is a 'pyrale' that enters into the cane through its shoots and feeds upon its very marrow, and the other is a sort of cochineal, known under the name of Coccus saccharis, that conceals itself under the leaves on the upper part, and also causes a great deal of harm to the plant. It is, unfortunately, to be feared that these insects will soon spread widely, and the plant attacked by them soon begins to decay and dies in a few days. From the want of water, heat, and light, the cane this year has mainly fed upon ammoniacal substances, which have imparted to it a premature maturity and prevented it from attaining its full growth, for which reason it is better prepared to be invaded by the insects."

—— The Weather.—General remarks on the weather during the week ending March 21, issued by the Meteorological Office, London:—The weather has been much finer than of late in all parts of the kingdom, although slight showers of rain, snow, or hail occurred during the last two or three days. A thunderstorm occurred at Barrow-in-Furness during the afternoon of the 21st. The temperature was slightly above the mean in all districts. Over the greater part of England the maxima were above 60°, the highest reading reported being 63°, which was registered at Nottingham on the 17th. The thermometer was generally lowest on the 21st, when it fell to 17° at Glenalmond, to 22° at Durham, and to 32° or below at nearly all our northern and north-western stations. Over the southern districts, however, the minima occurred on the 16th. The rainfall was less than the mean in all districts excepting "Scotland, E." Bright sunshine showed a great increase in duration nearly everywhere, the percentages varying from 20 in "Ireland, S." to 33 in "Scotland, W.," and to 52 in "England, E." Depressions observed:—On the 18th a large and deep depression was shown over Norway, and caused westerly gales and fresh or strong winds at all our northern stations, and during the remainder of the period numerous depressions, generally very slight, travelled from north-west to south-east across our islands and the North Sea, giving us fresh, and in some places strong, north-westerly or northerly winds, with showers of snow, sleet, or cold rain.

—— Gardening Appointments.—Mr. J. Chilcott, who for the last six years has been Foreman in the Culford Gardens, has been appointed Head Gardener to J. Paley, Esq., Ampton Park, Bury St. Edmunds, Suffolk.—Mr. James Morton, for the last three years Foreman under Mr. Edward Evans, Gardener to the Rev. T. Staniforth, Storrs, Windermere, has been appointed Gardener to C. F. Brooker, Esq., Woolcotteville, Connecticut, U.S.A.

# Home Correspondence.

**How Potatos Grow.**—I ask for space for some observations on the above subject, made by an unscientific witness. We are told (*Encyclopædia Brit.*, Art. Potato) that the Potato was introduced into Ireland by Sir Walter Raleigh about the year 1586 as a South American "fruit." His gardener, therefore, looked for the fruit where he had seen the flower, but finding none, he was about to get rid of the haulm when he discovered the tuber. Now, it is clear that the season about the year 1586 was unfavourable for the production of the fruit—apple, plum, seed-pod), as it is variously termed. In a healthy plant the tuber is connected directly with the haulm by a thick white cord; but when, as in Sir Walter Raleigh's case, there is no fruit, and the haulm is diseased, this white cord or branch decays, and the Potato is as much severed from the haulm as if it were cut off with a knife. So much for cutting or pulling off the haulm to save the Potato crop. The plant may have been more or less exhausted in its youth, and when a cold, wet summer succeeds, the proper amount of starch is not secreted, and the Potato will not keep even if it do not show outward signs of disease. We have had a succession of such seasons unfavourable to corn and cattle, the accident of a thunderstorm producing the effect of an electric stroke on the sickly plant. I planted extensively Potato sets, not seeds, last autumn, and should this summer prove propitious I look with confidence to a healthy crop, notwithstanding the evidence of scientific witnesses, who declare that "the disease did not exist [? was not recognised] in Europe before the year 1844, and consists in the growth of certain fungi —Peronospora infestans and Fusisporium solaii—which can be carried by a rabbit crossing the field where the fungus exists throughout the country. (Report on Potato Crop; ordered by the House of Commons to be printed, July 9, 1880.) *J. C. J., Horndean, Hants, March* 19.

**Primula Henryi ×.**—I send a flower of Primula Henryi (a hybrid raised by Mr. Anderson Henry between P. denticulata and P. pulcherrima), which has been shaded and sheltered by a Rhododendron on the rockery. Mr. Munro, who has, I believe, the stock of this Primula in his nursery near Edinburgh, seemed rather doubtful as to how far it differs from P. pulcherrima; but besides the lobes of the flower being less deeply cut and less pointed than in the latter, it has here proved not only one of the most floriferous, but also the hardiest and earliest of the denticulata section. Indeed, it is one of the earliest of all our Primulas, P. acaulis altaica and P. marginata being equally early. The latter is one of the loveliest of Primulas, but the most sensitive to sunshine; if not shaded sufficiently a few hours sunshine makes the flowers droop. A bell-glass placed over the plant while in blossom helps to preserve the delicate flowers from injury. This plan seems also to suit gold-laced Polyanthuses when grown out-of-doors. One plant of Primula rosea has a few flowers in blossom, but it has not quite recovered from the effects of the frost; P. denticulata is much injured, if not killed; P. erosa (=Fortunei) and P. verticillata, covered by bell-glasses through the winter, are dead. The former lived through two previous winters, and P. verticillata (left out under a bell-glass as an experiment) survived the frosts of early winter, which were as sharp as those it would be likely to encounter here during any but exceptional winters. *C. M. O.*

**Early Strawberries.**—I notice that Black Prince and Vicomtesse Héricart de Thury are grown successfully at Hatfield and Longford Castle. Doubtless they are reliable varieties, but I cling to an old tried friend, Keens' Seedling, for my early supply, and right well am I rewarded. Not having a house set apart for Strawberries we grow them in the vineries, and do not expect fruit before March. I gathered the first dish on the 6th, have since picked a few most nights; this morning (the 21st) the same plants, sixty in number, gave me 1½ lb. of fine finished fruit, and are now well furnished with a good crop. After so sunless a winter I must say my old friend well deserves all I can say in its favour. My own experience of the above varieties will not allow of their being placed on an equal footing with Keens'. I grow President to follow up, and can highly recommend it. *J. Masterson, Weston House.*

**Veitch's Dwarf Green Curled Borecole.**—Last year I grew ten sorts of Broccoli, Cottager's Kale, Asparagus Kale, Chou de Milan, and several other sorts, and all have suffered very much, with the exception of Veitch's Dwarf Green Curled Borecole, of which I planted 500, and not one is injured in the least. The young sprouts at the present time are delicious, and they look as if they will grow for a long time before running to seed. I planted a large quantity of sprouting Broccoli, and all are killed. I visited Moor Park on the 11th inst., and Mr. Mundell told me that Veitch's Dwarf Green Curled Borecole had stood the winter well, not one having suffered in the least, while other greens had suffered very much. *A. D., L.*

**Galanthus latifolius.**—It seems that the plant grown in this country as G. Redoutei has no claim to that appellation, but should be called G. latifolius. It is a native of the Caucasus, with perfectly green, not glaucous, leaves, nearly an inch in breadth. The ovary, according to Mr. Baker, to whom we are indebted for this information, is more nearly globose than that of G. nivalis, and the outer perianth segments more obovate obtuse. The specimen figured (fig. 80) was from the garden of the Rev. H. Harpur-Crewe, and we learn that it is in flower in Messrs. Backhouse's Nursery at York. Galanthus Redoutei is only a slight variety of nivalis. *M. T. M.*

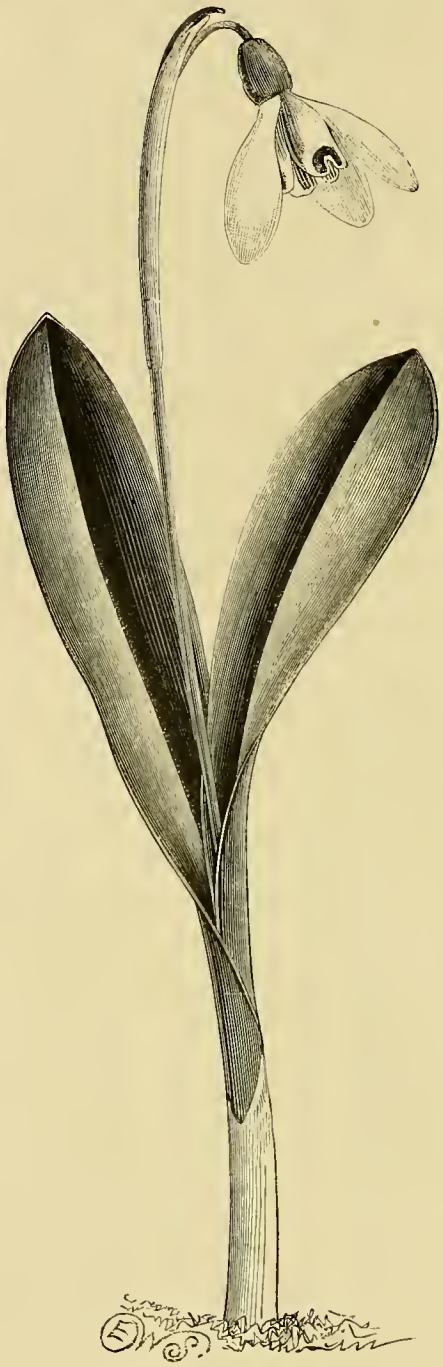

Fig. 80.—Galanthus latifolius.

**Notes from Crichel.**—Going through the houses at Crichel a few days ago I noticed several plants—old favourites—so unusually well done that I could not resist the temptation of making a few notes on them. The first object that struck me in one of the plant stoves was a fine batch of Begonia Ingrami, grown into neat little bush specimens loosely trained, and withal presenting an effect at this dull season, when denizens of the plant stove generally are seedy-looking after being repotted, that cannot fail to excite admiration. The plants are in robust health and bearing their lovely drooping scarlet flowers in such profusion as to render them suitable objects for any purpose of embellishment, whether for grouping or as table or room plants. The next thing that struck me as being particularly fine was a grand batch of Euphorbia jacquinæflora, grown in 9-inch pots, and loosely tied to wires forming the trellis for creepers in one of the plant houses. These are unquestionably the very best that I have ever seen grown in pots, the length of flowering-stem of many of the plants being from 15 inches to 2 feet. I should like to know if any better samples than these are upon record as having been grown in pots. Another notable object at Crichel is a magnificent plant of Anthurium Scherzerianum over 3 feet in diameter, the same variety as that exhibited by the Messrs. Veitch at the great show at South Kensington in May, 1878. The plant is kept in a temperature little higher than a greenhouse for six months out of the year, and its fine leathery dark green leaves afford the best testimony that can be adduced in favour of a lower temperature and an increased circulation of air being beneficial in the cultivation of these popular plants. The show house was gay with Primulas, Cinerarias, Tulips, Salvias, Azaleas, Epacris, Bouvardias, and a capital strain of Mignonette. In an adjoining house Begonia nitida and fragrans, with from three to five stems to a plant, were doing duty as "relief" plants amongst a miscellaneous stock of useful subjects for all purposes of decoration. In the Fern-house Adiantums for cutting are throwing up vigorously, in addition to a collection of other varieties which are spared the penalty of cutting. Adiantum Veitchii is a striking Fern in a young state, or rather I should say in a growing state, the young fronds having a peculiar bronze tinge which gives one the idea that there are two varieties of Fern growing in the same pot. *Visitor.*

**The Rickmansworth Pippin Apple.**—While at Moor Park, Mr. Mundell showed me an Apple, which he called "the Rickmansworth Pippin." It is a splendid dessert Apple, about the size of Cox's Orange Pippin; it was highly flavoured and in grand preservation, and will keep well till May. I also saw some fine bunches of Alicante and Mrs. Pince Grapes hanging in bottles, and although they had been culled from the Vines for a long time they looked remarkably well and seemed to me as if they would keep in good preservation for two months. *A. D., L.*

**The Deodar.**—I have great respect for Mr. Frost's knowledge of Coniferæ, but is it not possible that he may generalise too much from his experience at Dropmore? I have not been fortunate enough to meet with many fine Deodars except in sheltered spots with a good soil. In very dry situations they seem to go off rapidly, and they appear to be by no means happy at Kew. *H. K.*

**The Grape Crop at Throapham Manor.**—As your correspondent, "Foster's Seedling," p. 309, appears very much in doubt as to the truth of what I said in the *Gardeners' Chronicle* of Jan. 5, respecting the above, I beg to refer him to Mr. Skinner, who, I am sure, will be pleased to bear testimony to the accuracy of every one of my statements. I made no attempt at exaggeration, which would neither have benefited me nor any one else. My object was simply to record the facts of what I—and many others—thought an exceptionally fine crop of Grapes, the necessary "well coloured" tint being quite perceptible without the aid of the smoked glass which "Foster's Seedling" deemed essential. My connection with Mr. F. Hatswell has no bearing on the case whatever, and I have no wish to "foist off" either him or any other person. Probably "Foster's Seedling" is jealous of Mr. Hatswell getting more than his share of praise. I may further state "that in this case the Vines were not allowed to carry all the bunches they showed. Three hundred and thirty-seven bunches were taken off before they came into bloom, which still left the 660 bunches to finish." *B. A.* [Our correspondent has forwarded us a letter purporting to come from Mr. Skinner, and corroborating "B. A.'s" statements as to the weight of the Grapes and the number of bunches. Eds.]

**Hebeclinium ianthinum.**—For the embellishment of conservatories and greenhouses at this season of the year Hebeclinium ianthinum is one of the best plants that can be had, having fine bold foliage, and producing as it does numerous heads of lavender-blue Ageratum-like flowers that last a long time in perfection. Although requiring cool stove heat to grow it in and keep it through the winter, it stands well when in bloom in a temperature anywhere about 50°, but to get plants to do this at first start it is necessary to keep them a little dry at the roots and to stand them out of reach of cold draughts. As to cultivation, Hebeclinium ianthinum is one of the easiest of subjects

to manage, as with plenty of moisture at the roots and sufficient warmth it will thrive like a weed, and huge plants may be grown in comparatively small pots. The finest I ever saw were at Shrubland some years ago, where they had a house to themselves and were standing on the floor of a tank which was covered with about half an inch of water, some of which the pots were always absorbing, and the evaporation continually going on kept the foliage abundantly supplied with the requisite moisture, and rendered it remarkably healthy and vigorous. If very large plants are required, the way to get them is to prune back any that have done flowering, and when they break again shift on into bigger pots, after which the shoots should be gradually staked out as they advance, so as to form symmetrical specimens. The most useful sizes, however, for furnishing purposes are such as are grown in 6 or 8-inch pots from cuttings struck in spring, and if these are taken off with a heel, and when only about 3 or 4 inches long, they root readily in a close moist heat. Being of a gross feeding habit, the Hebeclinium ianthinum is much improved in appearance and vigour after becoming pot-bound by the use of liquid manure, which plants of it should then be freely supplied with. *J. S.*

—— When at Hothfield Gardens, the seat of Sir R. Tufton, Bart., near Ashford, Kent, a few days ago, I was pleased to meet with several well grown specimens of this fine old plant of various sizes. Lady Tufton, being very fond of the colour, Mr. Durey was induced to grow it in quantities, and he has succeeded in growing it to perfection, having had a fine succession for the whole of the winter. It is a common species, and a most useful winter flowering plant. The leaves are large, ovate, soft, deeply serrate at the edges, and dark green. The flower-heads (resembling a gigantic head of Ageratum) are purple, produced in large corymbs from the points of the branches; it is a very free bloomer, and well deserves more attention. *A. O.*

**Economy in Fuel: The Damper.**—I look upon the damper as a very necessary and useful adjunct to a properly constructed furnace, and with a great deal of what Mr. Inglis says in its praise at p. 340 I agree. Need I point out to him, however, that the usefulness of the damper is not only not inconsistent with a powerful draught, but that without it the damper is quite useless. The use of the damper is to modify the draught when required; but if there is no draught, what is the use of putting in an appliance for its modification? The thing is as "clear as a pikestaff"—a strong draught and the damper go together; the one is of little use without the other. Mr. Inglis thinks the admission of a small quantity of air at the furnace door to mix with the gases rising off the banked up fuel is a mistake; he is evidently not aware of the many ingenious methods which have been from time to time devised for this purpose, which all who have studied the subject admit is of great importance. If he can modify his aversion to the use of scientific phrases and read, say, "*Fuel and Combustion*, Williams and Prideaux, with additions by D. Kinnear Clark, C.E. London: Crosby Lockwood & Co., 1879," he will get some valuable information on this subject, with which he will, I am sure, be delighted, besides seeing for himself that I was right on this point. *A. Donald Makenzie.*

**Mushrooms.**—That these can be grown in a temperature of from 60° to 65° I am not going to deny; but I will further say that they may and can be grown in abundance with a temperature of 15° less. During the late severe weather the thermometer in the Mushroom-house here was frequently down to 45°, and very rarely over 50°, yet we have had a plentiful supply. Failure is not so much a matter of temperature as Mr. Jefferson appears to think; but is due more to the quality of spawn used than to anything else. My advice is, obtain your spawn from a reliable source, and insist on its being new; you may then hope to succeed. *J. Horsefield.*

—— Sometimes failure in Mushroom growing is caused through the soil with which the beds are occasionally moulded being too light, and of such a nature that it cannot, without being mixed with some binding ingredient, be beaten firmly together; and it not unfrequently happens that the soil in such cases is too loose to support a good-sized Mushroom in an upright position, and is consequently too porous to prevent the ammonia, which it is essentially necessary for the prolongation of a good supply of Mushrooms should be conserved in beds, from escaping therefrom. It also not unfrequently happens that abundance of Mushrooms "show" on such beds, and almost immediately disappear or shrivel up in an almost unaccountable manner, notwithstanding that the atmosphere and temperature of the house may to all appearance have been favourable to their growth; hence the cause, as already stated, seems unaccountable, and must be sought for in the soil, where, depend upon it, the fault lies. Therefore, under these circumstances, I would strongly recommend that to every two barrowloads of light loam one barrowload of garden soil and one of cow-dung be added, and thoroughly mixed to the consistency of mortar, and then laid on the bed, over which half an inch of finely-sifted loam had been previously spread with a trowel or float, finishing off with a perfectly smooth surface, which hermetically cases the bed with a smooth and, subsequently, firm surface. However, there need be no fears entertained about such a bed in the event of its not "showing" for eight or nine weeks from the time of spawning, for show it will, and, the atmosphere and temperature being as they should be, in such quantities and of such a size as will amply repay for the extra trouble and the time of waiting. *H. W. Ward, Longford Castle.*

**Clematis coccinea.**—Messrs. Veitch showed, at the meeting on Tuesday, a flowering plant of Clematis coccinea, a Texan species, with glaucous 3-lobed or 3-foliolate leaves, and bell-shaped flowers on long

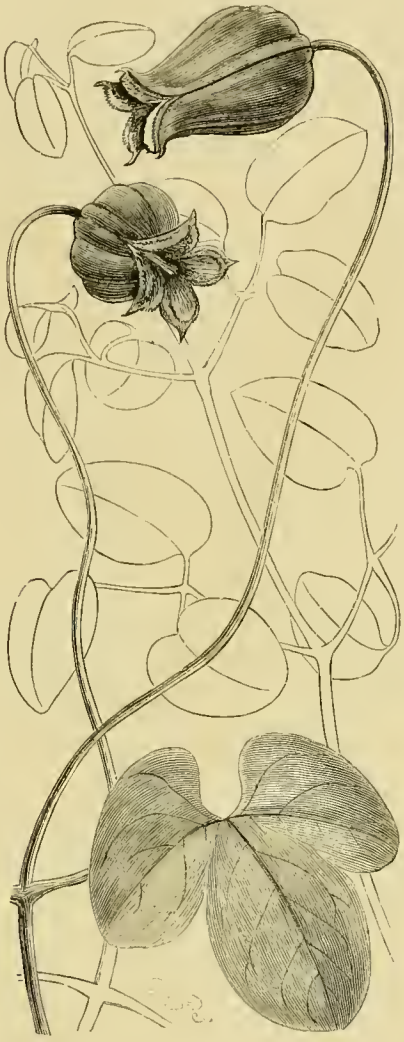

Fig. 81.—Clematis coccinea: flowers pale pink.

slender flower-stalks (see fig. 81). In the species exhibited the flowers were of a light rose-pink colour, but in other cases they are stated to be carmine-red, and were so represented recently in the *Garden*. The plant was figured in 1878 in the *Revue Horticole* under the erroneous name of C. Pitcheri; and in the *Florist*, in August of last year, under its proper name. The history of the plant was given by a correspondent in our number for November 9, 1878.

**The New Varieties of Azalea amœna.**—You have recently commended Azalea Mrs. Gerard Leigh as a fine variety for forcing, and no one can doubt its merits who has been fortunate enough to grow it. But those of the same type sent out by Mr. B. S. Williams in 1878 are also well worthy of notice. They were raised by Mr. Carmichael, being crosses between amœna Flag of Truce and Stella intercrossed. In habit they resemble amœna, being compact and shrubby, but are more vigorous in their growth and flower, wonderfully free, throwing fine trusses, but the flowers are single. When at Englefield, near Reading, in the memorable snowstorm week, Mr. Coombes, the gardener, drew my attention to them, and they were grandly flowering, their various bright free colours, varying from carmine to magenta, being very attractive. They are also finely in flower just now at Hothfield, near Ashford, Kent. These are certainly well worthy particular attention where good useful early flowering plants are wanted: the varieties are Lady Musgrave, Mrs. Carmichael, Princess Maude, Princess Beatrice, Prime Minister, and William Carmichael (after the raiser), and the last sent out, Mrs. Gerard Leigh, which produces large trusses (fourteen to sixteen flowers of bright rose colour. By growing a succession they can be had in flower from November till spring. *O.*

**The Synnotias.**—The plant mentioned under the unpublished garden name of Synnotia Walthami in your issue of last week (p. 370) proves to be S. variegata, Sweet, *Brit. Flow. Gard.*, t. 150—a rare species with a much longer perianth-tube than S. bicolor. *J. G. B.*

**Carter's Green Gage Tomato.**—This is an excellent variety for early forcing. We grow them on stages in 9-inch pots, and when sufficient fruits are set we plunge them in pots two sizes larger, and give liquid manure alternately. They require a lot of attention in the way of watering, but fruit much sooner than when grown in larger pots. It has a splendid flavour, in fact it is preferred here to all others for salads. It is very good when grown outside, and keeps well. *G. Wythes, Thurlestane Hall Gardens, Cheltenham.*

## Reports of Societies.

**Royal Horticultural:** *March* 22.—At the afternoon meeting, held in the large conservatory, Col. Trevor Clarke took the chair, and after the usual preliminary business had been got through—almost in dumb show, owing to the noise—Mr. Shirley Hibberd gave a popular lecture on the Tulip (a summary of which is given in another column) to a large and appreciative audience, which included several of the Dutch growers of bulbs.

The exhibition which attracted so many visitors was a remarkably good one — one of the best spring shows, in fact, that the Society has had for some time, a considerable amount of staging being completely clothed with flowers of the choicest description. The staple articles were, of course, Hyacinths and Tulips; but Amaryllis, Cyclamens, Camellias, and Orchids were well represented.

Hyacinths were shown by three trade and six amateur exhibitors, forming an exhibition of this beautiful and most popular of spring flowers such as has only occasionally been equalled. First in importance was a splendid collection from Messrs. J. Veitch & Sons, which comprised 220 plants of the newest and best varieties in cultivation. The one thing remarkable about this collection was the uniform quality of the individual spikes. In previous years certain isolated examples of gigantic proportions could have been pointed out, but rarely before a collection so large as this, in which every spike was worthy of being placed in a first prize collection; and as an evidence of their quality we may note that one spike measured 8 inches in length and 13 inches in circumference. A few new varieties were shown for the first time in the collection, some of which were of first-class merit. The best was certainly Czar Alexander, a single deep purple-blue, with a massive spike of closely-placed bells of large size. Next to this should be placed Primrose Perfection, a distinct and good variety, with the largest and best formed bells of any yellow Hyacinth in cultivation; but it is not such a well-formed spike as King of the Yellows, or Bird of Paradise. Beatrice, single pale rose, in the way of Grandeur à Merveille, has a more compact spike than that variety, but is not so clear in colour. The double varieties were represented by Masterpiece, a very distinct pale blue, with large well-formed bells, and which would be the best of double blue Hyacinths if it had a longer spike. The best new and old varieties of recent years were to be found amongst the single reds; these were Prince Albert Victor, crimson, with well-shaped bells and a good spike; Vurbaak, very good this year; Linnæus, a distinct deep carmine; Garibaldi, rich dark crimson; Lady Palmerston, rosy-pink; La Joyeuse, pale rose-pink; Princess Helena, soft rose and a long spike; Etna, and Von Schiller. The semi-double Koh-i-noor is also very fine in this colour. Amongst the single whites La Grandesse, by reason of its large pure white bells and long spike, is the best; and Mont Blanc stands next, but Baroness Van Tuyll, L'Innocence, Snowball and La Francaise were very fine. Of single blues there were grand spikes of King of the Blues, the best and most constant Hyacinth in any colour; Marie, a dark blue, and very good this year; John Bright, new and good; Grand Lilas, a fine old variety, in remarkably good form; Cavaignac, pale porcelain-blue, with very smooth large bells; Grand Bleu, brighter than Grand Lilas, though much like it in

formation; Czar Peter and Lord Derby, both fine pale blue varieties; The Sultan and Duke of Connaught, rich purple-blue. The collection received the award of the Gold Medal of the Society. Messrs. Osborn & Sons, of Fulham, exhibited a very meritorious group of a hundred Hyacinths and fifty pots of Tulips. The spikes were large, well developed, and in capital condition. The Hyacinths comprised some of the best varieties in cultivation. A Silver-gilt Flora Medal was awarded. Messrs. Cutbush & Son, of Highgate, also staged a collection, which was included in a collection of plants for which they received the award of a Gold Medal. Mr. Moorman, gr. to the Misses Christy, Coombe Bank, Kingston-on-Thames, and Captain Paton, Alpha House, Regent's Park, represented the amateurs, with extensive collections of Hyacinths and Tulips, and each of these exhibitors received the award of a Gold Medal. Prizes were offered by a Fellow of the Society for nine Hyacinths and nine pots of Tulips, and there were five competitors. Mr. Douglas, gr. to Francis Whitbourn, Esq., Loxford Hall, won the Silver Cup, with exceedingly good spikes of the following Hyacinths:—King of the Blues, Grand Lilas, Marie, Koh-i-noor, Macaulay, Vurbaak, Gigantea, La Grandesse, and Mont Blanc. Tulips: Keizer Kroon, Proserpine, Fabiola, White Joost Van Vondel, Vermillon Brillant, and White Pottebakker. Mr. Moorman was 2d, with a very good collection, his Tulips being very fine and the whole collection well set up; and Mr. R. Parker, Clay Hall Works, Old Ford, E., was 3d. Two other collections came from the same district, viz., from Mr. J. R. Roberts, 79, Mile End Road, and Mr. C. J. Dance, 437, Mile End Road, E., and extra prizes were awarded to both.

In addition to the remarkable group of Hyacinths, the Messrs. Veitch also staged an extensive collection of Amaryllis, together with some finely forced plants of the Gueldres Rose, Rhododendrons, &c., and a very effective group of well-flowered Camellias—handsome pyramidal plants, with good foliage and equally fine blossoms. These also were awarded a Gold Medal. Mr. B. S. Williams was honoured with a similar mark of distinction for a grand bank of flowering plants, which included over one hundred Orchids in bloom, representing about fifty species and varieties; as also was the General Horticultural Co. (John Wills), Limited, for a group of fine-foliaged plants, enlivened with a few Orchids, and largely carpeted with beautifully grown plants of the lovely Myosotis dissitiflora. The group was, however, too densely packed. Similar awards were also made to Mr. H. B. Smith, Ealing Dean, for a superb lot of Cyclamens, amongst which the pure white were most conspicuous for their splendid quality and high cultivation; and to Messrs. Paul & Son, Cheshunt, for an admirable group of forced Roses in pots—half specimens, well bloomed, and as attractive as of yore. Silver Banksian Medals were taken by Messrs. William Paul & Son, Waltham Cross, for a very beautiful lot of cut blooms of Camellias; by Messrs. Barr & Sugden, for a fine bank of Cyclamens; by Mr. James Douglas, for half-a-dozen fine Deutzias, &c.; by Mr. Cannell, for a nice group of Cinerarias; and by Mr. Aldous, for a capital collection of decorative plants; and Mr. Henry Little had a Silver Flora Medal for a nice lot of Cinerarias, Cyclamens, and Primulas. Messrs. Smith & Larke, of Ashford, had some pretty baskets of flowers; and in addition to the Hyacinths before mentioned, Messrs. Cutbush & Son staged some well bloomed Indian and Ghent Azaleas, and a small group of little Camellias nicely bloomed.

Scientific Committee.—Dr. Maxwell T. Masters, F.R.S., in the chair. The objects brought forward on this occasion were very few.

*Galls on Willow.*—Mr. MacLachlan showed large woody, oblong-ovate galls the work of Cecidomya salicis.

*The Buckland Yew.*—Dr. Masters showed a spray from this Yew, whose removal excited so much attention some time since. The spray was laden with male blossoms. From the same exhibitor came specimens of the branches of various Conifers affected with blister. Small blisters rise on the surface of the bark, which burst, and allow of the exudation of resin. As this dries up, circular pits are left in the bark, like smallpox marks, and the tree gradually dies.

*Plants Exhibited.*—From Messrs. Veitch came Amelanchier japonica, the Japanese form of Amelanchier canadensis. Dr. Masters, in commenting on this specimen, adverted to the wide distribution of the species of Amelanchier in Central Europe, the United States, the Himalayas, and Japan. Although different species had been described in each country, yet the differences between them all were so small that in a broad sense there was no difficulty in assuming that all these forms were mere geographical variations of one and the same species. From Mr. C. Green, gr. to Sir George Macleay, came a very handsome Bromeliad, Pitcairnia corallina, with lanceolate plicate leaves about 2 feet long, tapering at the base into a long spiny petiole, and covered on the under-surface with ash-colour fluffy down. The inflorescence is a pendulous spike, bearing at the end numerous closely crowded brilliant scarlet flowers of large size. A Botanical Certificate was awarded. A similar award was made to Masdevallia Roezlii, a very remarkable large-flowered species, with a triangular perianth limb of a smoky-brown colour, spotted with darker spots and prolonged at the points into long tails. The lip is very small, of a pinkish colour, and shell-like. Sir Trevor Lawrence sent a branch of Dendrobium crassinode (Wardianum) which had been broken off three months ago and laid aside on a shelf without care. In spite of these adverse conditions, the flowers were produced freely, and were nearly, if not quite, of the usual size, but not so highly coloured.

Floral Committee.—W. B. Kellock, Esq., in the chair.—First-class Certificates were awarded at this meeting to Sir Trevor Lawrence, Bart., M.P. (Mr. Spyers, gr.), for a perfectly white-flowered variety of the beautiful Indian Dendrobium linniflorum, which has received the name of candidum, and which bore a spike of thirteen good blooms. To Messrs. Veitch & Sons, for Amaryllis Henry Little, a large bold flower of good form and substance, and blood-red, striped with white, in colour. To Mr. Wells, gr. to R. Ravenhill, Esq., Fern Hill, Windsor, for Fuchsia rubra ×, a hybrid between F. Dominiana and F. serratifolia, with flowers at least 3 inches in length, the tubes of which are crimson, and the corolla scarlet. It has the free flowering and vigorous growing habit of Lord Beaconsfield, and appears to possess considerable value as a winter-flowering plant, the specimen shown being stated to have been in bloom since October last; and to H. Little, Esq., Hillingdon (Mr. Wiggins, gr.), for Cyclamen persicum Ruby Gem, a rich dark variety, with ruby-crimson flowers. Odontoglossum Lehmanni, yellow, barred with brown, was shown by Mr. Salter, gr. to J. Southgate, Esq., Selborne, Streatham; and Charles Winn, Esq., of Birmingham, sent a flowering plant of Masdevallia Roezlii, a species remarkable for its dark triangular flowers and pinky-white shell-like lip. Messrs. William Paul & Son, Cheshunt, sent a box of seedlings from the blue Primrose, Scott Wilson, showing considerable variation in the sizes and colours of the blooms. Small forced plants of Lilac Charles X., and of Staphylea colchica, came from Messrs. Charles Lee & Son, and Mr. R. Dean also sent a basket of pretty Primroses and species of Primula, margined with Myosotis dissitiflora, and which were awarded a Silver Banksian Medal. Mr. B. S. Williams, amongst other new plants, had a fine variety of Imantophyllum miniatum named cruentum; and Messrs. James Veitch & Sons had several new Hyacinths which are commented upon elsewhere. Mr. J. George showed some dwarf flowering plants of new Abutilons, and Mr. Green, gr. to Sir George Macleay, had some cut blooms of those fine Fuchsias, splendens and cordifolia, in addition to a striking Bromeliad, Pitcairnia corallina, above alluded to.

## Notices of Books.

**Select Orchidaceous Plants.** By Robert Warner F.R.H.S., F.L.S.; the notes on culture by B. S. Williams. Third series, part 4.

We are glad to see another instalment of this luxurious publication, which, though it makes its appearance at long and uncertain intervals, is always welcome, not less on account of the admirable pictures of the plants, mostly designed by Fitch, than for the detailed notes on culture furnished by Mr. Williams. The subjects figured in this fourth part of the third series are:—Odontoglossum Hallii (pl. 10), showing a noble spike of its brilliant yellow purple-blotched white-lipped flowers, from Mr. Warner's collection at Broomfield. Cypripedium barbatum Warnerianum (pl. 11), also from the Broomfield collection, a charming and richly coloured variety, almost unique, and which on one occasion travelled from London to St. Petersburg and back without injury, bearing about fifty of its brilliant flowers, which were greatly admired at the St. Petersburg International of 1869. Aerides crassifolium (pl. 12), a grand illustration, taken from Sir Trevor Lawrence's fine specimen plant; this shows a remarkably vigorous foliation and a long drooping spike of highly coloured purplish flowers. In reference to the treatment of the Aerides and other East Indian Orchids Mr. Williams observes:—"Formerly we shaded our East Indian Orchids with thick canvas, but by experience we find that a much thinner material, made to our own design, just sufficient to keep off the burning heat of the sun, is more suitable, as it admits more light. This mode of shading causes the growth of the plants to be more robust, consequently they flower more freely, and produce stronger spikes." Referring to the general absence of large specimens at our exhibitions Mr. Williams tells us that "Nine years ago the lovers of Orchids were privileged to see these fine plants exhibited in our large shows in great perfection: for example, there were plants of A. crispum, with ten flower-spikes; A. odoratum, with eighty spikes; A. virens, with twenty spikes; A. affine, with twenty of its long branching racemes; and many others equally fine. At the present day such well-developed plants are the exception—not the rule; and one seldom sees a good collection of them. This is to be regretted, as they are as easy to cultivate as any other Orchids, if they have a suitable house, and are not smothered up amongst other plants."

It is to be regretted that so important a publication should not be issued with greater regularity, and at more frequent intervals. The available material is yet abundant, and the interest which has always been taken in this class of plants undiminished, if not increasing.

**The Tomato.** By Wm. Iggulden. (*Journal of Horticulture* Office.)

This fruit has become so universally popular of late years as to considerably enhance its value as a commercial commodity and increase its importance in other respects so that the demand has so greatly increased as not only to extend the cultivation immensely at the natural season but at all other periods in the year, for which purpose other means of cultivation, which formerly were not recognised in practice, have had to be brought into requisition to meet a demand which aforetime did not exist. To those unacquainted with the modern methods of cultivation Mr. Iggulden's little volume, which gives special directions, will afford much valuable information and help. The general remarks upon the subject are likewise thoroughly practical in detail, and will be a valuable aid to the amateur and non-professional gardener. The rest of the matter, comprising a list of varieties and other useful information of a similar character, is amply sufficient to commend it to the notice of those who are interested in the cultivation of Tomatos.

**Botany of California.** By Sereno Watson. Cambridge, Mass. Vol. ii.

This is a handsomely printed quarto volume, forming the continuation of the work, and comprising the apetalous orders, the gymnosperms, the endogens, and the higher cryptogams. Mr. Watson has contributed the bulk of the volume, but he has been assisted by various specialists, thus—Dr. Engelmann has elaborated the Oaks, the Pines, and the Loranths; Dr. Engelmann's notes on the Conifers have already been published in abstract in our columns; Mr. Bebb has monographed the Willows, Mr. Boott the Carices, Dr. Thurber the grasses, and Mr. Eaton the Ferns. The work is necessarily one for consultation and reference, so that its defects can only be ascertained in the course of actual work. Its merits, on the other hand, though they too, of course, cannot be fully recognised by merely turning over the pages, yet, to a considerable extent, make themselves manifest at a glance. The clear descriptions, the well-contrasted characters, the lucid arrangement, the necessary references; all these, to say nothing of the beautiful typography and excellent "get-up," strike the reader at once, and give the volume a luxurious appearance not common in similar publications on this side of the water. Platanus cali fornica, we see, is reduced to P. racemosa, and is described as a tree attaining 100 feet in height, the trunk measuring sometimes 29 feet and upwards in circumference. Sixteen species of Willow are enumerated, three Poplars, and fourteen Oaks. Castanea chrysophylla forms the genus Castanopsis, and is described as sometimes a low shrub sometimes a tall tree. Of the Coniferæ we have already spoken; but to show of what interest they are, it is enough to mention the Cupressus macrocarpa, the Chamæcyparis Lawsoniana, Thuya gigantea, Libocedrus decurrens, Sequoia sempervirens, and S. gigantea (Wellingtonia of gardens), Abies grandis, A. nobilis, magnifica, and others.

Among the Californian Liliaceæ, many of the true Lilies, the Calochortus, the Yuccas, and others are deservedly favourites in our gardens. In describing the grasses Dr. Thurber retains the old terminology, and does not adopt the innovations proposed by Mr. Bentham. No less than sixty-two genera are

enumerated. A good index—an essential in such a work—has been given, as also a glossary, and a brief indication of the work of various botanical collectors from Hænke in 1791 to the present time.

It would have been better to have indicated by some distinct typography the species which are naturalised in contradistinction to those which are truly aboriginal. We may hope, too, that a sketch of the botanical geography of the country may be forthcoming, showing the relation between the Californian flora proper and the Mexican flora on the one hand and that of North-west America on the other. The striking differences of the flora on the two sides of the continent and the probable explanations have been pointed out by Asa Gray, Hooker, and others.

—— *Fruit and Wine.*—Under the title *Frutta e Vino* a new bi-monthly journal has been established in Milan, exclusively devoted to the cultivation and preservation of fruit.

—— *Pot Roses.*—A fifth edition of Mr. W. Paul's observations on the cultivation of Roses in pots has been published by Kent & Co.—sufficient evidence that the book needs no further recommendation from us.

—— *A Handy Book on Window Gardening.* By H. C. Stewart. (Barrett, Lisson Grove).—A little book, better in intention than in execution. Not only does it appear to us to shoot over the heads of the class for which it is intended, but it contains some very questionable statements, as, for instance, that plants require annual repotting, because their roots throw out a great deal of excrementitious matter which poisons the soil. Again, we are told that the different varieties of Geranium were formerly known as Pelargoniums, a name now given to all the varieties of the Geranium by florists!

—— *Canada in* 1880.—Under this title has been issued a second series of reports from representative practical agriculturists who visited various provinces in Canada with a view to report on its suitability for English emigrants. The reports are generally favourable, and the class of emigrants who are likely to succeed best are stated to be tenant farmers with capital and capitalists in general, male and female farm labourers, domestic servants and country mechanics. Canada offers no encouragement to idlers, and very little to clerks, shopmen and persons unaccustomed to manual labour. The pamphlet can be procured from the Government Agent, 10, Victoria Chambers, London, S.W.

—— *The School Garden a Means of Technical Education for the Farm Labourer and Others.* By T. Wilkinson. (Harrow: Overhead.)—The object of this little pamphlet, and with which we sympathise fully, at least in principle, is to urge that every school in a rural district should have a piece of land large enough to allow every boy over a certain age or standard (say ten, and standard III.) a plot from 5 to 8 poles in extent. Each plot should be cultivated by the boy holding it under the superintendence of the schoolmaster, who might reasonably be expected to possess the moderate amount of knowledge on the subject necessary to obtain a certificate from the Science and Art Department. Anything that will serve to interest the children in their studies and to develope their intelligence is to be commended, while as to the practical advantages of the plan to the children of the labouring classes in the country there can be no two opinions.

—— *Modern Bee-keeping: a Handbook for Cottagers.* (Longmans.)—This is a little pamphlet published for the British Bee-keeper's Association, and containing in short compass plain directions for the construction of hives, the management of bees, the collection and disposal of the honey, and other matters. We strongly recommend the little treatise.

—— *The Scientific Roll.*—The object of this new periodical is "to broadly classify the sciences and group the various items under specified headings, so as to form a single series, so arranged that any person consulting the work will find collected in one place a key to the literature of the subject comprised in each heading." The magazine commences with meteorology, and is intended to comprise a series of systematised notes on the subject for the use of students. Messrs. Bradbury, Agnew & Co. are the publishers.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, March 23, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mar. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 17 | 30.22 | +0.38 | 55.1 | 37.0 | 18.1 | 45.2 | + 3.6 | 41.3 | 86 | W. | 0.00 |
| 18 | 30.25 | +0.42 | 59.8 | 41.0 | 18.8 | 49.2 | + 7.5 | 41.3 | 74 | W.: S.W. | 0.00 |
| 19 | 29.95 | +0.13 | 57.5 | 42.0 | 15.5 | 48.6 | + 6.6 | 39.9 | 73 | W.S.W. | 0.00 |
| 20 | 29.62 | −0.19 | 52.0 | 40.0 | 12.0 | 45.7 | + 3.0 | 38.4 | 76 | WSW: W. | 0.02 |
| 21 | 29.50 | −0.30 | 46.0 | 34.0 | 12.0 | 38.8 | − 3.0 | 30.6 | 72 | WNW: W. | 0.66 |
| 22 | 29.76 | −0.03 | 43.5 | 31.0 | 12.5 | 36.1 | − 5.8 | 30.9 | 82 | W. | 0.00 |
| 23 | 29.53 | −0.25 | 47.0 | 29.9 | 17.1 | 39.3 | − 2.7 | 33.6 | 71 | S. | 0.07 |
| Mean | 29.83 | +0.02 | 51.6 | 36.4 | 15.1 | 43.3 | + 1.3 | 36.6 | 76 | W. | 0.15 |

March 17.—Fog in the morning. Misty all day. Sun's place visible at times.
— 18.—A fine bright day; dark cloudy night.
— 19.—A fine bright sunny day; strong wind. Fine night.
— 20.—Fine but dull day; occasional gleams of sun. A little rain began to fall at 6 P.M. Cloudy, dull night.
— 21.—A few drops of rain in early morning; very dull, at times very dark. Sun shone at 1 P.M. A great darkness at half-past one, and snow in large flakes began to fall at a quarter to five. Cold, bleak, windy night.
— 22.—A heavy gale in the early morning. Snow fell from 10 A.M. to 1 P.M. in small quantities. Afternoon fine. A windy day and cold night.
— 23.—Bright for a little time in the morning, then overcast and dull, with a barometer reading rapidly decreasing. Slight rain began to fall at 7 P.M., and continued to midnight. The reading of the barometer at midnight was 29.35 at the level of the sea.

London: *Atmospheric Pressure.*—During the week ending Saturday, March 19, in the neighbourhood of London, the reading of the barometer at the level of the sea decreased from 30.03 inches at the beginning of the week to 29.86 inches by the morning of the 14th, increased to 30.39 inches by the morning of the 16th, decreased to 30.37 inches by the afternoon of the same day, increased to 30.57 inches by midnight of the 17th, and was 30.06 inches at the end of the week. The mean reading at the level of the sea was 30.21 inches, being 0.42 inch higher than last week, and 0.17 inch above the average for the week.

*Temperature.*—The highest temperature during the week was 59°.8 (being the highest temperature since October 7, 1880), on the 18th, the next in order being 59°.5, on the 15th, 57°.5, on the 16th. The least of the high temperatures was 51°, on the 14th. The mean of the seven high day temperatures was 55°.9. The lowest temperature during the week was 31°.1, on the 16th, the next in order being 35°.5, on the 15th, and 37°, on the 14th and 17th. The highest of the low temperatures was 42°, on the 19th. The mean of the seven low night temperatures was 37°.4. The greatest range of temperature in one day was 28°.5, on the 16th, the next in order being 20°, on the 15th; the least range was 14°, on the 13th and 14th. The mean of the seven daily ranges was 18°.4.

The mean daily temperatures were 44°.6 on the 13th, 42°.3 on the 14th, 44°.1 on the 15th, 45° on the 16th, 45°.2 on the 17th, 49°.2 on the 18th, and 48°.3 on the 19th. They were respectively 3°.6, 1°.1, 2°.7, 3°.5, 3°.6, 7°.5, and 6°.6 above their averages.

The mean temperature for the week was 45°.5, being 3°.2 lower than last week, and 4°.1 above the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, were 142°.5 on the 16th, 126° on the 15th, and 122° on the 19th. The least reading was 109°, on the 17th. The mean of the seven daily readings was 106°.9.

*Rain.*—No rain fell during the week. The weather during the week was very fine; slight *fog* prevailed on the 17th.

England: *Temperature.*—During the week ending March 19 the highest temperatures were 64° at Sunderland, 61°.9 at Cambridge, 60°.9 at Birmingham, 60°.2 at Nottingham, 60° at Sheffield. The lowest of the high temperatures were 53°.6 at Bradford, and 54°.5 at Liverpool. The mean from all stations was 58°.2.

The lowest temperatures were 26° at Cambridge, 27° at both Nottingham and Hull, and 29° at Sheffield. The highest of the low temperatures were 40°.3 at Liverpool, and 37°.1 at Brighton. The mean from all stations was 32°.3.

The range of temperature during the week was greatest at Cambridge, 35°.2, the next in order being Nottingham, 33°.2; Sheffield, 31°, and Sunderland, 31°. The least ranges were Liverpool, 14°.2, and Brighton, 19°.9. The mean from all stations was 25°.9.

The mean of the seven high day temperatures was highest at Birmingham, 58°.8, the next in order being Cambridge, 56°.7; Blackheath, 55°.9; Leicester, 55°.6. The mean was least at Hull, 49°.6. The mean from all stations was 53°.1.

The mean of the seven low night temperatures was least at Cambridge, 34°.7; the next in order being Hull, 35°.4, Nottingham, 35°.6, Wolverhampton, 36°.1. At Truro, Plymouth, Brighton, Bristol, Liverpool, and Sunderland, the mean was above 39°. The mean from all stations was 38°.1.

The mean daily range was greatest at Cambridge, 22°; the next in order being Birmingham, 20°.7; Leicester, 19°.2, and Nottingham, 18°.5. The least daily ranges were 8°.7 at Liverpool, and 11°.5 at Bradford. The mean from all stations was 15°.

The mean temperature for the week was highest at Birmingham, 47°.4; the next in order being Truro, 46°.6, Plymouth, 45°.9, Sunderland, 45°.6, Liverpool, 45°.2, and Leicester, 45°. The mean was least at Hull, 41°.5. The mean from all stations was 44°.5.

*Rain.*—No rain fell at any stations situated between latitude 50° 50′ and 52° 30′. The largest fall registered was 0.93 inch at Plymouth. The mean from all stations was 0.16 inch, and the greatest number of days on which rain fell was three, at Liverpool. The weather during the week was generally fine with bright sunshine. At the most southerly stations the sky was generally overcast.

Scotland: *Temperature.*—During the week ending Saturday, March 19, the highest recorded temperatures were 59°.6 at Aberdeen, 58° at Dundee, and 57°.8 at Edinburgh. At Glasgow the highest temperature was only 51°.5. The general mean was 55°.8.

The lowest temperatures were 28°.4, at Aberdeen, 28°.5, at Glasgow, and 29° at Dundee. The general mean was 29°.9.

The mean temperature was highest at Edinburgh, 46°.1, the next in order being Leith, 45°.8, and Paisley, 45°.4; it was least at Glasgow, 41°.6. The general mean was 44°.2.

*Rain.*—The largest quantity registered was 1.36 inch at Greenock, the next in order being 0.46 inch at Aberdeen, and 0.42 inch at Paisley. The general mean was 0.42 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

Combined Hoe and Rake.—Can any of your correspondents recommend a hoe and rake for cleaning gravel walks that can be used with the aid of a small pony? The gravel used here is loose seaside gravel that requires raking over almost daily to keep it neat, and as we have a large extent of walks we are anxious to make what use we can of the garden pony.

## Answers to Correspondents.

Carnations: *G. M.* It is by no means unusual for these to sport.

Cinerarias: *H. B.* They are poor by comparison with the best strains.

Cork Oak: *R. Palmer.* The Cork Oak was successfully introduced into South Australia by the Kew authorities in 1864. There are trees of some age at the Cape, and six Wardian cases of young plants were sent from Kew to the Punjaub in 1875.

Erratum.—At p. 334, for "Tophia lanceolata" read "Josephia lanceolata."

Galls on Willow: *W. P.* The hard woody galls on the Willow twigs are formed by the larvæ of Cecidomyia salicis, Schrank—a large gall-gnat.

Haricot Beans: *H. D.* These are the ordinary varieties of kidney or French Beans, and called Haricot Beans only when the ripe seeds are cooked and served up in French fashion. The reason why Haricot Beans are not much grown, as such, in this country is because it is not every cook who can serve them up in the right way, and when they are done properly but few of the English people like them. The taste for them must be acquired, as for many other good and nutritious vegetables.

Insects: *E. S.* We found in sweepings of your store floor from sacks of Turnip seed one small dead larva of a minute moth (Tinea —?), fragments of grain-eating beetle (Silvanus dentatus), and the body, without legs, of a Chelifer. Fumigation, or heating the seeds, will destroy the living insects. *J. O. W.*—*A. E. H.* The very minute white mites found in too long kept honeycomb are Acarus favorum, very closely

allied to, if not identical with, the common Acarus Siro, or cheese mite. *J. O. W.*—*J. J.* After carefully searching your box of mould from Strawberry pots with a strong lens, we failed to discover any worms or larvæ therein. *J. O. W.*

Names of Fruit: *J. Le Cornu.* We do not recognise the Apple.

Names of Plants: *C. M. Owen.* Yes; Salvia rutilans.—*Young Gardener.* After careful examination we cannot find any difference between the cone you sent and that of the common Spruce.—*T. Pledger.* The handsome Camellia reticulata. It was introduced from China in 1824.—*Diss.* Erica mediterranea.

Patent Tree-Lifter: *Cor.* "Philodendron's" agent for the sale of this implement is Mr. J. Charlton, Parade, Tunbridge Wells.

Primula Princess Louise: *J. Tomkins.* It has not become a popular flower in the general sense that everybody grows it as a decorative flower, because, according to our experience, it appears that few can grow the plant up to a decent size. We have not seen a single plant of it exhibited in London either last year or this. As it was a very telling plant when originally shown, we shall be glad to learn that it keeps up its popularity in the Midlands.

Summer Cloud: *S. Taylor* and *T. D.* Messrs. H. Elliott & Co., Maidenhead, Bucks.

Weeds in Courtyard: *J. Titchener.* The cheapest and most effectual plan is to boil 1 lb. of arsenic in three gallons of water for fifteen minutes, to which add seven gallons of cold water, and then apply the liquid. Of course, extreme care must be taken in the use of so dangerous a poison. Only the most careful workman should have anything to do with it, and he should have hands with skin unbroken, and be careful not to get his feet wet with the solution, or to inhale the steam while it is boiling. An annual dressing of this solution will be sufficient.

## CATALOGUE RECEIVED.

A. Lietze, Rio de Janeiro, Brazil—List of Palm Seeds' Plants, and Bulbous Roots.
Thibaut & Keteleer, 107, Rue Houdan à Sceaux (Seine, France)—General Catalogue of Plants.
William Pontey, Wakefield Road, Huddersfield—General Nursery Stock.
William Paul, Paisley—Florists' Flowers.

Communications Received:—W. S.—H. L.—H. G. Rchb. f.—B. S. W.—J. V. & S.—G. N.—T. H.—E. M.—J R. J.—J. B.—E. J.—W. F.—G. M.—H. E.—J. O' B. (many thanks).—R. F.—W. M.—S. B.—S. P. O.—B. A.—C. H. H.—E. A.—W. H. F.—A. K., Warsaw.—W. T. D.—C. S. S.—F. M.—Sir T. L.

# Markets.

*COVENT GARDEN, March 24.*

We have really nothing of note to remark upon, except that Strawberries are making a better appearance, with little demand; and Cucumbers are selling more freely at lower prices. *James Webber, Wholesale Apple Market.*

### Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 1 0– 2 0 |
| Grapes, per lb. | 3 0–12 0 | Strawberries, per oz. | 0 9– 1 0 |
| Lemons, per 100 | 4 0– 6 0 | | |

### Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Garlic, per lb. | 1 0– .. |
| Asparag., Fr., bndl. | 3 0–25 0 | Herbs, per bunch | 0 2– 0 4 |
| — English, bund. | 8 0–14 0 | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Beans, French, p. lb. | 2 0– .. | — Cos, each | 0 4– 1 0 |
| — Broad, per lb. | 1 0– .. | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 6 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 2 6– .. | Parsley, per bunch | 0 4– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Radishes, per bun. | 0 2– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Rhubarb, per bund. | 1 0– .. |
| Chilis, per 100 | 3 0– .. | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 1 0– 2 0 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| | | Tomatos, per lb. | 0 9– 1 0 |

Potatos:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

### Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Ficus elasticus, each | 1 6– 7 6 |
| Azalea, per doz. | 30 0–42 0 | Foliage Plants, various, each | 2 0–10 6 |
| Begonias, per doz. | 6 0–12 0 | Genista, per doz. | 9 0–18 0 |
| Cineraria, per doz. | 10 0–12 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cyclamen, per doz. | 12 0–24 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Cyperus, per dozen | 6 0–12 0 | Myrtles, per doz. | 6 0–12 0 |
| Dielytra, per dozen | 9 0–12 0 | Palms in var., each | 2 6–21 0 |
| Dracæna terminalis | 30 0–60 0 | Pelargoniums, doz. | 18 0–30 0 |
| — viridis, per doz. | 12 0–24 0 | Primula, single, per dozen | 5 0– 6 0 |
| Erica, in variety, doz. | 18 0–30 0 | Roses, various, doz. | 12 0–30 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Scillas, 12 pots | 9 0–12 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |

### Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 sprays | 1 0– 3 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Azalea, 12 sprays | 0 6– 1 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Bouvardias, per bun. | 1 0– 3 0 | Narcissus, in variety, 12 sprays | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Pelargoniums, 12 spr. | 1 0– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | — zonal, 12 sprays | 0 6– 1 0 |
| Crocus, 12 bunches | 1 6– 2 6 | Primula, double, per bunch | 0 9– 1 6 |
| Cyclamen, 12 blms. | 0 3– 0 6 | — single, 12 sprs. | 0 6– 1 0 |
| Daffodils, single, 12 bunches | 2 0– 6 0 | Roses (indoor), doz. | 3 0– 9 0 |
| — double, 12 bun. | 3 0– 6 0 | — red French, per dozen | 3 0– 4 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Stephanotis, 12 spr. | 9 0–15 0 |
| Eucharis, per doz. | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Euphorbia, 12 sprays | 1 0– 3 0 | Tulips, 12 bunches | 10 0–12 0 |
| Gardenias, 12 blms. | 4 0–12 0 | Violets, 12 bunches | 9 0–12 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | — Neapolitan, Fr., per bunch | 3 0– 5 0 |
| Hyacinth, Roman, 12 sprays | 0 9– 1 0 | — Czar, Fr., bunch | 0 8– 1 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | | |
| — red, 12 blooms | 1 0– 3 0 | | |
| Lilac, Fr., per bunch | 6 0– 8 0 | | |

## SEEDS.

London: *March 23.*—Messrs. John Shaw & Sons, of 37, Mark Lane, report that the weather having lately been highly favourable for field operations, considerable progress has been made in seeding the land, and there is, consequently, an active demand for Clover seed, &c. Although stocks of all descriptions are getting into narrow compass, values all round keep at the low level previously noted. Perennial and Italian Rye grasses are firm. More money is asked for spring Tares. A small quantity of Hemp seed is now offering at moderate rates.

## CORN.

The receipts of English Wheat at Mark Lane on Monday were small, and best qualities of white realised 1s. over the previous Monday's rates, but secondary sorts were no dearer. Foreign showed an advance of 6d. to 1s. Country flour was 1s. dearer, but foreign unchanged. Beans were 1s. lower, except Egyptian. Peas met a quiet demand at previous rates. American mixed Maize sold readily at 6d. lower than on Monday se'nnight. In Oats the rates of Friday last were unaltered; these, however, showed 6d. reduction on the week.—There was very little change in the condition of the trade on Wednesday. With moderate receipts in London either of home-grown or foreign Wheat holders were firm, and quite late rates were required. The trade was, however, dull. Flour did not improve in value, and in Barley, Beans and Peas the movements have been unattended with any quotable change. Prices were maintained for Oats, sales being confined chiefly to the common qualities. Maize was held for late value. Average prices of corn for the week ending March 19:—Wheat, 43s. 7d.; Barley, 31s. 8d.; Oats, 21s. 10d. For the corresponding period last year:—Wheat, 46s. 1d.; Barley, 34s. 11d.; Oats, 23s. 3d.

## CATTLE.

At Copenhagen Fields on Monday there was an increased supply of beasts but a very dull trade, prices ruling fully 4d. per stone under those of Monday se'nnight. The current topping rates of best Scots, &c., could not be quoted over 5s. to 5s. 2d., and many really first quality cattle sold under 5s. Sheep hardly sold so well as on Thursday last. Quotations:—Beasts, 4s. to 4s. 4d., and 4s. 8d. to 5s. 2d.; calves, 5s. to 6s. 4d.; sheep, 5s. 4d. to 5s. 10d., and 6s. 4d. to 7s.—On Thursday trade was quiet in tone. Beasts sold slowly at about Monday's rates; sheep were quiet but steady; lambs were steady, and calves sold at the figures above quoted.

## HAY.

Tuesday's Whitechapel Market report states that the supplies of fodder were rather large, but of straw short, whilst the demand was slack. Prices were as follows:—Prime Clover, 100s. to 118s.; inferior, 60s. to 95s.; prime meadow hay, 80s. to 105s.; inferior, 30s. to 70s.; and straw, 30s. to 44s. per load.—On Thursday there was a large supply on offer. Trade was very dull, but prices were without alteration.—Cumberland Market quotations:—Superior meadow hay, 90s. to 105s.; inferior, 50s. to 75s.; superior Clover, 110s. to 120s.; inferior, 84s. to 95s.; and straw, 40s. to 45s. per load.

## POTATOS.

The Borough and Spitalfields markets reports state that supplies come forward to a fair extent, and best qualities sell steadily, but inferior are unsaleable. Scotch Regents, 90s. to 100s.; Champions, 70s. to 80s.; Victorias, 90s. to 110s.; Essex Regents, 80s.; ditto Champions, 80s. per ton; Belgian kidneys, 4s.; German reds, 4s. to 5s. per bag.—The imports into London last week included 1404 bags from Boulogne, 1678 bags Ghent, 71 bags Dunkirk, 100 bags Havre, 2937 bags Antwerp, and 251 bags 110 crates Nassau.

## COALS.

The following are the prices current at market during the week:—Walls End—Hetton, 16s.; Hetton Lyons, 14s. 6d.; Lambton, 15s. 6d.; Original Hartlepool, 16s.; Wear, 14s. 6d.; Tunstall, 14s. 6d.; Thornley, 15s. 6d.; Hawthorns, 14s. 9d.; South Hetton, 16s.; South Hartlepool, 15s.; Tees, 15s. 9d.; Radford Navigation, 17s

**Government Stock.**—Consols closed on Monday at 99⅞ to 100 for delivery, and 100 to 100⅛ for the account. Business on Tuesday closed at 100 to 100⅛ for delivery, and 100 1/16 to 100 3/16 for the account. Wednesday's figures were 100⅛ to 100¼ for delivery, and 100 3/16 to 100 5/16 for the account. On Thursday the final quotations were 100 to 100⅛ for delivery, and 100 1/16 to 100 3/16 for the account.


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| WEBBS' PERFECTION CYCLAMEN | 1 6 | „ | 2 6 |
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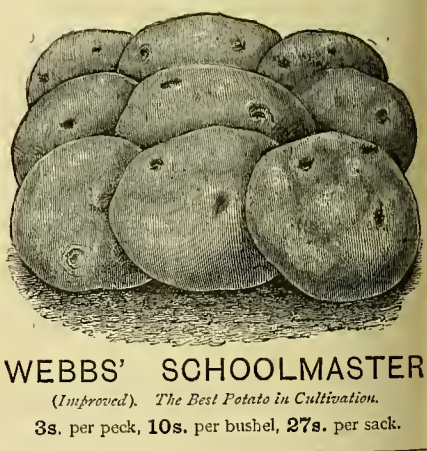

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# HORTICULTURAL PREPARATIONS.

**LAWN SAND,** for destroying Daisies, Dandelions, Plantains, Ribbed Grass, Thistles, and other weeds, on Lawns, Croquet Grounds, Bowling Greens, Parks, &c.; at the same time acting as a fertiliser, and improving the growth and colour of the grass. Price in tins, 1s., 2s. 6d., and 5s.; kegs, 28 lb., 10s.; 56 lb. 19s.; 112 lb., 36s.

**GARDENER'S INSECTICIDE,** for destroying all the various Insects, Blights, and Mildews infesting plants and trees. It is easily applied either by dipping, syringing, sponging, or as a winter dressing; does not require cleansing off with water; will not stain or injure, any more than plain water, the most delicate flower, fruit, foliage, or root; gives the foliage a bright, clean, and healthy appearance, and promotes the growth of the plant. In jars, 1s. 6d., 3s., 5s. 6d., and 10s. each; and in kegs, 28 lb., 21s.; 56 lb., 42s.; 112 lb., 84s. each.

**STANDEN'S MANURE,** for promoting a rapid, healthy, robust growth, an early maturity, improving the quality of vegetables, flavour of fruits, and heightening the colour and increasing the size of flowers. It is specially invaluable to exhibitors and others whose aim is to excel. It is always of the same strength, certain and safe in all operations, and is applied with but little time or labour. In tins, 1s., 2s. 6d., 5s. 6d., 10s. 6d., and 21s. each; and in kegs, 56 lb., 21s.; 112 lb., 56s. each.

**MEALY BUG DESTROYER,** for the special eradication of this most troublesome of stovehouse plant pests. It is easily applied either with a small brush or vaporiser, is instant destruction to both insect and ova, and does not stain or injure the foliage. In bottles, 1s., 2s. 6d., 5s., and 10s.; ½ gallon, 21s.; 1 gallon, 42s. each.

**FLOWER CEMENT,** for fixing the petals of flowers for bouquets, head-dresses, vases, church, table, or ball decorations. It dries quickly, and preserves the flowers without staining or injuring them. In bottles, 1s. 6d.; quarts, 8s. each.

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Daniel's Prize Calceolaria.

| | Per Packet.—s. d. | s d. |
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| **AURICULA,** Daniels' Prize Alpine | .. .. .. | 1 0 |
| **BEGONIA,** Tuberous-rooted, choicest mixed | .. 1 6 | & 2 6 |
| **CARNATION,** choicest double, from named flowers | .. .. .. ..1s. 6d. | 2 6 ,, 5 0 |
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*From* Mr. Peter Sinclair, *Greenock.*

"You will observe by accompanying report of Greenock Autumn Flower Show competition that I carried off Two First Prizes for Carnations raised from your Seeds."

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| **CALCEOLARIA,** Daniels' Superb Prize | ..1s. 6d. | 2 6 ,, 5 0 |
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*From* Rev. Dr. Thomas Smith, *Edinburgh.*

"I have had a splendid crop of seedling Calceolarias from your Seed. Some of the flowers were the most beautiful I ever saw."

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| **CINERARIA HYBRIDA,** from a splendid strain | 1s. 6d. | 2 6 ,, 5 0 |

*From* Mr. M. Moody, Gardener to J. Rendall, Esq., *Wootton.*

"I must tell you the Cinerarias, the Seed of which I received from you last year, are now in bloom, and the admiration of every one; many of them are considerably larger than a crown piece.

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| **CYCLAMEN PERSICUM,** beautiful varieties, mixed | .. .. .. .. .. | 1 6 ,, 2 6 |
| **DAISY,** choicest double, mixed | .. .. .. | 0 6 ,, 1 0 |
| **GLOXINIA HYBRIDA GRANDIFLORA,** very choice, mixed | .. .. .. .. | 1 6 ,, 2 6 |
| **PANSY,** Daniels' Show and Fancy | .. .. | 1 6 ,, 2 6 |
| ,, Prize Blotched, magnificent varieties | .. | 1 6 ,, 2 6 |
| ,, Daniels' improved striped, beautiful | .. .. | 1 6 |

*From* W. Marshall, Esq., F.R.S., *Dublin.*

"Every Seed of the two packets of Pansy you sent me grew, and I have now a magnificent bloom of the finest Pansies in the neighbourhood.

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| **PICOTEE,** choicest double, from stage flowers, | 1s. 6d. | 2 6 ,, 5 0 |
| **PRIMULA,** Daniels' choicest red | .. .. .. | 1 6 ,, 2 6 |
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| ,, Fern-leaved, very choice | .. .. .. .. | 1 6 |
| ,, Superb double-flowered, mixed | .. .. | 2 6 ,, 5 0 |

*From* M. H. Voss, Esq., *Streatham.*

"The Primula Seed you sent me last year gained my Gardener First Prize at the Brixton Hill Show. The Plants now in bloom far surpass your Catalogue Illustrations.

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| **PRIMROSE,** choicest mixed, from a fine collection of brilliant varieties | .. .. .. .. | 2 6 |
| **POLYANTHUS,** finest gold-laced | .. .. .. .. | 1 0 |
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At Clearance Prices, for Cash only.

WOOD AND INGRAM beg to offer the following, at greatly reduced prices:—

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| CLIMAX (Bresee's) | .. .. .. .. .. 7 0 |
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And a few other varieties.
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A PERFECT HOLLY HEDGE may eventually be formed by planting two Hollies and six Quick in every yard.
Strong HOLLY, 9 to 12 inches high, 12s. per 100.
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| Beauty of Hebron | Early Shaws |
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TIFFANY, No. 1, 3*s.* 6*d.* per piece; No. 2, 4*s.* 6*d.*; Mineralised, 6*d.* per piece extra.
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THE NEW PATENT TREE LIFTER.
*Vide Gardeners' Chronicle*, March 5.
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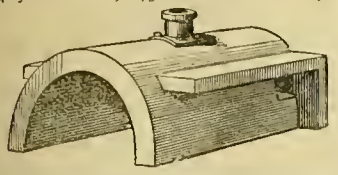

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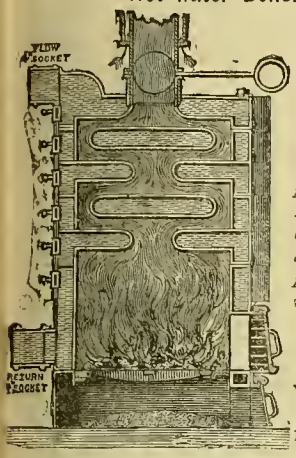


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**No Greenhouse Perfect without one.**

TEBBS' UNIVERSAL FUMIGATOR, for Greenhouses, Conservatories, &c., will last for years, and is fast superseding all other apparatus or contrivance for the purpose; requires no attention when once lit; no fear of flaming, no waste of material, every particle being given off in dense smoke. Price 3s., 4s 6d.; large size, 7s. 6d. each; packing extra.

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**HEATING and LIGHTING STOVES.**

*Silver Medals awarded at Wolverhampton Exhibition, 1878; and Brussels International Exhibition, 1880.*

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| No Smoke | No Dust |
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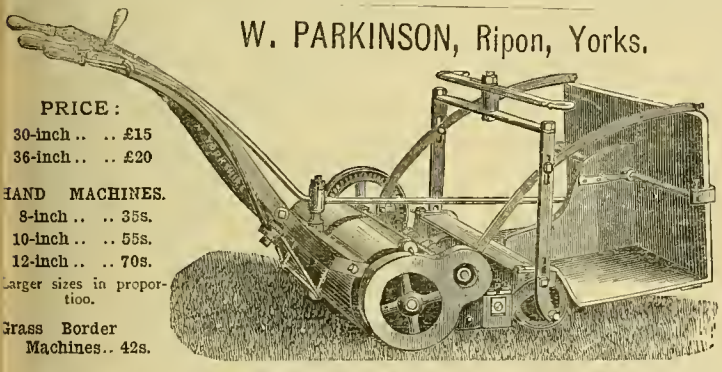

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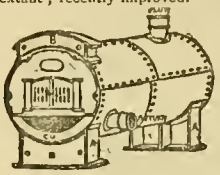

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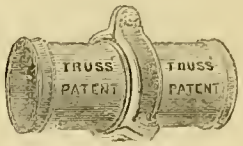


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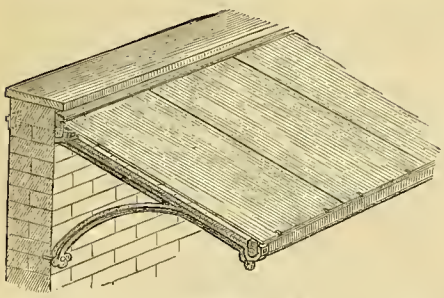

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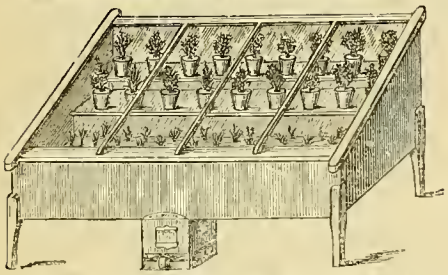

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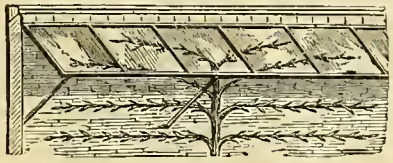

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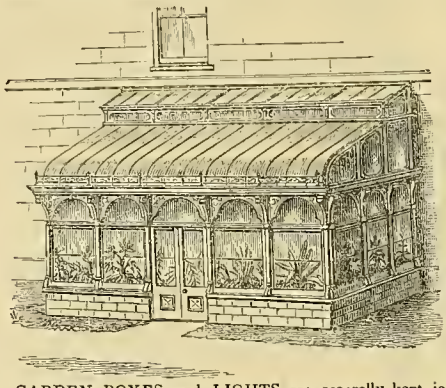

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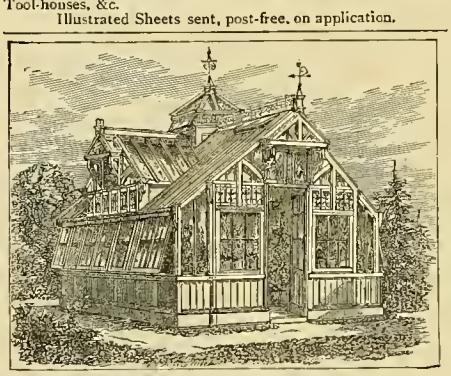

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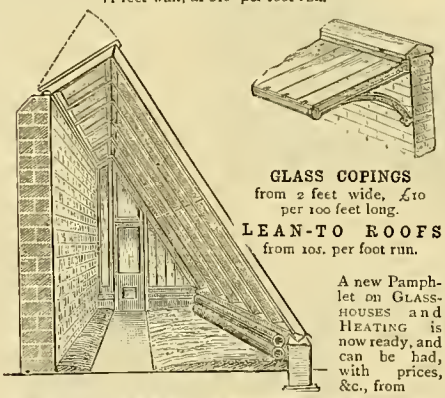

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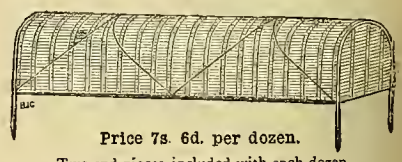

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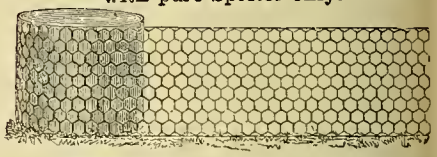

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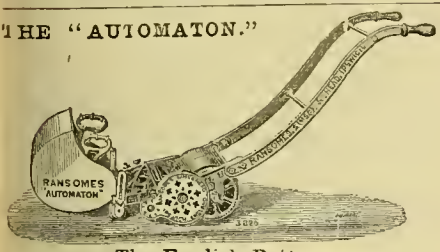


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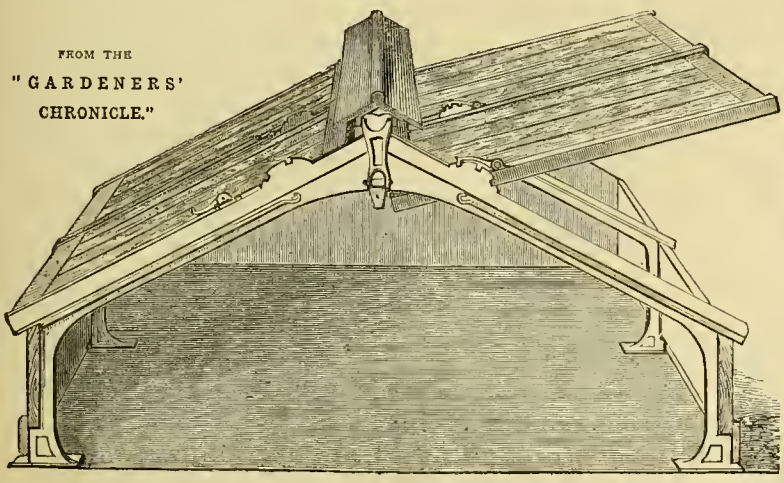

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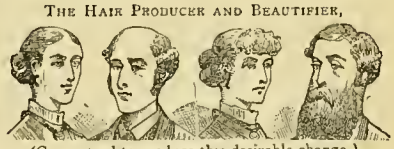

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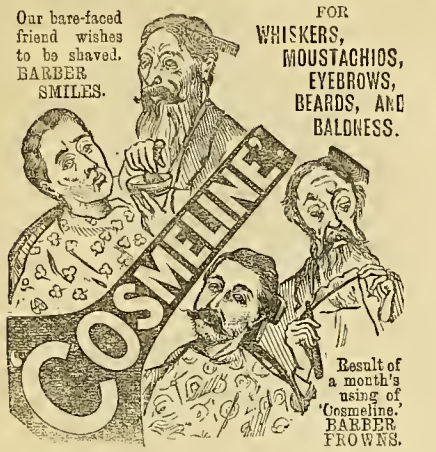


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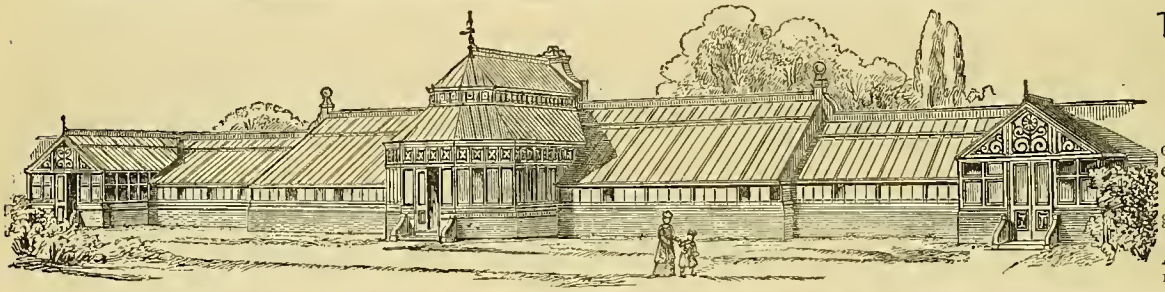

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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, March 26, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 379.—Vol. XV. { New Series. } SATURDAY, APRIL 2, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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*NOTICE.—Will be published with the "Gardeners' Chronicle" for next Saturday, April 9, a Double-page Coloured Plate of DAFFODILS.*

For further particulars see page 426.

ALEXANDRA PALACE, N.
(Lessees—Jones and Barber.)
FRIDAY and SATURDAY, May 20 and 21, GRAND FLORAL EXHIBITION of BOUQUETS, TABLE DECORATIONS and POT ROSES. For Prize Lists and particulars apply to
JOS. FORSYTH JOHNSON, Horticultural Director.

ALEXANDRA PALACE, N.
APRIL 30 to MAY 21.
GRAND EXHIBITION of CLEMATIS,
By Geo. Jackman & Son.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1881, will Open, as usual, the Friday before Whit Sunday (June 3). INTERNATIONAL HORTICULTURAL EXHIBITION of 1881 will Open on August 24. THREE THOUSAND POUNDS in PRIZES at the above Exhibitions. For Schedule, &c., apply to the undersigned.
BRUCE FINDLAY,
Royal Botanic Gardens, Manchester.

THE HORTICULTURAL EXHIBITION to be held in connection with the Essex Agricultural Society's Show at Southend-on-Sea will take place on WEDNESDAY and THURSDAY, June 15 and 16, when SILVER CUPS and PRIZES to the value of about ONE HUNDRED and THIRTY POUNDS will be offered for Plants, Fruit, Flowers, and Vegetables. No Entrance Fee will be charged to Exhibitors. ENTRIES CLOSE JUNE 1. The Schedule of Prizes, Entry Forms, and full particulars, may be obtained of
Mr. JOHN TAYLOR, Jun., Hon. Sec.
22, Cambridge Terrace, Southend-on-Sea, Essex.

CHISWICK, TURNHAM GREEN, and DISTRICT HORTICULTURAL SOCIETY.
President—His Grace the Duke of Devonshire, K.G.
GRAND EXHIBITION of FLOWERS, FRUIT, &c., THURSDAY, July 14, in the Royal Horticultural Society's Gardens, Chiswick. Schedule of Prizes and Subscription Forms, with full particulars, now ready, and may be had on application to the Hon. Secretary, J. T. MUSGRAVE, Sutton Court Road, Turnham Green; also of the General Manager, Mr. A. F. BARRON, Royal Horticultural Gardens, Chiswick.

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SUNNINGDALE NURSERY,
Direction of, see *Gardeners' Chronicle*, March 19, 1881.

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FRUITING CANES, thoroughly ripened without bottom-heat, 7s. 6d. to 10s. 6d. each. PLANTING CANES, 3s. 6d. to 5s. each. Leading kinds.
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Catalogues at the Mart, and at Messrs. P. & M.'s new City Offices, 8, New Broad Street, E.C.

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MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on THURSDAY NEXT, April 7, at 12 o'Clock precisely.
On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 8, New Broad Street, E.C.

**Orchids in Flower or Bud.**

MESSRS. PROTHEROE AND MORRIS beg to announce that their NEXT SALE of ESTABLISHED ORCHIDS in Flower or Bud will take place at the Auction Mart on MONDAY, April 11, particulars of which will be given next week.
Catalogues at 8, New Broad Street, E.C.

**5000 Lilium auratum, just received from Japan in** fine condition.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 4, at half-past 12 o'Clock precisely, an importation of 5000 bulbs of LILIUM AURATUM, just received from Japan in fine condition; also a large quantity of LILIUM species, of which drawings will be shown; and 2000 LILIUM KRAMERI, from Japan; an importation of 2500 TUBEROSES from America, a consignment of 2000 TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, 3000 GLADIOLI, 200 fine clumps of IRIS KÆMPFERI and EULALIA JAPONICA, from New Jersey; 25 cases of BELLADONNA LILIES, &c.
On view morning of Sale, and Catalogues had.

**Odontoglossum crispum, &c.**

MR. J. C. STEVENS has received instructions from Messrs. Shuttleworth, Carder & Co., 191, Park Road, Clapham, S.W., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, April 6, at half-past 12 o'Clock precisely, a grand Importation of ODONTOGLOSSUM CRISPUM (Alexandræ). These are especially fine varieties, and some of the finest masses ever imported. CATTLEYA TRIANÆ, MASDEVALLIA HARRYANA, semi-established; ONCIDIUM SERRATUM, ODONTOGLOSSUM GLORIOSUM, and ANGULOA CLOWESII.
On view morning of Sale, and Catalogues had.

**Cattleya Trianæ.—Zygopetalum Gautieri.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 7, at half-past 12 o'Clock precisely, CATTLEYA TRIANÆ, the whole of which have been collected in flower. The importation consists of fine varieties; on some plants the flowers still adhere to the old stalk, and many are described with colours, &c., as collected; they vary from the purest white (Cattleya Trianæ alba) to the deep purple-lipped varieties; the consignment is in grand condition. ZYGOPETALUM GAUTIERI, the grandest lot ever imported of this rare and extremely beautiful species. The specimens are growing in Tree Ferns from 3 to 6 feet high, some of them perfectly covered with plants, and in flower. They have been collected regardless of expense, and are really fine. The whole of the importation, consisting of some eighty stems, will be offered. Also a splendid lot of the beautiful MASDEVALLIA TRIANGULARIS, in finest health; BIFRENARIA HADWENI, a grand lot; ODONTOGLOSSUM ŒRSTEDII and RAMOSISSIMUM, SOPHRONITES GRANDIFLORA, MORMODES LENTIGINOSA, and other Orchids.
On view morning of Sale, and Catalogues had.

**Flowering Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, April 8, at half-past 12 o'Clock precisely, a great variety of choice ORCHIDS in FLOWER or BUD, including Masdevallia Shuttleworthii, M. Lindeni, and M. Yeitchii; Odontoglossum Roezlii alba, O. triumphans, O. Alexandræ; Dendrobium Devonianum, Cattleya Harrisoni, Cymbidium eburneum, and a great variety of other rare and valuable sorts.
May be viewed after 2 o'Clock the day prior and morning of Sale, and Catalogues had.

**Aerides Leeanum.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 11, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., imported plants in the finest possible condition of the above-named new an lovely AERIDES, named by Professor Reichenbach in honour of William Lee, Esq., of Leatherhead, in whose collection a plant has recently bloomed. The plants were collected in the Philippine Islands by Mr. Boxall, who writes that it is a lovely species, flowers most beautiful magenta colour, with a pure white stripe down the centre of the throat; it is so free-flowering that Mr. Boxall saw quite small plants with ten and twelve flowering spikes, and in many instances two or three from the axil of one leaf. In habit the plant much resembles Aerides quinquevulnerum, and its position in the genus seems to be near Aerides Thibautianum (Huttoni). The seed-pods are deep magenta in colour. A coloured sketch, prepared in the Philippine Islands, will be on view, also dried specimens, clearly showing the marvellous profusion with which the flower-spikes are produced. At the same time will be offered very strong plants of DENDROBIUM HETEROCARPUM PHILIPPINENSIS, some of the bulbs 4 feet in length; good plants of DENDROBIUM GLUMACEUM, AERIDES MACULOSUM, AERIDES CRISPUM and LINDLEYANUM, varieties mixed, many of these with fine spikes.
May be viewed the morning of Sale, and Catalogues had.

**Hardy Plants and Bulbs—Camellias from Ghent.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, April 9, at half-past 12 o'Clock precisely, a consignment of 400 choice named CAMELLIAS, nice healthy plants and well set with blom-buds, from Ghent; some fine plants of ROSA RUGOSA, the new Japanese Rose; DEUTZIA GRACILIS, and other ornamental flowering Shrubs; a great variety of HARDY HERBACEOUS PLANTS such as Carnations, Picotees, Violets, Pæonies, Spiræas, &c.; choice GLADIOLI, LILIUMS, TIGRIDIAS, and other bulbs, Garden Yases, &c.
On view morning of Sale, and Catalogues had.

**The Second Portion of the Celebrated Collection of** ORCHIDS of JOHN DAY, Esq., of TOTTENHAM.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, April 12 and 13, at half-past 12 o'Clock precisely, the second portion of this splendid COLLECTION of ORCHIDS, comprising, amongst other fine things, the following:—

| | |
|---|---|
| Oncidium splendidum | Odontoglossum blandum |
| ,, ornithorrhyncum album | ,, nævium majus |
| ,, macranthum | ,, vexillarium (in good variety) |
| Aerides Dayanum | ,, crispum (in good variety) |
| ,, Schröderi | Grammatophyllum Ellisii |
| ,, affine superbum | Cattleya exoniensis (best variety) |
| Vanda Cathcarti | ,, labiata |
| Dendrobium cucullatum giganteum | ,, Skinneri |
| Saccolabium præmorsum | Lælia purpurata |
| ,, guttatum var. Turneri | ,, crispa superba |
| ,, ,, var., Lady Ashburton's | Cypripedium Druryi |
| Angræcum Chailluanum | ,, Spicerianum |
| Masdevallia Macrura | Cymbidium Parishii |
| ,, Trochilus | ,, Dayanum |
| ,, Lindeni | &c., &c. |
| Odontoglossum Andersonianum | |

On view morning of Sale, and Catalogues had.

**Selected Varieties of Odontoglossum Alexandræ.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, April 20, at half-past 12 o'Clock precisely, 4000 ODONTOGLOSSUM ALEXANDRÆ, collected in flower, which will be sold in their colours The Sale will also contain large importations of other Odontoglots.
On view morning of Sale, and Catalogues had.

**Flowering Orchids.**

MR. J. C. STEVENS begs to announce that he has fixed the following days for SALES of ORCHIDS in flower or bud:—

| | |
|---|---|
| FRIDAY, April 8 | WEDNESDAY, July 13 |
| TUESDAY, April 26 | |
| TUESDAY, May 10 | FRIDAY, August 5 |
| FRIDAY, May 20 | WEDNESDAY, August 24 |
| WEDNESDAY, June 1 | FRIDAY, September 16 |
| WEDNESDAY, June 15 | |
| WEDNESDAY, June 29 | FRIDAY, October 14 |

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

**Enfield Highway, Ponder's End, and Nag's Head** LANE, ENFIELD, MIDDLESEX.
By direction of Executors.
VALUABLE FREEHOLD and LEASEHOLD PROPERTIES.

MR. ARTHUR JACKSON has received instructions from the Executors and Trustees of the will of the late William Mitchell, Esq., to SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on WEDNESDAY, April 20, at 2 o'Clock precisely, in various lots, the following valuable PROPERTIES:—
A substantially brick-built FREEHOLD RESIDENCE, at Enfield Highway, with every convenience, suitable for a moderately-sized family.
About 40 acres of productive MARKET GARDEN LAND, in a high state of cultivation, of which about 16½ acres are planted with choice varieties of Fruit Trees, now well established; together with an extensive range of outbuildings. About 7 acres are most eligible, and now ripe for building operations.
A valuable FREEHOLD BRICKFIELD, situate in Nag's Head Lane, Enfield, containing 4 acres, of which about 2 acres of the deep beds of clay are unworked.
THREE FREEHOLD DWELLINGS and 1¼ acre of FRUIT LAND, situate in the high road at Ponder's End, now also ripe for building operations.
THREE LEASEHOLD DWELLINGS and BLACKSMITH'S SHOP, also at Ponder's End.
THIRTY-ONE FREEHOLD exceedingly well built brick and tiled DWELLINGS in St. James' Terrace and Old Road, Enfield Highway; let to excellent tenants at rentals amounting to £369 4s.
A FREEHOLD BRICKFIELD at the Old Road, containing about 5 acres; well adapted for a building estate.
Also about 57 plots of FREEHOLD BUILDING LAND, in St. James' Road and the Old Road.
Particulars, conditions, with plans, may be had ten days previous to the Sale, of J. R. RIGNALL, Esq., Solicitor, Enfield; at the Mart, Tokenhouse Yard; and of Mr. ARTHUR JACKSON, Auctioneer, Land and Estate Agent, 25, Liverpool Street, E.C., and Enfield, Middlesex.

**Weybridge.**

CLEARANCE SALE of a choice selection of Exotic, Indigenous and Rare PLANTS, GARDEN TOOLS, FRAMES, WIRE HURDLES and FENCING, INDIA-RUBBER HOSE, HORSE, Two PIGS, Two CARTS, HARNESS, CARPENTER'S EFFECTS, and numerous other items.

MESSRS. STANLEY ROBINSON AND WALTON will SELL by AUCTION, on the Premises, Fir Grove, close to the Railway Station, on THURSDAY, April 7, at 11 for 12 o'Clock precisely, by order of Mrs. J. K. Field, whose Lease of the premises has just expired.
May be viewed day preceding and morning of Sale, and Catalogues had on the Premises, at the "Stag and Hounds" and the "Hand and Spear" Hotels, Weybridge; and at the Offices of the Auctioneers, Poultry Chambers, 11, Poultry, London, E.C.

WANTED to RENT, within 12 miles of London, a Small HOUSE (six or seven Rooms), with Large Garden and 1 or 2 Acres of Land attached, for Market Gardening. Rent low. No Agents.
G. T. G., 6, Girdlestone Road, Upper Holloway, N.

**Seed and Floral Business.**

FOR DISPOSAL, a genuine old-established BUSINESS, in a rich and flourishing town, about thirty miles from London. Good shop and Dwelling-house. Fine commanding position. First-class connection. Advertiser retiring.
A. B., Mr. Howard, Nurseryman, Southgate, Middlesex, N.

TO BE SOLD, with Immediate Possession, a First-class Old-established NURSERY and SEED BUSINESS, in thorough working order, in the leading thoroughfare, five miles south of London; owing to failing health of proprietor. Any one with a fair amount of capital will find this a profitable investment. Apply, in first instance by letter only, to
B. F. S., Messrs. Nutting & Sons, Seed Merchants, 60, Barbican, London, E.C.

BATH and WEST of ENGLAND SOCIETY
(Established 1777) and
SOUTHERN COUNTIES ASSOCIATION.
TUNBRIDGE WELLS MEETING,
JUNE 6, 7, 8, 9, and 10.
ENTRIES of LIVE STOCK, IMPLEMENTS, &c., CLOSE APRIL, 21. POST ENTRIES (with extra Fees) received up to May 1
POULTRY ENTRIES CLOSE MAY 1.
Forms and all information supplied on application to
JOSIAH GOODWIN, Sec.
4, Terrace Walk, Bath.

**Fifty Nurseries, Market Gardens, Florist and Seed** BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 98, Gracechurch Street, E.C.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

SUTTONS' FLOWER SEEDS. ASTERS.

SUTTONS' FLOWER SEEDS. STOCKS.

SUTTONS' FLOWER SEEDS. BALSAMS.

SUTTONS' FLOWER SEEDS. ZINNIAS.

SUTTONS' FLOWER SEEDS. CALCEOLARIA.

SUTTONS' FLOWER SEEDS. CINERARIA.

SUTTONS' FLOWER SEEDS. CYCLAMEN.

SUTTONS' FLOWER SEEDS. PRIMULA.

SUTTONS' FLOWER SEEDS.
In immense variety, 6d. to 5s. per packet, post-free.

THE BEST, AND ONLY THE BEST.

SUTTONS' CATALOGUE of FLOWER SEEDS, gratis, and post-free on application.

SUTTON AND SONS,
THE QUEEN'S SEEDSMEN, READING, BERKS.

VIOLAS.—Blue, Yellow and White, named sorts, 10s. per 100.
HEATH AND SON, Exotic Nurseries, Cheltenham.

SURPLUS STOCK,
ASH, Mountain, 2 to 3 feet, and 6 to 12 feet.
LABURNUM, 4 to 7 feet.
POPLAR, Black Italian, 4 to 6 feet.
,, Ontario, 10 to 15 feet.
,, Abele, 10 to 15 feet.
QUICKS, Thorn, 2-yr. 2-yr.
PINUS CEMBRA (transplanted 1880), 4 to 7 feet.
ARBOR-VITÆ (transplanted 1880), 2 to 3 feet.
CUPRESSUS LAWSONIANA (transplanted 1880), 2 to 5 feet. Prices on application.
JOSEPH TREMBLE AND SONS, Victoria and The Castle Nurseries, Penrith.

**30,000 Finest**

SHOW and FANCY PANSIES in Cultivation, in over 300 most beautiful and distinct varieties, to dispose of at 20s. to 25s. per 100. Also most superb collections of all the newest and best ANTIRRHINUMS, PENTSTEMONS, PHLOXES, VIOLAS, MIMULUS, &c., of which priced Catalogue for 1881 of 53 pages—which should be in the hands of all growers of these popular flowers—will be sent on application.—J. FORBES, Buccleuch Nurseries, Hawick, N.B.

BEAUTY of NORFOLK.—Choice new Seedling Potato, of extra fine quality. This may be described as a late Beauty of Hebron, being of the same habit of growth and quality, but more robust, and ripens a fortnight later, is a good disease resister, and first-class for Exhibition. Per pound, 1s.; 7 lb., 6s.; 14 lb., 10s. 6d. 10 other choicest kinds in stock.
DANIELS BROS., Seedsmen to H.R.H. the Prince of Wales, Norwich.

TWELVE ADIANTUM CARDIOCHLÆNA for 12s.—This rare Fern is a grand rival of the beautiful A. farleyense, and forms a fine companion for it. Grows 3 feet high, fronds 3 feet over, and of a beautiful glaucous grey colour. Strong plants, raised from spores for the first time, are now offered at one-fifth of all other Nurserymen's Catalogues. Equally valuable for Cutting, Decoration, Exhibition. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, West Croydon.

STRAWBERRIES.—The fact of my being located in the midst of hundreds of acres of all the best Strawberries and Raspberries, enables me to supply them both cheap, good and correct to name; and all requiring Runners should order at once.
CATALOGUE post-free. Special Prices for large quantities.
H. CANNELL, Swanley.

POTATOS.—For Sale, a large quantity of MYATT'S PROLIFIC ASHLEAF, SCOTCH CHAMPION, and other Potatos for Planting. Splendid sample. Write for Prices, which are exceedingly low.
RICHARD BOWE, Potato Merchant, Selby, Yorks.

TWELVE HARDY EXOTIC and BRITISH FERNS, 10s. 6d.—Many being dormant, this is the best time to purchase, no injury being received by young fronds. Osmundas from America, Polystichums and Athyriums from Japan, Aspleniums from Jersey, &c. Strong plants for garden, rockery and other purposes. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, West Croydon.

FOR SALE (grown on best district Perthshire), about 100 Tons each, VICTORIA POTATOS, warranted pure Seed, and CHAMPIONS, extra quality.
W. S. HUNTER, Seed Merchant, Leith.

FLOWER SEEDS in PENNY PACKETS. —One hundred of the most showy, popular, and beautiful varieties, including finest double ASTER and Ten-week STOCK, Scarlet LINUM, MIGNONETTE, NEMOPHILA, SWEET PEAS, CONVOLVULUS, Dwarf NASTURTIUMS, CLARKIA, COLLINSIA, CALLIOPSIS, &c., post-free, 8s. 50 packets, including as above, post-free, 4s. 2d.; 25 ditto, 2s. 2d. Each packet contains sufficient seed for making two or three nice patches. Excellent for distribution amongst cottagers or children. All the varieties are easy of cultivation.
DANIELS BROS., The Queen's Seedsmen, Norwich.

SEED POTATOS.—We have to offer fine samples of the following varieties:—

| | |
|---|---|
| Myatt's Prolific | Aylesbury Kidney |
| Scotch Champion | Manhattan |
| Magnum Bonum | Woodstock Kidney |
| Grampian | Porter's Excelsior |
| Schoolmaster | Rector of Woodstock |
| Snowflake | Red Emperor |
| McKinlay's Pride | |

Prices on application.
JOSEPH TREMBLE AND SONS, Victoria and The Castle Nurseries, and 1, Market Square, Penrith.

**Awarded First-class Certificates by the Royal Horticultural Society, May 25, 1880; Brighton and Sussex Horticultural Society; and the Crystal Palace Grand Show.**

NEW ZONAL PELARGONIUM, "WEST BRIGHTON GEM."

WILLIAM MILES begs to announce that on April 1 next he will be prepared to supply Plants of the above, well established in No. 60 pots, at 1s. each and 10s. per dozen. Trade price on application. During the past year this Zonal has proved itself worthy of all that has been said respecting its floriferous character. As a winter-flowering variety it is unsurpassed. The plants are of a dwarf compact habit; the trusses large, well formed, and stand well up above the foliage; colour bright scarlet, and having transparent flower-stems, which gives the plant a handsome and distinct appearance. For bedding purposes it is unequalled, and for cut flowers all the year round it will be found invaluable. For opinions of the Press see the *Times* of December 17, 1879; the *Gardeners' Chronicle* of December 20, 1879; also the letter of "Medallist" in the *Journal of Horticulture*, December 16, 1880. Orders will be booked and executed in strict rotation. For further particulars, Catalogues of Carpet Bedding Plants, &c., apply to
W. MILES, West Brighton Nurseries, Cliftonville, Sussex.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.
Near 6000 species and varieties of plants are included in this List of eighty to ninety pages. No illustrations are given, nor any exaggerated descriptions to induce purchasers to buy varieties, which on proving they generally find so woefully disappointing. Special attention is given to the undermentioned classes, and purchasers selecting from our Catalogue may feel assured that no firm possesses larger collections of the finest sorts:—
CHRYSANTHEMUMS, GERANIUMS, FUCHSIAS, and other Soft-wooded Plants for Garden or Greenhouse.
DAHLIAS, PANSIES, PYRETHRUMS, CARNATIONS, and other Florists' Flowers.
HERBACEOUS and ALPINE PLANTS, many hundreds of the finest and most useful varieties.
BEDDING PLANTS, all the varieties required for any style of Bedding.
SPRING FLOWERING PLANTS, the most reliable sorts, in thousands of strong plants.
STOVE and GREENHOUSE PLANTS, Flowering and Ornamental Foliage Varieties, various sizes from quite young plants to quarter specimens, to suit various classes of purchasers.
The prices and plants need only to be compared with those of other firms, to prove that in no instance can buyers who study price and quality be supplied more advantageously than by ourselves.
W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

**Rare Things.**

ACER GINNALII.—A very handsome and distinct Maple, leaves glowing crimson in autumn: 3s. 6d. each.
HAMAMELIS ARBOREA.—Nice flowering specimens of this rare and curious winter flowering tree, 5s. each.
DAPHNE BLAGUAYANA.—Hardy as a British Heath, nice flowering plants, 3s. 6d. each.
POPULUS ALBA BOLLEANA.—Habit of the Lombardy, silvery leaves, 5s. each.
VITIS STRIATA.—Sub-evergreen climbing plant, with the clinging habit of Ampelopsis Veitchii, 2s. 6d. each.
YUCCA RUPICOLA.—A very distinct and perfectly hardy Yucca, 3s. 6d. each.
For other Novelties see our new supplemental LIST, just issued.
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

PALMS for DECORATION.—Twelve large and graceful Palms for 42s. Fine, strong, clean, well-grown plants, in 5-inch pots, fit for table or any decoration, including Euterpe edulis, Latania, Corypha, Areca, &c., in pairs or all distinct. Packages and extra Ferns gratis, to compensate for carriage any distance, for cash with order.
J. H. LEY, Royal Nursery, Croydon.

FOR PRESENT SOWING—POST-FREE.

*☞ In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.*

**Daniel's Prize Calceolaria.**

| | Per Packet.—s. d. | s. d. |
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| **AURICULA**, Daniels' Prize Alpine .. .. .. | | 1 0 |
| **BEGONIA**, Tuberous-rooted, choicest mixed .. | | 1 6 & 2 6 |
| **CARNATION**, choicest double, from named flowers .. .. .. .. | 1s. 6d. | 2 6 ,, 5 0 |
| ,, perpetual double, from named flowers .. | | 2 6 ,, 5 0 |

*From* Mr. PETER SINCLAIR, *Greenock*.
"You will observe by accompanying report of Greenock Autumn Flower Show competition that I carried off Two First Prizes for Carnations raised from your Seeds."

| | | |
|---|---|---|
| **CALCEOLARIA**, Daniels' Superb Prize .. | 1s. 6d. | 2 6 ,, 5 0 |
| ,, new dwarf, spotted, fine .. .. .. | | 1 6 ,, 2 6 |

*From* Rev. Dr. THOMAS SMITH, *Edinburgh*.
"I have had a splendid crop of seedling Calceolarias from your Seed. Some of the flowers were the most beautiful I ever saw."

| | | |
|---|---|---|
| **CINERARIA HYBRIDA**, from a splendid strain | 1s. 6d. | 2 6 ,, 5 0 |

*From* Mr. M. MOODY, Gardener to J. Rendall, Esq., *Wootton*.
"I must tell you the Cinerarias, the Seed of which I received from you last year, are now in bloom, and the admiration of every one; many of them are considerably larger than a crown piece.

| | | |
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| **CYCLAMEN PERSICUM**, beautiful varieties, mixed .. .. .. .. .. .. | | 1 6 ,, 2 6 |
| **DAISY**, choicest double, mixed .. .. .. | | 0 6 ,, 1 0 |
| **GLOXINIA HYBRIDA GRANDIFLORA**, very choice, mixed .. .. .. .. .. | | 1 6 ,, 2 6 |
| **PANSY**, Daniels' Show and Fancy .. .. | | 1 6 ,, 2 6 |
| ,, Prize Blotched, magnificent varieties .. | | 1 6 ,, 2 6 |
| ,, Daniels' improved striped, beautiful .. .. | | 1 6 |

*From* W. MARSHALL, Esq., F.R.S., *Dublin*.
"Every Seed of the two packets of Pansy you sent me grew, and I have now a magnificent bloom of the finest Pansies in the neighbourhood.

| | | |
|---|---|---|
| **PICOTEE**, choicest double, from stage flowers, | 1s. 6d. | 2 6 ,, 5 0 |
| **PRIMULA**, Daniels' choicest red .. .. .. | | 1 6 ,, 2 6 |
| ,, Daniels' choicest white .. .. .. | | 1 6 ,, 2 6 |
| ,, Daniels' choicest mixed .. .. | 1s. 6d. | 2 6 ,, 5 0 |
| ,, Fern-leaved, very choice .. .. .. .. | | 1 6 |
| ,, Superb double-flowered, mixed .. .. | | 2 6 ,, 5 0 |

*From* M. H. VOSS, Esq., *Streatham*.
"The Primula Seed you sent me last year gained my Gardener First Prize at the Brixton Hill Show. The Plants now in bloom far surpass your Catalogue Illustrations.

| | | |
|---|---|---|
| **PRIMROSE**, choicest mixed, from a fine collection of brilliant varieties .. .. .. .. | | 2 6 |
| **POLYANTHUS**, finest gold-laced.. .. .. .. | | 1 0 |
| **SWEET WILLIAM**, Daniels' superb strain .. .. | | 1 0 |

GRAMPIAN POTATOS, from Original Stock, as sent out by us in 1876. Price per Cwt. or Ton on application.
WM. SMITH AND SON, Seedsmen, Aberdeen, N.B.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
,, Golden, many thousands, 3, 4, 5 to 10 feet high.
Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
,, laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
,, Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
,, Golden Queen, 4, 5, 6 to 10 feet high.
,, Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1870.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
,, ,, ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
,, DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
,, SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

KING NOBLE or EARLY GOLDEN SHAW; the best early Potato of its class, being as early as the true old Ashleaf, and as fine a flavour, but produces four to six times the quantity. Dwarf and compact habit. First-class for early work. Per peck, 4s.; per bushel, 14s. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet.
CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

LIST of all the EVERGREEN FIR TRIBE suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country and Size there, Situation, Soil, and other information, with Copious Index of their Synonyms. Free by post for six stamps.
RICHARD SMITH AND CO., Nurserymen, Worcester.

LILIUM AURATUM, splendid sound bulbs, at 9s., 12s. and 18s. p. doz.; extra strong, 30s. and 42s. p. doz. LILIES, of various sorts, either for greenhouse, conservatory, or open border, by the dozen, 100, or 1000.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

WHITE ELEPHANT.—A choice new American Potato, of very great promise, raised from the same seed-ball as the Beauty of Hebron, which it resembles in many respects, but more productive; in fact, we may claim that the White Elephant not only possesses the unexcelled qualities of the Beauty of Hebron, but also the wonderful productiveness of the old California of twenty years ago. Price 1s. 3d. per pound, 7 lb. 7s. 100 other choice kinds in stock.
DANIELS BROS., Seed Farmers, Norwich.

FLOWERING SHRUBS in great variety, such as HYDRANGEAS, LILACS, DEUTZIAS, SPIRÆAS, CYTISUS, BROOM, PYRUS, BERBERIS, Double CHERRY, Scarlet HAWTHORNS, &c., 8s. per dozen, 50s. per 100.
Descriptive LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

JOHNSTON'S DOWNSHIRES.—We can now supply this fine variety, 3s. 6d. per peck, or 10s. 6d. per bushel. 100 other choice kinds in stock.
DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

**New Roses for 1881.**
SURPLUS NURSERY STOCK.

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| CHRVSANTHEMUMS, New Varieties of 1880, of Continental origin, and including some novel and splendid sorts | 6 | 0 |
| „ Large-flowered, superb exhibition in curved and reflexed varieties | 4 | 0 |
| „ Japanese „ „ very fine sorts | 4 | 0 |
| „ Pompon „ „ „ | 3 | 0 |
| „ Popular varieties, from different classes | 2 | 6 |
| COLEUS, Six brilliant new varieties offered by us for the first time; highly recommended, the set, one of each, 4s. 6d. | | |
| DAHLIAS, new and select, including new varieties of 1880; very choice | 5 | 0 |
| Show varieties, very fine, from our magnificent collection | 3 | |
| „ Fancy „ „ „ | 3 | 6 |
| „ Pompon or Bouquet, a charming assortment | 3 | 6 |
| „ Bedding, fine dwarf varieties | 3 | 6 |
| FUCHSIAS, new varieties of 1880, English and Continental, including some magnificent double flowers; very fine | 6 | 0 |
| „ Very fine exhibition varieties, single and double | 4 | 6 |
| „ Good showy varieties, single and double | 2 | 6 |
| „ Very choice mixed, without names | 1 | 6 |
| GERANIUMS, ZONAL (PELARGONIUMS), choice new varieties of 1880, Denny's, Pearson's, Lemoine's, &c. | 12 | 0 |
| „ New varieties of 1879; very fine | 7 | 6 |
| „ Superb exhibition varieties, carefully selected from our fine collection | 6 | 0 |
| „ Extra choice sorts | 4 | 0 |
| „ Double-flowered new varieties of 1880, very fine, with large handsome trusses of beautiful flowers, that continue for a long period; highly recommended | 12 | 0 |
| „ Double-flowered very choice varieties | 4 | 0 |
| „ White, Madame A. Baltet, splendid double white, 6d. each | 5 | 6 |
| „ Ivy-leaved, Double, newest and choicest sorts, including new varieties of 1880; very fine trusses of charmingly beautiful flowers | 10 | 0 |
| „ Ivy-leaved, Single varieties, excellent for hanging-baskets, &c. | 2 | 6 |
| MIMULUS, Daniels' superb large-flowered | 2 | 6 |
| PHLOX, HERBACEOUS, new and select, including new varieties of 1880 | 6 | 0 |
| „ very choice varieties from our superb collection | 3 | 6 |
| PENTSTEMONS, very select, including new varieties of 1880 | 5 | 0 |
| „ Choice sorts from our very fine collection | 3 | 0 |

*From* R. J. Hamilton, Esq., *Tunbridge.*

"Enclosed please find Post-office Order in payment of account for Rooted Cuttings, all of which have turned out splendidly, especially the Chrysanthemums, which are very fine."

*From* Mr. W. D. Penny, *Nairn, N.B.*

"I am very glad to say that the Rooted Cuttings I had of you in the Spring turned out very well indeed; not a single failure in the lot."

Cheques or Post-office Orders to

**DANIELS BROTHERS,**
**TOWN CLOSE NURSERIES,**
**NORWICH.**

**Important to Market Gardeners, Farmers, and SEEDSMEN.**

ALL KINDS of AGRICULTURAL, GARDEN, and FLOWER SEEDS of best quality, particular attention being paid to all Stocks of Seeds suitable for Market Gardeners, Farmers, &c.

BROCCOLI, Edmonton, Late White.
„ Covent Garden, Early White.
„ Evesham Giant, White, quite distinct, large, conical, and well protected.
BRUSSELS SPROUTS, Covent Garden Strain.
CABBAGE, East Ham and Enfield Market, selected Stock.
CAULIFLOWER, Walcheren (English saved), selected.
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CELERY, Covent Garden Red—the best grown.
CUCUMBER "The Market Wonder," no handle, wonderful cropper, good for frames or house.
RADISH, Red and White Turnip.
SPINACH, Extra Large Round.
VEGETABLE MARROW, Long White Ribbed.

Wholesale SEED CATALOGUE free by post on application. Special low prices for all leading varieties of Hardy Annual and Perennial Flower and Vegetable Seeds in quantity by arrangements.

WATKINS AND SIMPSON, Wholesale, Seedsmen, 1, Savoy Hill, Strand, W.C.; Seed and Trial Grounds, Feltham, and Twickenham, Middlesex.

ABIES DOUGLASII, 12 to 18 inches, 25s. per 100; 18 to 24 inches, 35s. per 100; 2 to 3 feet, 50s. per 100.
ABIES DOUGLASII GLAUCA, a distinct compact growing glaucous variety of the Douglas Fir, much hardier than the common, 9 to 12 inches, 12s. per dozen; 12 to 18 inches, 18s. per dozen.
„ MENZIESII, 12 to 18 inches, 30s.; 2 to 3 feet, 50s. per 100.
„ ORIENTALIS, 12 to 18 inches, 15s. per 100; 18 to 24 inches, 25s. per 100; 2 to 3 feet, 40s. per 100.
CUPRESSUS LAWSONIANA, 18 to 24 inches, 20s. per 100; 2 to 3 feet, 30s. per 100.
„ NUTKAENSIS, 2 to 3 feet, 12s. per dozen; 3 to 4 feet, 18s. per dozen.
PICEA CONCOLOR, 9 to 12 inches, 30s. per dozen; 12 to 18 inches, 36s. per dozen.
„ LASIOCARPA, 12 to 18 inches, 24s. per dozen; 18 to 24 inches, 30s. per dozen.
„ NOBILIS, 12 to 18 inches, 12s. per dozen; 18 to 24 inches, 18s. per dozen.
„ NORDMANNIANA, 4 to 6 inches, 10s. per 100; 9 to 12 inches, 6s. per dozen; 12 to 18 inches, 9s. per dozen.
PINUS ARISTATA, 4 to 6 inches, 12s. per dozen; 6 to 9 inches, 18s. per dozen.
„ BOLANDERII, a new Californian Pine, equal to insignis in its fine shade of deep green, and as hardy as our Scotch Fir, having stood this Russian winter uninjured, 2-yr., 1-yr. transplanted, 20s. per 100; 2-yr. 2-yr., 30s. per 100.
„ CEMBRA: this fine Pine stands the cold blast on our exposed hills better even than the common Spruce; 12 to 18 inches, 8s. per 100; 18 to 24 inches, 12s. per 100; 2 to 3 feet, 15s. per 100.
„ CONTORTA, 6 to 9 inches, 15s. per 100; 9 to 12 inches, 25s. per 100; 12 to 18 inches, 40s. per 100.
„ MONTICOLA, 12 to 18 inches, 12s. per dozen; 18 to 24 inches, 18s. per dozen.

With many other fine Conifers.
Priced LIST of which may be had on application.
MORRISON BROTHERS, Aberdeen.

PERPETUAL CARNATIONS for Summer and Winter flowering.
Strong young plants may now be had for 40 f. (£1 12s.) per 100.
ALLÉGATIÈRE (Allégatière) bright red.
FAVORI, beautiful rose, large flowers.
BLANC (Mont Blanc), pure white, with large rounded petals.
Orders for strong plants of the above, in bud, to be delivered in Autumn, are now received at the price of 75 f. per 100. A remittance with the order requested from unknown correspondents.
PELLET, Nurseryman, Route d'Heryeux, à Montplaisir, Lyon, Rhône, France.

J. H. BATH has the following SEED POTATOS for disposal:—

| | |
|---|---|
| Beauty of Hebron | Early Shaws |
| Myatt's Ashleaf | „ Rose |
| White Elephant | Bresee's Prolific |
| Grand Mogul | Paterson's Victoria |
| Magnum Bonum | Scotch Champion |

And other leading varieties.
Apply at 1 and 3, York Street, Borough Market, S.E.

FRUIT TREES of all kinds, for Gardens, Orchards, Walls, Forcing-houses, &c.
Descriptive Price LIST on application.
RICHARD SMITH AND CO., Nurserymen, Worcester.

BEDDING-OUT PLANTS.—To be Sold, at very low prices, about 20,000, assorted. Orders for delivery in May if desired. For LIST and full particulars address,
MANAGER or GARDENER, Winter Gardens, Blackpool.

**Special Offer of Magnum Bonum**

SEED POTATOS (Suttons' var., true). 40 Tons free on Rail at Castle Donington or Ashby, at £7 per Ton, from 10 cwt. upwards.
JOHN MACLEAN, Donington Park, near Derby.

**Notice.—SEED POTATOS.—Notice.**
At Clearance Prices, for Cash only.

WOOD AND INGRAM beg to offer the following, at greatly reduced prices:—

| | Per cwt.—s. | d. |
|---|---|---|
| CLIMAX (Bresee's) | 7 | 0 |
| EARLY ROSE 100s. per ton | 5 | 6 |
| KING of THE EARLIES (Bresee's) | 6 | 0 |
| SNOWFLAKE | 8 | 0 |
| SCHOOLMASTER | 12 | 0 |
| COVENT GARDEN PERFECTION | 8 | 0 |
| BEAUTY of HEBRON | 8 | 0 |
| DIPLOCK'S EARLY ROUND | 7 | 0 |
| MAGNUM BONUM (Suttons') 110s. per ton | 6 | 0 |
| EXCELSIOR (Porter's) | 8 | 0 |
| SCOTCH CHAMPION 100s. per ton | 6 | 0 |
| MYATT'S PROLIFIC 120s. per ton | 6 | 6 |

And a few other varieties. N.B.—Cwt. Bags, 6d. each.
The Nurseries, Huntingdon.

**Paul's Nurseries and Seed Warehouse,**
WALTHAM CROSS, HERTS.
(Adjoining Waltham Station, Great Eastern Railway.)

**WM. PAUL & SON**
(Successors to the late A. Paul & Son), Established 1806,

Invite attention to the following articles, which they continue to make objects of special care and attention:—

*A.* ROSES.
*B.* EVERGREENS, CONIFERS, ORNAMENTAL TREES, CLIMBING PLANTS, &c.
*C.* FRUIT TREES, including GRAPE VINES and STRAWBERRIES.
*D.* HYACINTHS, TULIPS, and other BULBS, CAMELLIAS, &c.
*E.* Special List of the above for large Buyers.
*F.* NEW ROSES, GERANIUMS, PHLOXES, DAHLIAS, &c.
*G.* SEEDS, and every Garden Requisite.

Inspection of the stock invited.

*Priced Descriptive Catalogues free by post.*

Important: Observe the Christian Name and Address,

**WM. PAUL & SON,**
WALTHAM CROSS, HERTS.

NEW SEEDLING POTATOS.—Gordon's Royal Kidney Regent, and Gordon's Victoria Regent, were raised from Seedlings three years ago, and have hitherto resisted disease. The former is a Second Early, and this year yielded over 10 tons per acre. The latter is not unlike Paterson's, but rougher skinned; it boils equally well, and is a much heavier cropper, having yielded 13 tons per acre.

Further particulars, with price, may be had on application to Mr. JOHN GORDON, Balmuchy, Fearn, Ross-shire, N.B.

Messrs. DRUMMOND AND SONS, Stirling, have authority to take Orders.

**Spring Planting.**

SEEDLING and TRANSPLANTED FOREST TREES. PLANTS for GAME COVERTS, ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c.—The immense stock of the above is in splendid condition, and special offers for large quantities will be made when desired.

CATALOGUES free on application.

The LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh.

**Single Dahlia Seed of the coccinea and mexicana Types.**

MESSRS. LAING AND CO. have obtained a few carefully saved seeds of these showy border plants, from the Collection at the Chelsea Botanic Garden. If sown now in gentle heat they will produce blooming plants by the end of the summer. Packets, saved from six distinct varieties, of various colours, 3s. 6d., post-free.

Stanstead Park Nursery, Forest Hill, S.E.

ABM. STANSFIELD (only surviving Son, and Successor to the late Abm. Stansfield, and sole surviving Partner of the firm of Abm. Stansfield & Sons), FLORIST, FERNIST, and GENERAL NURSERYMAN, Kersal Moor Nurseries, Manchester; and Vale Nurseries, Todmorden.

ABM. STANSFIELD AND CO. (late Abm. Stansfield & Sons), can now supply the Trade with strong plants of POLYSTICHUM TRIANGULARE XIPHIOIDES. Price per dozen on application. LIST of surplus Stock of choice British and Exotic Ferns will be issued to the Trade shortly.

Vale Nurseries, Todmorden, Lancashire.

N.B.—This Old-established Business has no Branch except the one at Kersal Moor, Manchester.

EXTRA STRONG THORNS.—Several millions, from 2 to 5 feet, well rooted. Stock believed to be unequalled. Samples and Prices on application.
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**GEO. JACKMAN & SON,**
(Established 1810,)
**Cultivators of**
FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
ROSES, RHODODENDRONS,
*Conifers and Hardy Climbers.*

THE CLEMATIS
A SPECIALITY.

*Descriptive Priced Catalogues free.*
**WOKING NURSERY, SURREY.**

**Choice Rare and New Hardy Perennials.**

**ILLUSTRATED CATALOGUE**

of above, for the present year, is now ready, and includes so many Rare and Choice Plants that it should be in the hands of every Lover of HARDY PERENNIALS. Fine selections of BAMBOOS and ORNAMENTAL GRASSES, AQUATIC and BOG PLANTS, CLIMBING and TRAILING PLANTS, GLADIOLUS, &c., are added. Also collections of PERENNIALS adapted for almost any position.

Post-free on application.

**THOMAS S. WARE,**
HALE FARM NURSERIES, TOTTENHAM, LONDON

# ODONTOGLOSSUM CRISPUM, &c.

## SHUTTLEWORTH, CARDER & CO.,

## ORCHID AND NEW PLANT IMPORTERS, 191, PARK ROAD, CLAPHAM, LONDON, S.W.,

BEG TO ANNOUNCE THAT

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, London, W.C., on WEDNESDAY, April 6, a grand importation of

**ODONTOGLOSSUM CRISPUM (ALEXANDRÆ).**

These are especially fine varieties, and some of the finest masses ever imported.

CATTLEYA TRIANÆ, MASDEVALLIA HARRYANA, semi-established; ONCIDIUM SERRATUM, ODONTOGLOSSUM GLORIOSUM, and ANGULOA CLOWESII.

*On view the morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# CATTLEYA TRIANÆ, ZYGOPETALUM GAUTIERI, &c.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 7, at half-past 12 o'Clock precisely, CATTLEYA TRIANÆ, the whole of which have been collected in flower. The importation consists of fine varieties; on some plants the flowers still adhere to the old stalk, and many are described with colours, &c., as collected; they vary from the purest white (Cattleya Trianæ alba) to the deep purple-lipped varieties; the consignment is in grand condition. ZYGOPETALUM GAUTIERI, the grandest lot ever imported of this rare and extremely beautiful species. The specimens are growing in Tree Ferns, from 3 to 6 feet high, some of them perfectly covered with plants, and in flower. They have been collected regardless of expense, and are really fine. The whole of the Importation, consisting of some Eighty Stems, will be offered; also a splendid lot of the beautiful MASDEVALLIA TRIANGULARIS, in finest health, BIFRENARIA HADWENI, a grand lot; ODONTOGLOSSUM ŒRSTEDII and RAMOSISSIMUM, SOPHRONITES GRANDIFLORA, MORMODES LENTIGINOSA, and other ORCHIDS.

*On view the morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# AERIDES LEEANUM.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 11, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., imported plants, in the finest possible condition, of the above-named new and lovely AERIDES, named by Professor Reichenbach in honour of William Lee, Esq., of Leatherhead, in whose collection a plant has recently bloomed. The plants were collected in the Philippine Islands by Mr. Boxall, who writes that it is a lovely species, flowers most beautiful magenta colour, with a pure white stripe down the centre of the throat. It is so free flowering that Mr. Boxall saw quite small plants with ten and twelve flowering spikes, in many instances two or three from the axil of one leaf. In habit the plant much resembles Aerides quinquevulnerum, and its position in the genus seems to be near Aerides Thibautianum (Huttoni). The seed-pods are deep magenta in colour. A coloured sketch, prepared in the Philippine Islands, will be on view, also dried specimens, clearly showing the marvellous profusion with which the flower-spikes are produced. At the same time will be offered very strong plants of DENDROBIUM HETEROCARPUM PHILIPPINENSIS, some of the bulbs 4 feet in length; good plants of DENDROCHILUM GLUMACEUM, AERIDES MACULOSUM, AERIDES CRISPUM and LINDLEYANUM, varieties mixed, many of these plants with flower-spikes.

*On view the morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES 38. KING STREET. COVENT GARDEN, LONDON. W.C.

# NEW PELARGONIUMS

**For the Season of 1881.**

## MESSRS. SALTMARSH & SON,

*THE NURSERIES, CHELMSFORD,*

Will have the pleasure of sending out, the first week in May, the following novelties of their own raising, and which they have every confidence will give entire satisfaction :—

## DOUBLE ZONAL PELARGONIUMS.

**LORD E. CECIL.**—This is unquestionably the finest double Zonal ever raised; the flowers are of a bright cerise-scarlet, with large round guard petals and very double, each pip resembling a miniature Rose; the trusses are enormously large, borne on strong footstalks; the plant is of moderate robust growth, and well adapted for making Exhibition Specimens. It was awarded a First-class Certificate at the Pelargonium Society's Exhibition in June last. Price 7*s.* 6*d.* each.

**MRS. ARTHUR LATTEY.**—A beautiful soft pink flower, with large, well-shaped guard petals; the pips are not over-crowded like the generality of double Zonals, but from their individual size and length of footstalk forms a large truss of flowers well set out; the trusses being produced very freely upon an exceedingly neat growth make a most perfect specimen for pot work. It has the additional advantage of being a first-rate winter bloomer, having far surpassed any variety we possess in this point during the past winter. Price 5*s.* each.

**SULTAN.**—Crimson-scarlet, very fine flower, double, and good trusser; habit of growth rather vigorous, but very compact and close jointed. Price 3*s.* 6*d.* each.

The above varieties obtained the Prize for the Best Three Varieties, not in Commerce, at the Pelargonium Show, held at the Royal Horticulutural Society's Gardens, in June last, and elicited the following opinions from the Horticultural Press :—

The *Gardeners' Magazine* (July 3, 1880) says :—"The First Prize for three new double Zonals was awarded to Messrs. Saltmarsh & Son, Chelmsford, for 'Sultan,' deep scarlet; 'Mrs. Arthur Lattey' (misprinted 'Salley'), light pink; and 'Lord Cecil,' brilliant scarlet. Certificates were granted as under :—To Messrs. Saltmarsh & Son for Lord Cecil, a GRAND double Zonal, bearing IMMENSE trusses of large, well-formed flowers of a brilliant orange-scarlet colour."

The *Gardeners' Chronicle*, July 3, 1880, says :—"For Three New Double Zonals Dr. Denny was beaten in a close competition by Messrs. Saltmarsh and Son, Chelmsford, who staged 'Lord Cecil,' a variety with immense trusses of reddish-scarlet flowers, which gained a First-class Certificate; 'Mrs. Arthur Lattey' (misprinted 'Tatley'), which bore large trusses of bright rose-coloured flowers; and 'Sultan,' crimson."

**EARL BEACONSFIELD.**—Rich dark scarlet, good broad petals, resembling in shape and size of flower the well-known variety "Annie Laxton," but darker in colour, and altogether an improvement on it; growth vigorous, producing enormous trusses of bloom. Price 3*s.* 6*d.* each.

**EMPRESS of INDIA.**—Rosy-flesh, shaded and mottled with salmon, flowers large and well-formed, and borne on fine trusses; habit of growth neat and compact, and particularly suitable for small specimens. Price 3*s.* 6*d.* each.

**The set of Five for 21s.**

## DECORATIVE PELARGONIUMS.

The following varieties have been carefully selected from a batch of very fine Seedlings of the leading varieties of this class, crossed with English and French show flowers, and will be found worthy of extensive cultivation for Market and General Decorative Purposes :—

**MRS. H. C. WELLS.**—Pure white, with a well-defined spot of rich rosy-magenta on each petal; the habit of the plant is robust and vigorous, with large roundish dark green leaves, and enormously large trusses of very large flowers, each flower having seven petals. Price 7*s.* 6*d.* each.

**LADY RAYLEIGH.**—Soft rosy-carmine with white edges, beautifully fringed, and clean white eye; a fine large flower with broad round petals borne in very large trusses; foliage neat and highly perfumed. Price 5*s.* each.

**LADY SELWYN-IBBETSON.**—Clean white ground, shading to blush-white and suffused with rosy-magenta, upper petals slighly blotched with chocolate, petals broad and beautifully fringed; good habit, and profuse flowering. Price 5*s.* each.

**MARS.**—Light scarlet with lighter edges and white throat, upper petals painted with darker scarlet, edges slightly fringed; the habit of the plant is particularly dwarf and close jointed, with handsome foliage, making it a most desirable Market variety. Price 5*s.* each.

**The set of Four for 21s.**

*Cut blooms of all the above varieties have been exhibited in our collections during the past season, and have taken First Prizes wherever exhibited, including the Pelargonium Society's Exhibition at South Kensington. For report see "Gardeners' Chronicle," July 3, 1880.*

**The Usual Trade Discount.**

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H. P. ROSES, extra strong.—Very fine strong plants, in 9, 10, and 11-inch pots, of all the leading kinds, coming into bud; suitable for exhibition. For LIST of sorts and price, apply to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

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VERBENAS, strong, healthy, well-rooted cuttings, Crimson, Purple, Scarlet, Pink, Mauve, White, 5*s.* per 100.
ALTERNANTHERAS, magnifica, paronychioides, do. major, 6*s.* per 100; amœna, 8*s.* per 100.
MESEMBRYANTHEMUMS, cordifolium, variegatum, 6*s.* per 100.
PELARGONIUMS, good named sorts, autumn struck, from single pots, 3*s.* per dozen.
Cash with order.
E. HORTON, The Nurseries, Bromham Road, Bedford.

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## Come and See.

**How and From What we Save our Seeds.**

THE *Garden* says (March 26) "A fine group of named varieties of Cinerarias was exhibited by Messrs. Cannell & Sons. Most of the sorts were very beautiful and varied in colour, while the flowers were large and as near perfection as regards form as could possibly be." The *Journal of Horticulture* reports thus :—"Messrs. Cannell & Sons secured a Silver Banksian Medal for a collection of Cinerarias, the colours of which were remarkably bright." The *Gardeners' Magazine* says :—"The Cinerarias were remarkable alike for the high-class culture and the excellency of the strain." Our houses are now a splendid sight. All who have extra fine kinds worth naming are requested to send us blooms.

PRIMULAS.

And also to show the superiority of our Primulas Three First-class Certificates have been awarded to us during the winter.

A Silver Medal was also awarded to us for our Cyclamen, and Two First-class Certificates for the same strain this season.

| | Per Pkt.—*s.* | *d.* |
|---|---|---|
| CINERARIAS | 2 | 0 |
| CYCLAMEN | 2 | 0 |
| PRIMULAS, SWANLEY RED | 5 | 0 |
| " SWANLEY PURPLE | 5 | 0 |
| " SWANLEY CRIMSON | 2 | 6 |
| " COCCINEA | 2 | 6 |
| " CANNELL'S WHITE | 2 | 6 |
| " CANNELL'S MIXED | 2 | 6 |
| " FERN-LEAVED STRIATA | 3 | 6 |
| " FERN-LEAVED WHITE | 3 | 6 |

Half Packets at Half the above Prices.

**Violets in Full Bloom.**

H. CANNELL AND SONS beg to offer very fine Plants, in 5-inch pots, full of flower, 5*s.* per dozen; smaller size, 3*s.* CATALOGUE, with price, &c., on application.

THE HOME FOR FLOWERS, SWANLEY, KENT.

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SEED POTATOS
12 tons GRAMPIANS, at £5 10*s.* per ton.
20 tons CHAMPIONS, Scotch, at £3 per ton.
2 tons FORTYFOLDS, at £4 10*s.* per ton.
3 tons RIVERS' ROYAL ASHLEAF KIDNEY, at £5 p. ton
8 cwt. LAPSTONE KIDNEY, at 5*s.* 6*d.* per cwt.
15 cwt. PRINCE ARTHUR KIDNEY, at 10*s.* per cwt.
15 cwt. FLUKE KIDNEY, at 5*s.* 6*d.* per cwt.
15 cwt. MAGNUM BONUM KIDNEY, at 6*s.* per cwt.
15 cwt. RINTOUL'S PINK-EYED DON, at 5*s.* per cwt.
10 cwt. WHITE DON (Rintoul's), at 6*s.* per cwt.
And other leading sorts. Apply to
THOMAS IMRIE AND SONS, Seed Merchants, Ayr, N.B.

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**New Fuchsias**

GEO. SMITH has much pleasure in offering his two NEW FUCHSIAS, feeling assured they will give the highest satisfaction, either for exhibition or decorative purposes. The blossoms are extra large, of fine form, very stout and brilliant. The *Gardeners' Magazine* for July 31, 1880, page 383, in report of meeting, says :—"Mr. George Smith exhibited two Fuchsias, both of which may be regarded as decided acquisitions of the dark single class," viz. :—

PRESIDENT—Bears large flowers, remarkable for their splendid substance, excellent form, and free habit; the sepals are well recurved and with tube of the brightest vermilion, the corolla beautifully formed, and of the richest violet.

MAGNUM BONUM—A very showy variety; the sepals very broad and stout, and of brilliant red; the corolla large, well-formed, and of the richest violet.

Beautiful illustrations, by Macfarland, 2*s.* each.
Strong plants of the above, 7*s.* 6*d.* each, ready third week in April.

---

**A Splendid New Yellow Chrysanthemum,**

MISS OUBRIDGE, is now offered for the first time. This will be found a very beautiful variety for Market or Exhibition, the plant being a sport from Madame Marthe. This retains the fine habit of its parent, and the flowers are of a soft yellow, not to be surpassed by any other variety known.

3*s.* 6*d.* each. Ready third week in April.

---

PETUNIA MAGNA CHARTA, a grand acquisition.—This will be found to be very constant, of fine strong habit, but dwarf; branching and compact, free in flowering, blooms of enormous size; colour purple and white. Most attractive, and in every way first-class for Market or Decorative purposes.

Strong plants in April, 2*s.* 6*d.* each.

---

**Dr. Denny's Splendid White Zonal Pelargonium,**
PRIMA DONNA.

PRIMA DONNA was exhibited at the Royal Horticultural Society's Gardens, June 29, on the occasion of the Pelargonium Society's Show, when it received the award of First-class Certificate of Merit, also First Prize in the Premier Class for Novelties, and attracted universal attention and admiration, and was pronounced by all who saw it to be the finest White Zonal ever exhibited. Price, 5*s.* per plant.

---

DOUBLE ZONALS.—GEORGE SMITH will at the same time distribute a selection of thirteen distinct varieties of the free-flowering type of Doubles raised by Dr. Denny. These varieties were all contained in the First and Second Prize-taking exhibits of the Pelargonium Society's Show, and four of the varieties were awarded FIRST-CLASS CERTIFICATES OF MERIT. Price 2*s.* each, or 20*s.* the set of thirteen varieties. Usual discount to the trade. The following is a brief description of the above, viz. :—

GORGEOUS, a large brilliant scarlet.
DAUNTLESS (First-class Certificate), a dark scarlet.
FANCY, soft orange-scarlet.
HOPEFUL, a dark magenta.
REFINEMENT, white, edged with magenta.
PIONEER (First-class Certificate), a dark cerise.
CHARMING, a bright blush magenta.
PROGRESS (First-class Certificate), a dark scarlet.
CONSTANCY, a lavender-magenta.
SPARKLING, a cerise-scarlet.
PERFECTION, an orange-scarlet.
ILLUMINATOR, a brilliant scarlet.
ENCHANTING (First-class Certificate), a brilliant magenta
The above are Now Ready, in good strong Plants.
All orders from unknown Correspondents must be accompanied by Money Orders.
Tollington Nursery, Hornsey Road, Islington, London, N.

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# OSBORN & SONS

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OF

# HYACINTHS, TULIPS, NARCISSUS, AZALEAS,

## AND OTHER SPRING-FLOWERING PLANTS.

Their HYACINTHS were awarded a MEDAL at the Exhibition of the Royal Horticultural Society on the 22d inst.; and First Prize for HYACINTHS, First Prize for TULIPS, and First Prize for NARCISSUS, and a large SILVER MEDAL for a Group of HYACINTHS and TULIPS, at the Royal Botanic Society's Exhibition on Wednesday last.

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## THE FULHAM NURSERIES, LONDON, S.W.

KALE (Russell's true), 2,000,000—7*s.* per 2000; 60*s.* per 20,000; 6 guineas per 50,000; £12 per 100,000. Large, fine, healthy plants. Cash with order.
EDWARD LEIGH, Dunsfold, Godalming, Surrey.

**Special Offer at Reduced Prices.**

FREDK. GEE begs to offer, for cash, the following Bedfordshire-grown PLANTS, POTATOS, SEEDS, &c.:—

**POTATOS.**

Fine samples, grown on new, light, and heavy land; can be highly recommended to those who require a change of seed:—

| | Per Peck of 14 lb. | Per Bush. of 56 lb. | Per Cwt. | Per Ton. |
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| | s. d. | s. d. | s. d. | £ s. |
| Early Ashleaf Improved, fine stock .. .. | 2 6 | 7 0 | 12 0 | 10 0 |
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| New Burbank Seedling, and Washington, fine kidneys, great croppers; stock now limited .. .. .. .. .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
| Golden Shaw (true), early; scarce .. .. | 2 0 | 7 0 | 12 0 | 10 0 |
| Climax and Peerless, very productive, and good quality .. .. .. .. .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
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| Rector of Woodstock, fine stock, much recommended.. .. .. .. .. .. .. | 1 6 | 5 0 | 9 0 | 8 0 |
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| Scotch Champion (true), very fine. An extraordinarily productive and wonderful disease-resisting variety, of fine quality .. | 1 0 | 3 0 | 5 0 | 4 0 |

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All the Standard varieties at 3*s.* per 1000 (of 1200); Red Picklers, at 5*s.* per 1000.

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| Beauty of Hebron | Improved York Regents |
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PYRAMID PEARS, in best varieties, extra strong and good, 12*s.* to 15*s.* per dozen.

PINUS AUSTRIACA, 2-yr. seedlings, very fine, 3*s.* per 1000; 12 to 18 inches, very strong, 40*s* per 1000.

PINUS LARICIO, 2-yr. seedlings, very fine, 4*s.* per 1000; 12 to 18 inches, very fine, 70*s.* per 1000; 18 inches to 2 feet, very fine, 100*s.* per 1000.

ASH, common, 4 to 5 feet, 35*s.* per 1000.

NORWAY MAPLE, 3 to 4 feet, 35*s.* per 1000.
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DOUBLE VARIETIES.

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| *Blandyanum | Neapolitan |
| Belle de Chatenay | Reine des Violets |
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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c, £6 6*s.* per truck.

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"A host of golden Daffodils,
Beside the lake, beneath the trees."

## SPECIAL NOTICE.

THE

# GARDENERS' CHRONICLE

FOR

SATURDAY NEXT, APRIL 9,

WILL CONTAIN A

**DOUBLE-PAGE COLOURED PLATE**
**(18 inches by 13 inches),**

From a Painting by Fitch, representing

# THE DAFFODIL,

OR

# LENT LILY.

(*Companion Plate to "THE POET'S NARCISSUS," published October* 16, 1880.)

**PRICE, FIVEPENCE; POST-FREE, FIVEPENCE-HALFPENNY.**
**OR WITH PLATE ENCLOSED IN CASE, SEVENPENCE-HALFPENNY.**

*Purchasers are specially recommended to order the Plate in a Case, to prevent injury from folding. The cost of the Number, with the Plate so protected, will be 6d., if obtained through a Newsagent.*

The Plate of "THE POET'S NARCISSUS" may still be had, price 6d., or by post, enclosed in case, 7d.

## NOTICE TO ADVERTISERS.

*As a large Extra Sale of this Number is guaranteed, it will be a very valuable medium for Advertisements.*

APPLICATIONS FOR SPACE MUST BE SENT IN NOT LATER THAN APRIL 5.

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THE PARIS EXHIBITION of 1878.

GOLD MEDAL AWARDED.

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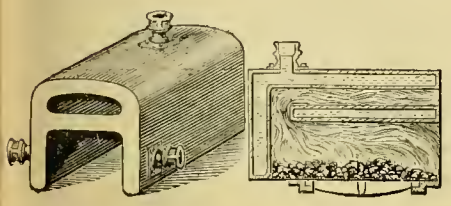

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The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.
Awarded a First-class Certificate by the Royal Botanic and Horticultural Society of Manchester, March 15, 1881.
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For Opinions of the Press and Testimonials see *B. S. W.'s Illustrated Seed Catalogue for* 1881, Post-free.

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| **Carnation,** finest mixed .. .. .. .. .. | 1 | 6 |
| **Celosia pyramidalis plumosa** .. .. .. .. | 1 | 0 |
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| **Dahlia,** Single, Yellow, Scarlet, or Mixed .. .. | 1 | 0 |
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| **Primula sinensis fimbriata coccinea,** 5s., 3s. 6d. and | 2 | 6 |
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B. S. WILLIAMS,
Seed Merchant and Nurseryman,
VICTORIA AND PARADISE NURSERIES,
UPPER HOLLOWAY, LONDON, N.

THE
# Gardeners' Chronicle.

*SATURDAY, APRIL* 2, 1881.


## FLOWER LORE: APRIL.

THE present month, which is always welcome as heralding in the spring-time of the year, has appropriately been called the "flower-producing month," for it is at this season that Nature begins to exert again her reproductive powers, awakening the earth from its winter's sleep, and decking it with those early flowers which have a charm for every eye. Perhaps one of the most beautiful sights in springtime is the wild Hyacinth, when its lovely blue flowers clothe, as with a fairy mantle, our fields and woods, and shed abroad their sweet and delicate perfume. Shakespeare, whose magic pen alone is sufficient to stamp celebrity on any plant it has glided over, has given a graceful allusion to this favourite flower in "Cymbeline" (iv. 2), where he represents Arviragus as saying of Imogen :—

> "Thou shalt not like
> The flower that's like thy face, pale Primrose, nor
> The azured Harebell, like thy veins."

This plant, although popularly called the Harebell, or Bluebell, is quite distinct from the Campanula rotundifolia, the true Bluebell of Scotland. It is also known as the Squill, or Crowleek, and is termed by Gerard the "Blew Harebell or English Jacint." Our Hyacinth, it must be remembered, is not the true Hyacinth of the Greeks, for that is supposed to have been a species of Lily which, according to legendary history, sprung from the blood of the boy Hyacinthus, bearing on its petals the exclamation "Ai! Ai!" (Alas!) The term of *non scriptus* was applied to the wild Hyacinth, because it had not the "Ai! Ai!" on its petals, and therefore could not be the Hyacinth of the poets. Several flowers are said to represent this sad blossom, the Martagon Lily and the Larkspur each laying claim to this honour.

Another favourite flower that now gladdens our woods is the Wood Sorrel, which some consider is the true Irish Shamrock. Its delicate little white flowers, with their delicate purplish veins, are romantically termed by the Welsh "Fairy Bells," and are supposed to ring the merry peals which call the elves to "moonlight dance and revelry." In days gone by it was generally called Hallelujah, on account of its blossoming between Easter and Whitsuntide, the season at which the Psalms were sung which end with that word. It bears the same name in German, French, Italian and Spanish. Among its various other nicknames may be mentioned Gowk Meat, Wood Sowers, Cuckoo's Bread, Hearts, from the shape of the leaflet, and Stub-wort. Its leaves are a real weather-glass, as they always close up at the approach of rain. The plant, too, yields the purest oxalic acid, and the salt prepared from it under the name of "salt of sorrel" is used to remove iron-moulds from linen.

That curious plant, the Arum maculatum, which now appears under the hedges, has been styled "the English Passion Flower." Its popular name, "Lords and Ladies," is derived

from children so calling the spadix, as they find it to be purple or white. If one, too, strips off the spathe or hood, inside will be found the "Parson in his Pulpit," which is another of its strange country names. Indeed, this plant is full of interest, not only botanically, but from the extensive folk-lore and many associations connected with it. Referring to some of its other appellations, the chief of these are Cuckoo Pint, Wake Robin, Friar's Cowl, and Calves' Feet—the last name having originated in its curiously shaped leaves. In Cheshire it is called "Gethsemane," because it is said to have been growing at the foot of the Cross, and to have received on its leaves some drops of blood.

"Those deep unwrought marks,
The villager will tell thee,
Are the flower's portion from the atoning blood
On Calvary shed. Beneath the Cross it grew."

Another name given to this plant was Starch-wort, from the starch that was procured from its roots, and which was much in request for the large collars worn in the time of Queen Elizabeth. Gerard, however, who wrote during this reign, tells us that "the most pure and white starch is made of the roots of Cuckoo Pint, but most hurtful for the hands of the laundress that hath the handling of it, for it choppeth, blistereth, and maketh the hands rough and rugged, and withal smarting." A further name for it is Bloody Men's Fingers, from the red berries that surround the spadix. We may note here that it is to this plant that we are indebted for those bright coral berries which give such a rich colouring to the scenery of autumn. The French have as many popular names for the Arum maculatum as ourselves, calling it, for instance, the High Priest's Mitre, Hare's Bread, and Pepper Cabbage. The uses to which this plant are said to have been applied are curious. Thus Pliny says its leaves were anciently used to preserve cheese, by covering it over with them; and according to tradition bears have been known to seek this plant as a necessary medicine, after they had lain for several weeks without food. From its roots, too, the French growers made a powder, which they termed Cypress powder—this, when mixed with water, being esteemed a good wash for the skin.

The Celandine, with its deep green leaves and small yellow flowers, has been popularly termed "Swallow-wort," as it generally appears about the arrival of the swallow, and withers away at its departure in autumn. Gerard, however, contradicts this notion, on the ground that the Celandine may be found all the year round. He considers that its name originated from the circumstance that "with this herbe the dams restore light to their young ones when their eies be put out." It has also been called Tetter-wort, from its curing tetters. The lesser Celandine has been nicknamed the "Pile-wort" from the Latin *pila*, a ball, in allusion, says Dr. Prior, "to the small tubers on the roots and its supposed efficacy, on the doctrine of signatures, as a remedial agent."

The sweet scent of the Wallflower now begins to perfume our gardens—a plant which in its wild state has been a favourite of our romance writers from its growing on old walls and ruins. Some of its popular names are very curious, and vary in different localities. Thus in Dorsetshire it is known as the "Bloody Warrior," from the blood-like tinges on its corolla; and in the West of England it is termed the "Bleeding Heart." Gerard names it Wallflower, Yellow Stock, Gillo-flower and Wall-Gillo-flower. Originally, the name of Heart's-ease was applied to it—a term used by Turner, one of the earliest English writers on plants, who calls it "heartis-ease." It has also been called Cherisaunce, comfort; a word which occurs in Chaucer's *Romaunt of the Rose*:—

"Then dismayed I left all soole,
Forwearie, forwandered as a foole,
For I ne knew ne Cherisaunce."

The Auricula, again, which is always welcome on account of its pretty blossoms, now blooms. It was long known as the Mountain or French Cowslip, and was called by our old botanists "Bear's-ear" from the shape of its leaves. It has also been named "Paralytica" by the herbalists of former days, on account of its being esteemed a good remedy for the palsy. At what exact period this plant was brought to this country is uncertain, but Gerard speaks of it as no stranger in the year 1597, observing, "it do grow in our London gardens."

Among the numerous other plants that now burst into blossom may be noticed the Pansy or Heart's-ease, one of the most popular of our old English flowers. There is, perhaps, no flower that has had so many quaint nicknames attached to it, which may be owing, as Dr. Prior points out, to its habit of coquettishly hanging its head and half-hiding its face, as well as to some fancied resemblance in the throat of the corolla. Thus some of its popular names are—"Three Faces under a Hood," "Jump Up and Kiss Me," "Pink of my John," "Kiss Me at the Garden Gate," "Flame Flower," &c. Shakespeare notices it by the name of "Love-in-Idleness" in the *Midsummer Night's Dream* (ii. 2), where he makes Oberon say—

"Yet marked I where the bolt of Cupid fell:
It fell upon a little western flower,
Before milk-white, now purple with love's wound,
And maidens call it Love-in-Idleness"—

a term which is still in use in Warwickshire. Its Anglo-Saxon name was Banwort or Bone-wort, the meaning of which, however, is a matter of uncertainty, as also is its modern name of Pansy, which some consider a corruption of the French word *pensée*. Its other appellation of Heart's-ease means a cordial, as in Sir Walter Scott's *Antiquary* (chap. xi.):—"Buy a dram to be eilding and claise, and a supper and heart's-ease into the bargain."

A plant also which now begins to display its lilac corolla, and has too curious a history to pass over, is the Moon-wort, or "Purple Honesty." It was formerly called "Pennie Flower," "Money Flower," "Silver Plate," "Pricksong Wort," and "White Satin." The French have bestowed similar names upon it, and still call it in some parts "Pope's Money," "Medal," and "Spectacle Plant." There is a popular superstition in our own country that wherever it grows the people in the neighbourhood are exceedingly honest. In days gone by it was held in high repute, because considered to possess various magical properties, besides being used in incantations. Thus, Drayton speaks of—

"Enchanting Lunary here lies,
In sorceries excelling."

Once more there is the Oxlip, so named from being a larger kind of Cowslip, and which Shakespeare has immortalised in the well-known lines in the *Midsummer Night's Dream* (ii. 2), where Oberon says—

"I know a bank whereon the wild Thyme blows,
Where Oxlips and the nodding Violet grows."

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The Census. — On Monday morning next, all householders will be called upon to fill up the Census papers previously left with them. As a correct enumeration of the population, their ages, employments, &c., is a matter of the greatest national value and not a matter merely of scientific interest, still less of idle or impertinent curiosity, it is to be hoped that those concerned will carry out this little act of patriotism in the most careful manner. The use to be made of the facts so collected will not affect individuals as such but only aggregates or masses, so that no one need fear that his or her own personal interests will be affected by the statements that he or she is called on to make.

## New Garden Plants.

Phaius tuberculosus, *Bl.*

This is a very novel beauty. I have at hand a newly developed peduncle with only six fine flowers, but in a few years no doubt there will be seen under Box Hill racemes with twenty flowers. They have rather stellate sepals and petals of fine white, and an exceedingly fine lip with wide yellowish lateral lobes, covered over and over with brown blotches, on an anterior obcordate wavy middle laciniæ, white, with mauve marginal spots. Three callous orange places with numerous impressions stand in the centre, directed towards a tuft of light sulphur-coloured capitate hairs, which must suffice to embarass many small insects. They are perhaps attracted by similar small hairs, which stand scattered on the side laciniæ. The column is white, with some light purple tint in front.

When two years and a half ago the plants of M. Léon Humblot came under the hammer, I wrote some recommendation to this zealous traveller, the copy of a sketch taken from the living plant well expressing its charm and the peculiar blunt base of the lip. All this, as at other times, proved good for nothing, and it was only Sir Trevor Lawrence who was merciful enough to take cordial care of a plant, now his pride. I hear the few plants which stand at disposition immediately rose to five guineas, and when our American brethren send their orders they will be quoted at ten guineas.

The moral is that young travellers should only collect known things and send, provided they know the thing, the novelty as perfect to some London establishment. When once they have appeared on the scene in fine flower, then it may be time to introduce them, as then the word "new" is pronounced in another way than before. The specimen I alluded to (see fig. 67, p. 341) is the one recently exhibited by Sir Trevor Lawrence. *H. G. Rchb. f.*

Miltonia Warscewiczii (*Rchb. f.*) ætherea, *n. var.*

A curious variety, whose colours are nearly lost — all blended in the slightest tinge. Sepals and petals are of the lightest yellow with white tips; the lip white, area lightest yellow, bordered and based with lightest mauve-lilac; keels white, column white.

I have to thank for this curious thing Mr. C. Winn, The Uplands, Solly Hill, Birmingham. Nothing comparable to it had ever come before me. *H. G. Rchb. f.*

Mormodes buccinator (*Lindl.*) theiochlorum, *n. var.*

This is a very nice variety of this variable species. It has light green sepals and petals, a sulphur-coloured lip, and a white column. It was purchased by Mr. J. Day at one of the Stevensian sales, with Mormodes buccinator var. major; hence it is of Neo-Grenadian origin, and was collected by Mr. Schmidtchen for Mr. Fred. Sander. *H. G. Rchb. f.*

Odontoglossum aspersum (*Rchb. f.*) violaceum.

This fine Odontoglossum would be quite like the type of the presumed hybrids that flowered in January, 1879, at Messrs. J. Veitch & Sons' Royal Exotic Nursery, if it were not for a good deal of mauve on the column (anther-case included), and on the lip (callus excluded). I have to thank Sir Trevor Lawrence for the specimen. *H. G. Rchb. f.*

Odontoglossum cuspidatum (*Rchb. f.*) xanthoglossum.†

A fine Odontoglossum, with large flowers of rich yellow colour, with rich and good horse-chestnut tint. Sepals and petals rather narrow, lanceolate acuminate, spreading. Lip ligulate, acuminate, wavy and toothletted with several fine and much split crests in front of the great square mark in the centre. The flowers are placed in a rich many-flowered raceme, as in that of a glorious Odontoglossum nevadense which I had lately from Director Linden's establishment, or in a panicle. The discovery was made by Mr. Coradine in the United States of Columbia, when he assisted Mr. Chesterton, then travelling for Messrs. Veitch, who kindly sent me fine dried specimens of the white-lipped variety. Thus I expected to see the plant coming one day from Messrs. J. Veitch & Sons. But no. It is Mr. B. S. Williams who comes on the scene, with a fine flower of the yellow-lipped variety. It is a fine thing, with a certain allure of Renanthera Lowii or Rohaniana. I described it *bonâ fide* as a good species. But is it a mule? We may do best to take the thing as it is, without too much troubling about its origin. *H. G. Rchb. f.*

† *Odontoglossum cuspidatum* (Rchb. f.). — Luteo-purpurea: paniculatum, grandiflorum; sepalis cuneato oblongis acuminatis hinc crispo undulatis; tepalis subæqualibus; labelli ungue a columna liberrimo late in laminam pandurato ligulatam serrulatam cuspidatam extenso; callis laceris inter lobos latiores partis panduratæ adjectis utrinque dactylis tribus; columna trigona supra basin utrinque angulata; alis apice membranaceis in fimbrias solutis.—Rchb. f., *Xenia*, ii., p. 199, tab. 184; Garcke, *Linnæa*, xli., 27. Nov. Grenada. *H. G. Rchb. f.*

## INDIAN RHODODENDRONS.

Several Himalayan species of the strikingly handsome genus Rhododendron are now blooming in the Winter Garden at Kew. The credit of having introduced to Europe so many of these glorious flowering shrubs is, as most people know, due to Sir Joseph Hooker, the present Director of the Royal Gardens. Although many of the Himalayan species will stand the winter in the open air, even in such unfavourable localities as Kew, some having proved their claims to hardiness by passing unscathed through the past extraordinarily severe winter, there are others that cannot withstand the vicissitudes of our changeable climate; all are, however, beautiful enough in foliage and flower to merit a place in any conservatory where room can be allotted to them. The little R. virgatum, one of a group of small-growing species, takes up no more room than Azalea amœna. It forms a compact bush, 1 or 1½ foot in height, with slender twiggy branches, small leaves, dark green above, and glaucous beneath, and large white flowers; it is found on the skirts of the Pine forests in ravines of the Lachen Valley at elevations of from 8000 to 9000 feet above sea-level. R. niveum owes its name to the snowy tomentum which clothes the under-surface of the very young leaves, later on this becomes a pale cinnamon-brown colour. The blossoms are purple; the large unexpanded flower-heads, embraced tightly by large brown imbricated bracts, exhibit a remarkable resemblance to the cones of some Firs. This is a native of rocky ridges and valleys of Lachen, &c., at 10,000 to 12,000 feet elevation. R. arboreum is one of the better known species, a very richly-coloured variety of it is now in flower. R. barbatum has blood-red flowers, the leaf-stalks and young growths being beset with rigid spreading hairs—hence its name. In its native mountains, where it grows at elevations of from 8000 to 11,000 feet, it forms a tree 30 or 40 feet high. R. argenteum in a wild state grows into a tree 30 feet or more in height; even without flowers, the noble foliage—dark green above and beautifully silvery beneath—renders it a conspicuous object at all times. The flowers are pink in bud, gradually whitening as they expand, and the base of the tube inside is adorned by a rich dark blood-purple blotch.

## HORÆ HORTULANÆ.

### No. IV.—A Chat about Primroses.

(*Concluded from p.* 364.)

With the denticulate Primroses I might have classed in point of culture the lovely rosy Primrose of the Himalayas—P. rosea—with its exquisite flowers of brightest pink; for it, too, though its foliage is less luxuriant than theirs, forms like them a dense winter heart. My friend, Dr. Aitchison, who I believe sent over the seed which reached England three or four years ago, tells me that in the Kashmir and Afghan valleys he found the plant growing on the sides of rocky ravines, where in spring and early summer water trickles round its roots, and bright green moss forms for it a bed, over which its blooms are spread in matchless sheets of carmine. In floral characters it differs widely from the denticulata group, and its numerous fine fibrous shoots shows that it needs a lighter, less stiff soil than they do; it is, moreover, less impatient of winter wet than they are.

The Sikkim Cowslip—P. sikkimensis—conspicuous for its tall umbel of large nodding flowers of purest yellow, a somewhat straggling bloom perhaps, but seeming to carry in it grand potentialities—needs, I believe, a very similar treatment. True, it forms no winter heart above-ground, but it turns the substance of its withered leaves into a juicy rootstock beneath the soil, and from this the new buds draw their strength. In summer, at all events, it needs at once fullest sunshine and abundant water, as well as a rich deep soil; but though probably it is not so impatient of autumn rains as are the members of the denticulata group, it is not a real bog plant, to be kept in wet all the year round. Kept dry in winter, it is absolutely hardy, having borne last winter's frost without the slightest harm; but it is apt to rot away when planted in some shady spot soddened by winter rains. The rare Stuart's Primrose—P. Stuartii—whose blooms I have not yet had the happiness to see, will I believe be found also to need the treatment I have sketched out. This at least I have already learnt, that the young seedlings need abundant moisture in a rich, deep soil, but also profit by fair exposure to solar rays; and the way the young plants die down in late autumn seems to show that they, too, need a dry winter's rest.

Our native Bird's-eye Primrose—P. farinosa—with its mealy foliage and sweet rosy flowers, though perhaps somewhat more of a bog plant, delighting in peat or saturated leaf-mould, repays a similar handling. For it, too, so long as its feet are kept well moist, loves to feel the sunlight play around its head, and it too desires its winter rest, since in its native home deep winters' snows guard it at once from sun and cold. Much the same may be said of the closely-allied P. longifolia, and of the P. nivalis* which comes to us in many varieties from central Asia, the form P. nivalis turkestanica being especially a handsome plant, with whorls of large highly-coloured flowers; and from these we may pass through P. erosa back to the denticulate group. One point of culture needs attention with P. farinosa, and, indeed, with all the members of this group—the new buds which spring up after the old bud has flowered are apt to get uncovered at their roots in late autumn and winter; it would seem as if these plants throve best where new leaf-mould is continually accumulating round them. Hence care must be taken to cover up with new soil the roots thus laid bare. Indeed, probably, the best plan is to divide the plant regularly every year after flowering, and to plant the pieces somewhat deeply. I myself, in common, I believe, with many others, have as yet failed to grow the P. nivalis turkestanica; but Prof. Regel, to whom the whole gardening world is so much indebted for the generous way in which he distributes the floral treasures which reach him from central Asia, insists on the necessity of this plan for its successful culture, and I have certainly found it useful with other forms of P. nivalis. Much, doubtless, may be said against "meddlesome" gardening; but this seems to be one of the cases where systematic interference is of use.

It will not have escaped the reader that the general plan of culture on which I have thus at some length insisted—viz., on abundant spring and summer moisture, with full exposure to the light of heaven, followed by winter rest—is in large measure the method adopted by those who grow Auriculas, save that their treasures, cabined in 60's and 48's, dare not meet the burning rays of the mid-day summer sun, and are fain to be content with the weaker slanting beams of the early morning hours. But in its native home on alpine hills the wild Auricula may often be found on open high grass slopes on which in clear mountain air the sun beats fiercely all day long. There the Auricula has no dread of wiltering: it lives, not dies by sunlight, for nightly dews and frequent daily showers and mists give it the water which it needs to face without alarm even scorching solar beams. So also with the other alpine Primulas: the lovely P. viscosa covering great patches of rock with sheets of soft tender pink, the still more lovely P. minima lifting up from tufted bed of tiny wedge-edged leaves rosy blooms, seeming all too large for such a pigmy foliage, and others, of which I will not attempt to give a list, for is not their name almost legion? All of them need for their wellbeing these four things: a rich soil, free exposure to the sun, abundance of water in spring and early summer, and a quiet autumn, ending in a peaceful winter's rest unfretted by the constant strife 'twixt rain, frost and sun. The first any one can give them, and with most varieties rich and concentrated food will be all the more useful if it be crammed between and under large stones and rocks; beneath these the spreading roots will often find moisture at such times as the leaves seek it in vain overhead. The second we may hope and wish for but not command. The third may be provided by constant care or some crafty mode of irrigation. The last is the most difficult to secure of all, for how can any plant rest in the turbulent season which we in England call winter? We may do something by careful mulching with cocoa-nut fibre and the like; but after all we can do little more when we have shut off the artificial water supply of summer than hope that frosts may come early and not late, and may come heralded by a sufficient fall of snow.

There are still many other Primroses of which I might speak, but I will content myself with yet one more, and then bring my catalogue to an end. Nearly all those which we have passed in review commend themselves for grace of shape and soft delicate hues rather than for brilliancy of colour; "the modest Primrose" may be spoken truly not only of the Primrose commonly so called, not only of P. acaulis, but of most other Primulas as well. They seek our love by the excellence of the single flowers rather than demand our admiration by gorgeous efforts at mass effects. As I think I have already said, I belong to that school of gardeners (the true gardeners we are fain to think ourselves) who love flowers as flowers, and who linger over the beauty of the single plant, or seek at most for some simple harmonious setting, rather than strive for flashing groups of brilliant colour. But we are, I trust, catholic enough in spirit to own that one, though not the highest of the pleasures of the garden, is the simple sensuous drinking in by the eye of some full mass of colour either of one or of many hues. And this pleasure the Primrose, too, will bring. I have already spoken of the striking effect which may be gained by a thick mass of P. rosea in all the glory of its carmine bloom. No less startling perhaps is the sight of a close set bed of well grown P. japonica, seen in its first blush, before its beauty is marred by the prominence of whorls of seeded capsules. But to my mind, for sheer brilliancy the palm among Primroses must be given to Siebold's Primula, P. Sieboldii, often called P. cortusoides amœna, from its resemblance to the humbler and yet worthy P. cortusoides. When it is grown in pots under glass, striking as are the umbels of drooping cup-shaped flowers, their hue is pale and sickly compared with the vivid tint which they take on out-of-doors. A single plant of moderate size, with some dozen scapes, well grown on the rockery or in the border, is seen afar off as a luminous patch of brightest pink. And their culture out-of-doors is so easy. Place them in some sunny well drained spot in rich light earth, let them not stint for water till the foliage after flowering has made all the growth it can, and then leave them to take care of themselves. They have not, like the Himalayan Primroses, the carking care first of building up and then of keeping intact a winter heart of young budding leaves. When their loose, crinkled, light green leaves of summer, having finished their labours, wither and die away, the good things which those leaves have toiled to gather up from soil and sunlight are safely garnered beneath the soil in a creeping rootstock, whence in due time of spring will shoot the buds of next year's leaves and blooms. Lured on by autumn rains and mild winter days, the rhizome may burst into untimely growth, and therefore suffer; or soddened by perpetual drip and want of adequate drainage may rot away. But these are unusual accidents; the under-ground rhizome is far less tender and capricious than the above-ground winter heart, and in most cases the plant which has once withdrawn beneath the soil may be expected to rest content till the coming spring, an ample rich top-dressing being all the care it needs.

You can grow it under glass if you like, but as I have already said, it reaches its greatest beauty out-of-doors. It is perfectly hardy, having stood even the last three winters without flinching. Moreover, it increases much more rapidly out in the open ground than in pots, and a well grown root taken up and divided in the autumn will furnish quite a crowd of plants for the greenhouse in the spring. My greenhouse is a small one, too small to serve as a workshop for decorative floriculture; and I strive, against Joseph, to keep its narrow space free for plants which are not hardy, or, being hardy, are early and fragrant. And Primula Sieboldii, alas! pays for its brilliancy of colour by being void of fragrance. I suppose, by the way, that its lack of sweet odour is the reason why the florists have taken it in hand. I cannot so far congratulate them on the results of their labours. They have washed out its colour and torn its edges, indeed have done their best to eliminate its chief, if not its only excellence. Of course they have produced a P. Sieboldii var. alba. It is a most curious psychological phenomenon this yearning to have a white variety of every flower which grows. I remember in my early gardening days a friend gave me as a great treasure some seed of white Forget-me-not, and for years afterwards I wasted precious hours every spring in trying to root out the vile impostor. Surely the one beauty of the Forget-me-not is its matchless blue; take away this and the plant becomes a common weed. The whiteness of the white petal is due to the same cause as the whiteness of grey hairs—to the presence of air where fluid should be; and though grey

* The true P. nivalis, not the white (hybrid?) form of P. viscosa very frequently spoken of erroneously as P. nivalis. P. viscosa belongs to the Auricula group, with leathery leaves, and a stout rootstock. P. nivalis seems to approach the farinosa group.

hairs become factors of beauty on an aged head, they spoil the looks of youth. Pure white flowers are doubtless beautiful, some of them perhaps the most beautiful that Nature gives; and where, as in the Hyacinth, a plant has intrinsic grace of form, we are gladdened by the same grace repeated in many hues. But where the worth of a flower lies solely in the depth of its azure-blue or the fulness of its rich crimson, ought we then to clap our hands because, in some seedling, disease has replaced the pigment with bubbles of air?

With Siebold's Primroses my list of Primroses must at present end. I might speak of many more, and might treat more fully of many on which I have only lightly touched; but I think I have said enough. Nor need I dwell longer on their culture, save perhaps only to say this—that where big roots in process of time need dividing, or offshoots taking off, let the division and replanting be done if possible as soon as flowering is over. No wise man, I venture to think, would, if he could help it, plant a Primrose at a time when the winter days are shortening, when the plant should be at rest, securely anchored by firm roots against the pulls and thrusts of a soil which is one day frozen and the next thawed. We all know the sights which meet us when we survey our treasures after days of frost; we grieve as we look on some small chosen darling thrust up sideways on the bed, with its roots all bare. Whereas, if we plant in spring, or even in summer, shading and duly watering till the young roots have taken hold, we may smile at the winter frosts and storms.

One other point of cultural moment I should like to dwell on before I close. Nearly all the Primroses will, I believe, be found to be at least dimorphic; all those which I have examimed, with certain exceptions, about which I do not feel quite clear, possess the two forms known as "pin-eyed" and "thrum-eyed;" that is, with styles longer than or shorter than the anthers. The pin-eyed forms are naturally rejected by the florist; their obtrusive stigmas come near at least to being an eyesore, but equally naturally they are used for breeding from. The prominence of their stigmas makes them convenient seed-bearers; but the breeder should always bear in mind that Mr. Darwin has conclusively shown that in these dimorphic plants the most abundant seed, the strongest seedlings, and the finest flowers, are gained by joining the two forms, by fertilising the long-styled plants with pollen from short-styled plants, or *vice versâ*. Nor need the breeder shrink from thus using the less elegant pin-eyed mother, lest the "pin-eye" should be predominant in the offspring. His seedlings will be both of one kind and of the other, and if he joined two thrum-eye forms he would still have offspring in part pin-eyed, with this additional drawback—that the produce would be fewer, weaker, and less likely to contain noble desirable flowers. *Dietes.*

## ENTADA SCANDENS.

This is one of the many climbing plants that give a decidedly tropical aspect to the vegetation of Jamaica. It climbs and rides lightly over every other form of vegetation that lies in its track, provided that the object is not too high. Mountain slopes, though studded with other trees and shrubs, at times present a complete mantle of the long thin shoots and glossy leaves of this scandent shrub. The wonder is that other plants under its dark covering live at all. It seems to be the fittest of the fit to live; it virtually treads all others down. It is to be seen in its strength and best form along the river courses. The long stout branches, like great cables, wreathe together every tree for many yards. The branches of one growing by the river here have travelled 150 yards in one direction and 50 yards in the opposite direction from the low trunk, which is close on 18 inches in diameter.* It is very anxious to go further, but is at present stopped short for want of trees or shrubs to clamber over. I have been told of one that had extended through and over trees for nearly a mile; but, believe me, this wants verifying.

Though a climber it is not a twiner, excepting in the sense that all plants nutate. It is a tendril-bearer, and its leaf-tendrils are, it seems to me, remarkably sensitive. They are either simple or forked, and when rubbed gently on the inner side they in a short time (five minutes or less) appear in motion, slowly at first, but in about ten minutes after manipulation they are moving at the rate of half an inch per minute, the speed gradually increasing until the object in their way is clasped, which is soon after accomplished.

The young shoots are thin and straight, but the stout old branches generally present the appearance reproduced in the accompanying sketch (fig. 82), as though they had twined round some object which afterwards died and dropped out of their rigid coils. This feature, so far as I can judge, is merely a result of contraction.

My reason for making the accompanying sketch was to show (that I might the better explain) the curiously contorted worm-like ridge, or keel, on the branch. When I first observed this feature I thought it might be a tunnel formed on the bark by tree-ants, which here form covered passages of bark, cemented with saliva, along the trunks and branches to their often huge rounded dwelling built of the same materials; but on closer inspection it was discovered to be something very different and quite natural to E. scandens. By severing one of the stout branches the real nature of the ridge was revealed. The tortuous ridge is the excentric pith of the stem. The branch wears its heart upon its sleeve for—well, at any rate for us to look at. This plant is perhaps the best living instance of excentric growth as a normal yet botanically abnormal growth. The ridge can be traced forward into branches that are about ⅜ inch thick, but entirely disappears, and assumes a natural place, in the centre of smaller growths. Before it disappears it follows in a zig-zag wriggling way the course of the laterals, by passing along the stem from the base of one lateral to the base of the next; and these being alternately placed, and somewhat distichously disposed on the stem, account in some measure for the course described by the excentric pith, as shown in the figure.

Fig. 82.—Branch of Entada scandens (the "coccoon" of the Jamaica peasantry).

Length, 2 feet 5 inches; diameter, 2½ inches to 3 inches; actual length of eccentric pith, 6 feet 2 inches.

The character above described and illustrated is a specific one that has not yet found, and possibly never will find, a place in a descriptive Flora; but with the field botanist it will perhaps henceforth supersede all others in determining Entada scandens. *George Syme, Castleton Botanic Gardens, Jamaica.*

* I have stated that the plant growing here by the river side has extended 150 yards in one direction. It is probable, however, that the actual length from the roots to the extreme point of growth is more than double that. This will be explained by the remarks made in immediate connection with the figure. *G. S.*

## GARRYA FREMONTI.

Our esteemed correspondent, Mr. Webster, of the Gardens, Gordon Castle, sends us a flowering spray of this species with male catkins, and of which we give an illustration (fig. 83), for the purpose of comparison with the older and better known G. elliptica. It is a native of Oregon, California, and the Cascade Mountains, and has oblong or oblong obovate acute leaves, not so wavy at the edge as the commoner species. Mr. Webster adds that while G. elliptica has quite succumbed to the frost, G. Fremonti has not a twig injured:—"They are both growing near each other on the front of my house—aspect south. The plant of elliptica is fully 20 feet in height, has been planted about twenty-eight years. It had its top much injured in 1860 with 22° of frost; with that exception it never has been much injured by any frost until last January, when we had it at zero. The plant of G. Fremonti is not so large, but it has in every way been under the same treatment, and I have thought its hardier character worthy of making known."

## KUBANKA AND SAXONKA WHEAT.

My second year's experiments with Kubanka and Saxonka Wheat were described in the *Gardeners' Chronicle*, vol. xiii., pp. 108, 172 (January 24 and February 7, 1880). They were made for the purpose of testing the opinion of the Russian farmers in Samara, a province on the Volga, that Kubanka Wheat repeatedly grown on poor soils is converted into Saxonka.

I may repeat that neither in the first nor second year's experiments did there appear to have arisen the slightest change in the character of the two Wheats. The grain of the first crop (1878) was pretty well ripened, especially that of the Saxonka, but the grain of the second crop (1879), owing to the extreme lateness of the season, presented about as wretched a sample as could be looked upon. In this case also the Kubanka was less fully matured than the Saxonka, the reason probably being that Kubanka is a larger seeded, stronger strawed form of Wheat than Saxonka, and requires longer time to arrive at full growth. Although both varieties were affected with red rust in 1879, yet they were not so badly affected as in 1878, apparently showing that when wetness of season goes beyond a certain degree, the conditions favouring rust begin to diminish.

On March 9, 1880, I planted in the corner of a field two rows of Kubanka seed of crop 1879, and two rows of crop 1878; also two rows of Saxonka of crop 1879 and one row of crop 1878. For comparison, I planted at the same place on March 13 two rows of ordinary spring Wheat with seed of crop 1878, and two rows of Rye with seed of crop 1879. On April 1, at the same place, I planted three rows of different varieties of Wheat, the seed being from New Zealand. And to test the effect of late sowing I put in on April 14 other two rows of Kubanka with seed of 1878, and two with seed of 1879, and two rows of Saxonka with seed of 1878.

The soil was in ordinary condition, but it is not a soil which can be regarded as a Wheat soil. The first sown ill-matured Kubanka seed of 1879 germinated very partially, and threw up very delicate plumules; the seed of 1878 produced a much better plant. No difference could be detected in the Saxonka rows between the seed of 1878 and 1879, showing clearly that the same unfavourable circumstances are less fatal to the embryos of Saxonka than to those of Kubanka. But although the Kubanka plants from the seed of crop 1879 were thin they came ultimately to be little inferior to the plants from the seed of 1878; those which grew having more room and more food than the thicker drills. The first sown Saxonka began to show ears about June 25, Kubanka ears appearing a few days later, while Rye and Bere beside them were a few days earlier. Flowering began upon the Saxonka about July 8, and upon the Kubanka about the 14th, at which date the Saxonka was well advanced. The spring Wheat and other unbearded varieties began pollination about the same time as the Kubanka. The latest sown rows flowered at a later period; but otherwise the lateness seemed to have produced no special result.

The plants were now at their best, and the question of the experiment presents itself—Has any alteration taken place in their characters? The answer

must still be that no alteration has taken place; the Kubanka has not "degenerated" into Saxonka, nor has the Saxonka "improved" or returned into Kubanka. The Kubanka retains its purple anthers, thickset spikes, and long awns; while the Saxonka has still its yellow anthers, thinset spike, and shorter awns. I stated in my last report that the ears of Saxonka and of awny spring Wheat were identical; but when seen growing beside each other there appears a slight difference. Both are constructed on the thinset principle, but in general the spring Wheat has a longer ear than the Saxonka, and, the seeds being large, more divergent awns. Ears, however, may be selected from both varieties barely distinguishable. The two varieties are evidently closely related, whether the relationship is genetic or cosmical let time determine.

Zealand, although close beside the Russian, were not much affected with rust. Other fungi followed the rust, and the destruction of the Wheat was so complete that only specimens were kept. Some of the seeds, though having their coats shrivelled, attained considerable size. On examining these at the present date (February 28, 1881) I find that they are infested with mycelium in all directions. What is implied in this fact as regards the life-history of red rust cannot be here discussed.

The conclusions at which I have arrived from these three years' experiments have already been indicated. No transformation of the one form of Wheat into the other takes place. Want of food, poorness of soil, reduces the size of the plants but does not immediately alter their character. Did it frequently happen that so great a change as the alteration of Kubanka Wheat

higher than anything mentioned by M. Fabre—carrying corns eight-tenths of a grain in weight, a weight far exceeding that of the corns of Saxonka Wheat, but no change seems to be coming over the structure of the plant. The Kubanka variety of Wheat tillers well in good soil, throwing up strong stalks and prolific ears; but in poor soils Saxonka has greatly the advantage over it, being a Wheat the whole structure of which in the present age is slighter, and more easily ripened. Its early and complete ripening also brings the embryo further forward, and makes its regermination more certain than in the case of the later Kubanka, so that when the two varieties get mixed up together in the operations of ordinary and careless husbandry, the crop upon poor or exhausted soils, unable to grow the heavier Kubanka, will consist year after year of greater and

Fig. 83.—Garrya fremonti: male catkins. (see p. 430.)

By July 14 the Saxonka was a good deal rusted, the Kubanka being at that time unaffected. Rusting came on in the same way with the crop of 1878, when by spreading newspapers and shaking the stalks I collected a pill-boxful of the spores. By-and-bye the Kubanka was also covered with rust. I had then some hope that if the rust had a certain date of development the late sown rows, which were still bright green, might escape. But no; whenever they came to the same stage of maturity the lines of rust also appeared. From a statement in Lawson's *Manual* (p. 15), that Continental Wheats, although affected with rust the first crop after importation, get over the disease, I concluded that the worst was past in crop 1878. This was not the case, for the rusting now proceeded till the whole of the plants of both varieties were utterly destroyed, not a sound ear or seed remaining. The spring Wheat and the New

into Saxonka took place by the adverse cultivation of a few years, the fact must have been verified absolutely long ere now. Such changes are not to be witnessed right off while the heat of enthusiasm looks on for a proof of evolution. I have been cultivating the wild Oat for many years, and it has not changed in one iota. I have been cultivating Ægilops ovata, Ægilops speltæformis, and other species of Ægilops for a few years. They sometimes live over two seasons. Æ. ovata, triuncialis, and others, frequently throw up nearly 200 spikes from a single seed; but not a spike of ovata has as yet given the faintest countenance to the contention of M. Fabre, that it was the immediate parent of some Wheat. And speltæformis would never be thought, on a cursory view by a farmer, to be anything but a rather dwarf form of some bearded Wheat. Many of the stalks have been from 3 feet to 3 feet 8 inches high—

greater proportions of Saxonka; and it will appear to the farmer who thought he began with a nearly pure stock of Kubanka, that Kubanka has been transformed into Saxonka. If a hybrid between these two forms could be produced resembling Saxonka, hybridising might be regarded as part of the explanation of the seeming transmutation. So far as my own experiments go, hybrid Wheats appear to be unattainable. Perhaps only those forms now exist which will not cross with each other. It is not very difficult to transfer the pollen of one Wheat to the styles of another. But will that produce a hybrid? If a Wheat's own anthers are discharged just at the natural time of flowering, upon its own styles, in a couple of hours or less many pollen tubes will be found to have entered the branches of the feathers. But the pollen of one variety (Kubanka) discharged on the styles of another variety (spring

Wheat) produces no tubes, any more than the pollen of Rye.

It only remains for me to return my best thanks to Dr. Charles Darwin for entrusting me with this experiment, and to Dr. Asher for valuable information regarding farm practices in Samara. *A. Stephen Wilson.*

## Orchid Notes.

Raising Seedling Orchids.—Judging from the inquiries I have received, since I sent you, a short time ago, a few notes respecting some Dendrobiums we had in flower—which were some of a batch I had raised from seed, that had been carefully watched and tended until we were rewarded with their first opening blooms — raising seedling Orchids is a sphere of labour upon which many are anxious to enter, and the few notes now given are chiefly for those whose desires tend in this direction. These are by no means the first seedlings I have succeeded in raising. I have operated upon many of the different forms of Cypripediums, and have obtained seed-pods. The seeds I have sown on the pots of the other Cypripediums, and have been rewarded with a large number of plants; many have flowered, some new forms have appeared, others have yet to bloom, more especially a cross that at present comes on very slowly, for although they have been up four years they are still in thumb-pots. Of Calanthes also I have raised a number. These are difficult to keep even after they are pricked off. In this case, though C. Veitchii produced the seed, the seedlings when they flower (as they have done for two years running) are the two forms of vestita, the yellow and the rose-coloured coming out of the same seed-pod, and so far no trace of Veitchii appears amongst any of them.

In the raising of Orchids from seed the grower should select two of any genus, or of genera having a close affinity; and should first get a clear knowledge of the component parts of the flower, chiefly the structure of the column and the pollen masses; and then, choosing the stronger one, on the column of this should place the pollen of the other. This operation must be done with care, and a personal attempt will make it far clearer than any written description. Make a note upon the label, and also make an entry in a pocket-book of the date, the male and female plants, and any other memoranda in connection therewith. Be very exact in all these particulars. In the majority of cases the flowers will soon begin to wither, but instead of falling off, as they do at other times, the blooms they will continue to hang in a dry state on to the ovary, which will gradually increase in size as the seed becomes formed, and having assumed an elongated shape, the seeds will be ripe in the course of six months, or it may even be twelve months, and the pod will show signs of cracking. The length of time the seed takes to ripen may probably be in a measure due to the season of the year in which the operation is performed, although some species will always be found to take much longer than others. The pods of Phalænopsis will hang twelve months before the seeds are ripe, whilst Calanthes will come to maturity in four or five months. As soon as the seeds are ripe, and the pods are bursting, they should be cut off before the small seeds fall away; carefully shake the pods on the pots of some of the plants in the same house, holding the pod close to the soil to prevent the seed being blown away. Lay the pod on one of the plants; in a day or two again take up the pod, shake it over some plants, as it will be found some more seed will have ripened; mark every pot on which the seed has been shaken, and also the special class of seed sown. Water carefully when the plant requires it, and nothing more can be done. I have always found the seed to spring up better if sown in this manner. If special pots are made up the chances of success are much less certain; at least so I have found it. In some cases six months will elapse ere any signs of life make themselves apparent; it may be that no young plants will be seen for twelve months; and even after the first are seen others will continue to spring up during the following months; so that a matter of eighteen months may pass by ere the whole of the plants can be seen. The little seedlings should not be disturbed the first twelve months; if during the second season they can be handled with safety they may be taken off and pricked round the side of a pot or basket, which must be suspended from the roof, but not neglected so as to become very dry. If the seedlings, however, keep very small, they had better remain on the pot on which they were sown until they have formed a few little bulbs; for in the young stages the operation of removing them is one attended with considerable risk, and many may be lost if they are disturbed too soon. When once they are pricked off and commence to root they are almost sure to do well, and as the seasons pass round the growths become stronger, the bulbs stouter and more plump, and in the case of some the blooms may be looked for at four years after coming up; many, however, will require six years, and a longer time even than that will be necessary to wait ere some of the Cattleyas and stout bulbed orchids will flower.

Considering the vast numbers that are annually imported, there can be no doubt that the seed ripens freely, and also germinates very abundantly, in their native habitats; but then they are at home—the whole of the conditions are favourable. The insect agency necessary for their fertilisation is at hand; the heat and moisture and seed-bed are the best possible; so that when we remember these things we cannot wonder at the immense numbers that must spring annually into existence. Probably the reason some of the plants in our houses remain so long in flower is because the particular form of insect needed for their perfect fertilisation is absent. If with the plants the insects were also imported, the blooms would much more rapidly pass away. But until we are all set upon raising Orchids from seed, and are delighted at the length of time they remain in flower, we will say, keep away the insects, the humming-birds, and the butterflies, and let us enjoy our flowers as long as they will remain open. *W. Swan, Fallowfield.*

### Dendrobium Devonianum.

All admirers of chaste and beautiful flowers, especially Orchid growers, would I am sure be delighted to see the splendid specimens of the above Dendrobe now in bloom at the nurseries of the Messrs. Backhouse, York. There are some six plants, which collectively have close on 1200 buds of flower on; one plant has ten growths, some of the growths being nearly 4 feet long and closely set with flowers for nearly their whole length. There are 260 flowers on this plant; another similar plant as to number of growths and their length, has one growth with sixty-four flowers on it. This is a most beautiful variety, the flowers being much larger and more beautifully marked than the rest, though the individual flowers on all are very large. When I saw the plants on the 24th inst. they were hung against a wall in a fernery, the wall being covered with Ficus repens and small Ferns, which, as may be imagined, formed a good background for the floral picture in front. The plants in question were part of the Constable Burton collection that has been noticed in your columns (see p. 250), and as specimens of the treatment given there are quite equal to the ones mentioned at the above page. What astonished me more particularly was the small amount, if any, of material that the plants had to grow in. They were just simply fastened to rough blocks of Elder wood, and looked as if they had at some time had a mere handful of sphagnum and peat to start them in, certainly not more. This has all disappeared, and the blocks are simply one mass of healthy fibrous roots. Personally, I am not in a position to criticise the treatment generally given to Orchids, from not having had any extensive experience in their culture; still, I cannot help remarking that, judging by the results of the treatment given at Constable Burton, position and atmospheric treatment have quite as much if not more to do with the success or otherwise of Orchid culture than the mere compost they are grown in, and that a more natural treatment would in the case of many species be, at all events, worth trying. I had the opportunity of seeing the whole collection a few days after they came into the Messrs. Backhouse's hands, and was much surprised to see the large masses of Cattleyas of sorts, Dendrobiums, Aerides, Saccolabiums, that were growing in roughly-made baskets and blocks of Elder, Elm, and Thorn. In some cases the small crates, as I may almost term them, were one mass of healthy wiry fibrous roots, not a particle of the usual compost to be seen. The large prices that some of the best plants have realised since they came into Messrs. Backhouse's hands are a proof that they were in fine condition generally. *H. J. C., March 29.*

### Mr. Hardy's Orchids.

Amongst the many collections of these favourite plants that have been formed in recent years there are few more important than Mr. Hardy's, at Timperley, Manchester, which keeps growing apace, not alone by the addition of new kinds as these become attainable, and by the addition and duplication of the finest forms of the best older species, but still more by the healthy progress which the collection generally is annually making. For although Orchids are amongst the slowest growing of cultivated plants yet when the joint requirements of treatment and suitable houses in which to grow them are present the progress they make is very different to that which is possible where either of the above essentials are wanting. Thick bulbs and stout leathery leaves having a due proportion of the peculiar bronzy tint indicative of rude health bear evidence of the satisfactory state of the collection, not alone as regards the bloom to be expected during the ensuing season, but, what is of even more importance, as indicating their continued healthy condition. Amongst many examples of such kinds as are in flower, and equally so with quantities of others coming on, the amount of bloom which the plants bear in proportion to their size is remarkable. Amongst the best of fine things coming on it is difficult to particularise, yet a few of the most remarkable may be named, such as a large and very strong example of the orange-red Ada aurantiaca, showing twenty-seven spikes; Cattleya Skinneri, with eight immensely stout flowering heads, the biggest bulbs over 3½ inches in circumference; Dendrobium thyrsiflorum Walkerianum, with a score of bulbs showing flower—some of the growths are just upon 2 feet in length. Odontoglossum vexillarium is present in quantities, the strength of the plants giving promise of the sight they will present when their exquisitely coloured blossoms are open. The cooler section of Odontoglots and the Masdevallias are in equally good order, especially the fine kinds of the latter, such as M. Lindeni, M. Veitchii and M. Harryana. Cattleyas, comprising all the leading sorts, are as promising as they well could be, C. Mendelii and C. Mossiæ particularly; Thunia Bensoniæ grows as strong and freely as a Willow. Over a path in one of the houses is hanging a row of baskets filled with Dendrobium crassinode and D. Findleyanum, with another row of different forms of D. Wardianum in pots on the opposite side of the house, that in themselves are a sight worth going some distance to see. The following were in bloom:—Arpophyllum giganteum, Angræcum eburneum, Cymbidium eburneum, C. Lowianum, Cypripedium Boxallii, C. Roezlii, C. Harrisianum, C. villosum, C. Lowii, Cattleya Trianæ, many forms; C. Warscewiczii, Cœlogyne flaccida, C. ocellata, C. cristata, Dendrobium crassinode, D. Findleyanum, D. Wardianum, Masdevallia Lindeni, M. ignea, M. Harryana, Mesospinidium vulcanicum, M. roseum, Odontoglossum nebulosum, O. gloriosum, O. Rossii, O. cirrosum, O. Pescatorei, O. Dawsonianum, O. triumphans, O. Cervantesii, O. crispum, Oncidium Weltoni—a fine spike of O. lamelligerum, bearing forty-eight flowers, was just going off; Phalænopsis Luddemanniana, Vanda suavis, V. Parishii, &c.

### East Indian Orchids.

Time was when the section of these plants represented by the genera Aerides, Vanda, and Saccolabium, were looked upon as the kings of the Orchid family — their rarity, value, and appearance all combined to place them in the highest estimation of cultivators. But, along with a few other non-bulb-forming species, they have gradually declined in favour, and although those who form collections of Orchids now stand in the proportion of ten to one as compared with the number of growers that used to exist, still it is a somewhat rare occurrence to meet with a stageful of healthy plants of the kinds above-named. Mr. Findlay has for a long time been particularly successful with them at the Botanic Garden, Manchester; the centre stage of a good-sized span-roofed house is almost wholly occupied by a lot of specimens in excellent condition. The plants, which mostly consist of the best species of Vanda and Aerides, have attained a size to show their true character, that is, from 2 to 4 or 5 feet in height, with stout healthy leaves down to the pots, a state that in itself affords the best evidence of their good condition, for where this division of the Orchid family, after reaching the size these have, are found fully furnished with healthy foliage, it may invariably be accepted as conclusive of their well-being. The house in which they grow affords them a full volume of light, and there is no stint of air, which can be admitted in all weathers by a large swing light in the division that separates it from the adjoining house, which is used for standing the Orchids in whilst in bloom, associated with Ferns, Palms, and other things, and which is necessarily kept cooler and drier than the house wherein the plants are grown.

## ARTIFICIAL MANURES.

[The subjoined analysis has been made for us of this manure. A shilling tin of this mixture weighs about 1 lb. 5 oz. The same manure is supplied in bags at 16*s.* a cwt., or at the rate of £16 a ton; so that the advantage of buying in large quantities is obvious. The manurial value may be estimated by our previous remarks at p. 144. Eds.]

"Composition of a Sample of Manure marked No. 6 (Gyde's Imperial Fertiliser).

| | |
|---|---|
| Moisture | 13.06 |
| *Organic matter and ammonia salts | 34.74 |
| **Phosphoric acid (insoluble) | 10.02 |
| Lime | 19.54 |
| Potash | 1.42 |
| Nitrates | traces |
| Oxide of iron, alumina, sulphuric acid, &c. | 19.86 |
| Insoluble siliceous matter | 1.36 |
| | 100.00 |
| *Containing nitrogen | 4.01 |
| Containing ammonia | 4.87 |
| **Equal to phosphate of lime | 21.87 |

BERNARD DYER, F.C.S., F.I.C."

# Garden Operations.

### *FLOWER GARDEN.*

Necessarily a writer of Calendar notes must occasionally repeat himself—at least, that is my experience, and perhaps it is the more unavoidable in my case because of the rule I adhere to, viz., that of founding the hints, &c., here offered on my own doings at the time of writing. It is on this ground that the indulgence of the reader is asked whenever he feels disposed to carp at inevitable repetition, as will be seen when we say that we are still busy cutting over injured Laurels, Laurustinus, and Euonymus, and clipping Holly, Box, Privet, Yew, and Laurel hedges, also clipping Ivy on buildings; this will not bear to be delayed longer, as new growth has already commenced. Box edgings, too, should be finished planting as early as possible, and so should other edgings, such as Thrift, Festucas, and Sedums. Rhododendrons and Ghent Azaleas are this season most profusely set with flower-buds; some of the early hybrid kinds of the former will shortly be in flower, and however beautiful they may be, if there is an undergrowth of weeds the enjoyment, if any, to an orderly mind must be of a very negative character, hence the beds and borders containing these should be "pointed" over at once. I dislike deep digging, preferring rather to lightly prick over and re-surface the beds with a couple of inches thickness of leaf soil and peat. I need scarcely add that the turf edgings should be neatly trimmed; and if space affords, patches of hardy herbaceous plants and bulbs thrive well in such undisturbed plots. One or two beds here are filled with Primroses, and just now are truly beautiful. The thought has occurred to me whilst writing this, that it would not be a bad rule to follow, when first forming flowering shrub beds, to fill the front space of half of them with spring blooming hardy plants, such as Primroses, Crocus, Daffodils, Scillas, and Heaths, and the other half with summer and autumn blooming plants and bulbs, such as Lilies, Gladiolus, Veronicas, Hydrangeas, and some of the dwarfer kinds of Michaelmas Daisies: there would thus be a comparatively long season of flower in positions that are now gay for four or five weeks only in a year. Roses of every class may now be pruned. We have here quite escaped the injury that has been experienced in many parts, for we have no losses, but then our lowest recorded temperature, 4°, only occurred twice, and the beds being thickly mulched with long stable litter no doubt added to their security. The drier portions of this mulching is now being removed, and the remainder is being forked in, after which a dressing of soot will be given. The soil here is very light, not by any means of such a nature as is generally considered indispensable to Rose culture, yet by deep tilth and surface mulchings the plants and flowers are generally as good as those grown on what are termed Rose soils. Brier and Manetti stocks in such a light soil throw out suckers so profusely that the bother of removing them is something serious, and therefore we are gradually reducing our stock to dwarfs on their own roots, these also producing the finest flowers.

The rockery and fernery gardens may now be put in trim order by removing any mulching that was given as protection to the plants, giving a morsel of fresh soil to such plants as require it, and weeding and stirring with a handfork the whole of the bare spots of ground, filling up any blanks that the winter has caused by division or fresh importations from the nursery. All dead fronds of Ferns should be cut away before the new fronds throw up, and the present is a good time to move or divide any kinds needing that attention. The walks in gardens of this kind should not be of a formal nature, but they should be kept as scrupulously clean and firm as those of the parterre. The most suitable edging plants for walks in such gardens are the dense-growing Sedums and Saxifrages, and if the same kinds of plants be used as undergrowth for the Ferns the winter effect will be considerably enhanced. Vacant beds should be prepared for the summer bedders. Some of these we are now planting, the edgings having been made up to a height of 4 inches above the turf, and clothed, some of them with Sedum glaucum, corsicum, acre elegans, &c.; others with Herniaria glabra; others with Veronica repens, Sempervivum montanum, calcareum, and the like. As soon as these edgings are planted the designs are marked out, the positions for the various plants labelled, and the hardy kinds at once planted; and by thus taking time by the forelock, we to some extent avoid the pressure of work at a later period. *W. Wildsmith, Heckfield, Hants.*

### *FRUIT HOUSES.*

Peaches and Nectarines. — We have had another spell of wintry weather here during the past ten days. Over 6 inches of snow fell last week, some of which is still (March 28) lying about, and forcing is still uphill work, so little assistance being obtained from the sun, and in a great measure all depending on fire-heat. Keep a steady temperature in the early house during the stoning period; those already given will be quite high enough for the present, as I have always found it best to pursue a steady course rather than to force hard and run the risk of losing half the crop. Attend well to syringing, wetting every particle of foliage, and keeping borders and pathways well moistened three or four times a day on bright sunny days. Thin the fruit finally, as by this time it will be seen which will make the best fruit; leave them at about 9 or 12 inches apart, all over the tree as far as it is possible to do so. Tie in the young shoots, keeping them as straight as possible; and pinch in close any terminal shoots that will have to be taken out after the fruit is gathered. Give copious waterings of tepid water as the trees require it; do not on any account let them get dry at the roots. The fruit on the earliest trees in the second house will have commenced stoning, and if not already done give them a good mulching of half-rotten manure, and a thorough watering. Continue disbudding, pinching, and heeling down young shoots, taking special care not to crowd them together, which will cause them to make weak spindly shoots that are no good for fruit bearing. The fruit should now be set in the third house; disbud daily, and apply the same treatment as to the earlier houses when in same stage. Later houses will now be coming in bloom; fertilise, &c., on bright days. Since introducing bees I have had no occasion to use the brush; they have done their work effectually. Keep the house intended for the latest fruit as cool as possible, just keeping out the frost. *J. Wallis, Keele Gardens.*

Melons.

The general instructions given in my last Calendar respecting atmospheric conditions are still applicable, and will continue to hold good so long as cold winds and periods of sunshine alternating with a low chilling temperature prevail. A good fireman and well-regulated valves are always invaluable at this season, when a steady mean temperature—say of 70°—is desirable throughout the day until closing time. A rise of 10° to 15° from sun-heat with a notch of air on will be quite safe; indeed, in changeable weather I like to have the ventilators so adjusted by 10 A.M. that it is not necessary to keep running to and fro to open and close them at the sight of every blink of sunshine or passing cloud. Under these circumstances the plants are seldom syringed overhead; but they enjoy several vapour baths throughout the day by damping the walls, paths, and borders with tepid water, and are allowed to run up to a temperature of from 85° to 90° with sun-heat at closing time. In any case where the leaves are thin and the leaf-stalks elongated, if ventilation is attended to as directed, and syringing the plants overhead be discontinued for a time, the leaves will gradually wax thicker and altogether assume a more vigorous and robust appearance. These conditions will also be beneficial to the setting of the fruits, which in the case of early crops will now be at this stage. Plants that were pinched for an early crop are swelling away from two to three fruits each, while others will be permitted to travel to the top of the trellis before the point of the leader is pinched out. Fruiting laterals should be pinched out at one joint beyond the fruit and all sub-laterals should be removed regularly, in order that no portion of the vigour of the plants may be wasted uselessly. In earthing-up plants after the crop is set the compost may with advantage be of a richer character than before. Our mixture is prepared in the proportion of three barrowloads of turfy loam cut about an inch thick, one barrowload of soil that has been strongly impregnated with night-soil and covered from the action of the weather, and one barrowload of wood ashes. The compost is warmed by inserting hot bricks into it and pressing it firmly together until the whole body of earth is warmed to the requisite temperature, when it is well incorporated together, and carefully laid over the roots of the plants, and made moderately firm by gentle pressure. See to the planting of succession crops in pits and frames, and take care that a constant supply of fermenting materials is always in readiness when it is required for linings, &c. *W. Hinds, Canford, Dorset.*

Cucumbers.

In no department of forcing is progress so rapid as in the case of Cucumbers when root-action is healthy and vigorous, and the weather is at all favourable to growth. During the past fortnight the plants have made amazing progress, and require almost daily attention in the way of pinching, tying, and distributing the shoots equally all over the trellis. Overcrowding must not be permitted if vigorous health is to be sustained for any lengthened period, and the same may be said of over-cropping, which is seldom necessary in private gardens, where a constant supply of fruits is of more importance than a glut at any given time. Remove all deformed fruits, leaving only the requisite number of those that promise to be handsomer, and do not allow fruits to remain on the plants a day longer after they are fit to be cut. Fruiting plants will now require regular attention to watering at the root with liquid manure-water at a temperature of 85°. A rich surface-mulching of cow-manure will also be beneficial to plants that are bearing heavy crops, inasmuch as it creates and sustains active feeders, besides giving off ammonia to the leaves. Insect pests should not be troublesome at this season, except in cases of enfeebled growth, the primary cause of which is a chill at the roots, by applying surface-dressings at a lower temperature than the bed of earth in which the plants are growing. If, however, greenfly puts in an appearance, fumigate gently, and be sure that the leaves are thoroughly dry before the operation is performed. Train and earth-up young plants in succession-houses, and maintain a night temperature of 70°, and a day temperature varying from 75° to 85°, with abundance of atmospheric moisture. *W. Hinds, Canford, Dorset.*

### *KITCHEN GARDEN.*

Sow the main crop of Beet in good open soil, in drills 15 inches apart: Frisby's Excelsior and Pine-apple Short-top are two good varieties. A sowing of Sir Joseph Paxton or Osborn's Early Forcing French Beans should now be made out-of-doors in a warm border, where provision can be made for protecting them from late frosts when the plants appear through the soil. Seedlings, such as Turnips, Cabbages, &c., just coming through the surface of the beds, will require to be dusted over with a mixture of dry soot and lime, which will prevent chaffinches and other birds from interfering with them. An application of this mixture will also check, if not entirely prevent, the ravages of slugs and flies, which are sometimes, even at this early stage of vegetation, very destructive to rising crops, the former pest being especially partial to young Lettuce plants. Peas, as previously stated, should be sown fortnightly, and in sufficient quantity to maintain a good succession. Potato planting should now be completed.

The herb border in many establishments is no unimportant adjunct to the kitchen garden, and the demands for its produce are large and frequent. Therefore, in order to maintain a young and plentiful supply, it will be necessary to make fresh plantations of the respective kinds, amongst which the following varieties will be most sought after, viz., Tarragon, Mint, common and Lemon Thyme, Sage, &c.; these are readily increased by division of the roots and slips, and which should be planted in rows at from 10 to 15 inches asunder. The end of March or beginning of April is the best time for carrying out this operation, which, like all other departmental work, should be performed neatly.

Forcing Department.—The shoots and leaves of Tomato plants will now require attention in the way of tying, thinning, and stopping, and the roots should be kept liberally supplied with weak liquid manure of the same temperature as the house in which they are growing. Avoid syringing plants coming into flower until they have set their fruit, when it should be resumed. A night temperature of from 55° to 60°, and 70° by day with fire-heat, running it up 10° or 15° with sun, and plenty of air, will be congenial to the well-being of the Tomatos. Another batch of the Trophy Tomato should now be sown for the main crop out-of-doors. Another batch of French Beans should also be sown in pots, to be transferred to pits later on. Pits and Frames.—See that Celery plants, which should have the lights taken off on warm days, and the sashes tilted up at night. Carrots, Brussels Sprouts, Cauliflower, and Cabbage plants being pushed on for planting out shortly, must be attended to in the way of watering and airing. *H. W. Ward, Longford Castle.*

## APPOINTMENTS FOR THE ENSUING WEEK.

| | | |
|---|---|---|
| Monday, | April 4 | Sale of Lilies and other roots, at Stevens' Rooms.<br>Sale of Established and Imported Orchids, Tuberoses, &c., at the Auction Mart, by Protheroe & Morris. |
| Wednesday, | April 6 | Royal Caledonian Horticultural Society's Spring Show (two days).<br>Newcastle-on-Tyne Spring Flower Show (two days).<br>Sale of Imported Orchids, at Stevens' Rooms. |
| Thursday, | April 7 | Linnean Society's Meeting, at 8 P.M.<br>Sale of Imported Orchids at Stevens' Rooms.<br>Sale of Carnations, Picotees, Pinks, &c., at the City Auction Rooms, by Protheroe & Morris. |
| Friday, | April 8 | Sale of Flowering Orchids, at Stevens' Rooms. |
| Saturday, | April 9 | Sale of Hardy Plants and Bulbs, at Stevens' Rooms. |

THE question as to the most efficient and economical MANURE for POTATOS can hardly be said to be solved; and indeed it is most probable, nay certain, that no definite rule can be laid down which will suit all cases. Still, to arrive at a general rule would be a great point, and to do this we must accumulate facts, weigh them, classify them, and ultimately draw our inferences from them. The records of two sets of experiments are before us, on which we propose to say a few words. In the first place, we may allude to the experiments carried out on Mr. LAWES' estate at Rothamsted. The experiments have only been in progress for four years, and for that reason alone are not so important as those on grass-land and cereals, where the trials have been conducted year after year on the same land and in the same manner for, in some cases, nearly forty years. Still, although, no doubt, considerable fluctuations will occur in future according to season, each year will add to the accuracy of the experiments and even now some indications may be observed which are amply worth calling attention to. Accordingly, we have extracted from the memorandum sheet recording the generalities of the experiments carried out each year at Rothamsted the following particulars relating to the amount of produce on ten different plots, occupying altogether about two acres.

| 1876. | | | | 1877. | | | | 1878. | | | | 1879. | | | | 1880. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plots. | Total. | | Per cent. of Diseased Tubers. | Plots. | Total. | | Per cent. of Diseased Tubers. | Plots. | Total. | | Per cent. of Diseased Tubers | Plots. | Total. | | Per cent. of Diseased Tubers. | Plots. | Total. | | Per Cent. of Diseased Tubers. |
| | Tons. | Cwt. | | | Tons. | Cwt. | | | Tons. | Cwt. | | | Tons. | Cwt. | | | Tons. | Cwt. | |
| 1 | 3 | 17¼ | 7.5 | 1 | 3 | 0½ | 4 0 | 1 | 2 | 17½ | 3 6 | 1 | 0 | 16¼ | 3.6 | 1 | 1 | 1¼ | 2.5 |
| 2 | 4 | 5¼ | 3.6 | 2 | 5 | 18 | 5.0 | 2 | 5 | 11¾ | 7.7 | 2 | 2 | 8½ | 21.6 | 2 | 5 | 4¼ | 4 7 |
| 3 | 5 | 6¾ | 5 0 | 3 | 5 | 4¾ | 3 8 | 3 | 7 | 6 | 9.1 | 3 | 2 | 10¼ | 22.5 | 3 | 6 | 2¾ | 8 8 |
| 4 | 6 | 14¼ | 14 5 | 4 | 8 | 3¼ | 10.7 | 4 | 8 | 9¼ | 15 5 | 4 | 3 | 14½ | 17.2 | 4 | 6 | 10¾ | 16 6 |
| 5 | 2 | 18 | 10.5 | 5 | 4 | 1 | 5 0 | 5 | 3 | 10½ | 8.0 | 5 | 1 | 3 | 6.6 | 5 | 0 | 17¾ | 0.3 |
| 6 | 3 | 17⅝ | 12.7 | 6 | 5 | 7¼ | 5.3 | 6 | 4 | 13¼ | 10 3 | 6 | 1 | 0¾ | 9 7 | 6 | 1 | 1¼ | 0.2 |
| 7 | 8 | 2 | 12.3 | 7 | 7 | 17½ | 9.0 | 7 | 8 | 17¼ | 11.8 | 7 | 2 | 15½ | 10.6 | 7 | 6 | 14 | 9.7 |
| 8 | 8 | 15⅞ | 16.0 | 8 | 8 | 13¾ | 9.6 | 8 | 9 | 4¼ | 12.9 | 8 | 2 | 9 | 12.7 | 8 | 7 | 11¼ | 13.9 |
| 9 | 6 | 1 | 11.3 | 9 | 3 | 6 | 2.1 | 9 | 3 | 18¾ | 4.3 | 9 | 1 | 2 | 5.9 | 9 | 3 | 19 | 4.1 |
| 10 | 6 | 3⅝ | 10.6 | 10 | 3 | 15½ | 1.7 | 10 | 4 | 1¾ | 5.8 | 10 | 1 | 1½ | 8.3 | 10 | 3 | 16½ | 4.3 |

Of the ten plots one is left year after year without manure, the others are manured in various manners, but each year each plot receives the same treatment. Thus, plot 1 is left continuously unmanured; plot 2 has 14 tons of farmyard manure; plot 3 has 14 tons of farmyard manure and 3½ cwt. of superphosphate; plot 4 has the same as plot 3, with the addition of 550 lb. of nitrate of soda, plot 5 is dressed with 400 lb. of ammonia salts; plot 6 with 550 lb. of nitrate of soda; plot 7 has 400 lb. of ammonia salts, 3½ cwt. of superphosphate, 300 lb. of sulphate of potass, 100 lb. of sulphate of soda, and 100 lb. of sulphate of magnesia; plot 8 is the same as plot 7, but has the same amount of nitrogen supplied as nitrate of soda; plot 9 has 3½ cwt. of superphosphate; plot 10 has the same amount of superphosphate as plot 9, and the same amount of alkaline salts as plots 7 or 8, but without any nitrogenous manure whatever. We give in a tabular form the total crops from each plot in each year, which is instructive in many ways. Ammonia salts alone yielded scarcely more than the persistently unmanured plots, and on one occasion even less. The highest produce, as a rule, is furnished by plots 7 and 8, with an admixture of nitrate of soda, or ammonia salts, with superphosphate and various alkaline salts. The influence of the miserable season of 1879 is brought out most forcibly by these figures. Further, we are in position to give the percentage of diseased Potatos observed in each plot, which, again, must, for various reasons which we need not enter into here, be taken as an approximation only to the truth rather than as a full statement. For the first four years the variety grown under ordinary field culture was the Rock, but, unluckily for some reasons, the Champion was substituted in 1880. It will be observed that the percentage of diseased tubers varies very greatly on the different plots. That the Champion has no absolute immunity from disease is proved, but unfortunately no means are afforded of comparing it in this respect with other varieties. Speaking generally, it would seem that the more highly manured plots, 4, 7, and 8, are most affected with disease—a fact no doubt attributable to the luxuriance of the haulm and foliage, which render them particularly favourable for the growth of the fungus.

In order to show what latitude must be allowed in interpreting experiments of this kind we quote from the report made to the County Cork Agricultural Society of some experiments made at Munster Farm, and from which it appears that two samples of Champion grown in the same season under similar conditions, each receiving at the rate of 30 tons of farmyard manure per acre, yielded as follows:—9 tons, 4 cwt. and 2 qr.; and 11 tons, 14 cwt., respectively; the proportion of diseased tubers being, in the first case, 2 qr., in the second 1 cwt. Among other results obtained at Cork it is made evident that the British varieties are more productive than either French or German. It is further shown that "the Champions hold their own against all comers," and that there is considerable variation in the percentage of large or "marketable" Potatos in the case of different varieties. Red-skin Flourball, Magnum Bonum, American Chilis, Victoria, Champion, Regent, White Rock, Brown Rock, and Skerry Blue are mentioned as giving a large proportion of "marketable" tubers.

Farmyard manure and seaweed are found in the Cork experiments to be the two best manures; but in looking through the records the admitted necessity of allowing a large margin for natural variation as well as for the season becomes apparent, so that before any definite statements can be made the experiments require to be carried on on a large scale for a large number of years under conditions as strictly comparable as possible. A good deal of good work is now rendered valueless for want of systematic co-operation and uniform treatment. This uniformity of plan and of record might be more fully secured than it is by the agency of our great agricultural and horticultural societies. If every experimenter does what he thinks best in his own judgment, the results he obtains are very likely to be of little value.

—— THE ABYSSINIAN BANANA IN JAMAICA.—We are indebted to the kindness of Mr. R. V. SHERRING, of Hallatraw Court, near Bristol, for a good photograph, by THOMPSON, of Kingston, Jamaica, of the fine view (fig. 84) on the opposite page. Mr. SHERRING's object in having this view, looking up the Cinchona plantation, taken, was to get a good photograph of the two Abyssinian Bananas (Musa Ensete) in bloom which stand in the foreground. On the left of the trees, and behind the wild Coco plants, stands Mr. W. NOCK, who has charge of the plantations, and who is the discoverer of an exquisite new Gymnogramma. The trees with the white stems, on the extreme right, and in the deep shade, are Cinchonas from 20 feet to 30 feet in height, and the highest 37 feet. The extreme distant ridge is the top of the plantation, and the backbone of the Blue Mountains.

—— ROYAL AGRICULTURAL COLLEGE.—The *City Press* states that the vacant Chair of Chemistry in the Royal Agricultural College, Cirencester, has been filled by the appointment of Professor EDWARD KINCH, F.C.S., F.I.C., &c., of the Imperial Agricultural College, Tokio, Japan. Professor KINCH is well known in England and abroad as a rising agricultural chemist, who has contributed largely to our knowledge of the agriculture of Japan.

—— M. ED. PYNAERT.—The news that M. PYNAERT VAN GEERT has been named a Chevalier of the Order of Leopold will be received with satisfaction by his English friends, who know how well he has deserved his honours.

—— CALIFORNIAN VINES.—These, says Mr. JOLY, are likely to compete, at some not distant date, with the products of French vineyards in foreign markets. France at the present time imports Spanish and Italian wines to supply the deficiencies in her own produce dependent on the ravages of the Phylloxera. From California even wine is imported to Bordeaux, to be there "transformed" and re-exported to California under a French brand.

—— SORGHUM HALEPENSE.—M. FOLDESSY, of Pesth, writes to us in praise of this grass as a forage plant in warm countries, and especially in sandy soil, where its mode of growth renders it also valuable in holding up embankments, &c. The climate of the British isles would not be suitable for this grass, although in some of our colonies, we believe, it is grown with advantage.

—— LIBERIAN COFFEE.—Mr. D. MORRIS, the Director of the Public Gardens and Plantations of Jamaica, has published in the form of a pamphlet a summary of what is known as to the history, characteristics, and culture of Liberian Coffee. Among the circumstances favourable to the culture of this species,

FIG. 84.—MUSA ENSETE (THE ABYSSINIAN BANANA) IN JAMAICA. (SEE P. 434.)

which was first introduced into commerce by Mr. William Bull, is the fact that it can be grown on the plains, where the preliminary expenses in the acquisition and clearing of land are naturally much lower than on the hills. Though not exempt from the attacks of the leaf-disease, it is nevertheless able to bear its effects much more successfully than the ordinary species, than which it is also more prolific.

—— Leopoldinia pulchra.—This most elegant Palm, better known in gardens as Cocos Weddelliana, evidently does not require so much warmth to keep it in health as is generally supposed, at all events during the winter season. A couple of handsome specimens, some 5 or 6 feet high, grown in pots, are plunged in the rockery of a Fern-house at Oakley, Fallowfield, where the night temperature through the winter has been from 40° to 50°, and the plants have not apparently suffered in the least, being as dark green in colour as they are usually met with where kept much warmer.

—— Rhododendron Countess of Haddington and R. Veitchianum. — The greenhouse varieties of Rhododendron are now being better appreciated than they used to be, and well they deserve it. Their strong constitution, entailing less liability to die off or get into a sickly condition than most hard-wooded plants, in addition to the beauty and great diversity in form and colour of their flowers, at once entitles them to a first place for decorative purposes, especially when the plants get large, and the houses in which they are to be used are roomy. In one of the large span-roofed houses at the Manchester Botanic Garden we recently saw two specimens—Countess of Haddington, 6 feet by 6 feet, and Veitchianum, 5 feet by 5 feet—clothed with their beautiful large delicate-tinted flowers, than which few things can be more effective at the present season.

—— The Loquat.—Mr. Bowell, The Gardens, Stawell House, Richmond, S.W., informs us that he has under his charge a specimen of the Loquat (Eriobotrys japonica) bearing a dozen bunches of from eight to ten ripe fruits, and that any one interested in the plant may see it by applying to him between the hours of 2 and 5 P.M.

—— St. Patrick Potato.—Why St. Patrick? This long kidney-shaped tuber is remarkable for the number of eyes it has. Had St. Patrick more than the customary brace of visual organs, or if not why is the patron saint of Ireland made the godfather of this new American Potato? The tubers are long, and in shape and appearance as like those of Magnum Bonum as well can be, but have an alarming number of eyes. We counted just fifty, all growing in two 3-oz. tubers. And a very pretty calculation might be worked out as to the number of plants to be got from each eye, and the number of pounds of tubers from each plant.

—— Fruit Prospects.—This is ever a speculative theme at this time of the year, but it must be admitted that the recently prevalent cold temperature has largely assisted to increase the promise of good fruits which trees and bushes have so long been giving. There are no premature developments to deplore this year, the flower-buds, always so anxious to burst and show their beauties to admiring humanity, are kept in check by weather which, whilst favouring to the utmost all ground-work, is yet too uninviting for the tender blossoms. A pleasant genial April will soon put everything right.

—— The "Flora of British India."—It is satisfactory to note the steady progress of this very useful work. The last issued part contains the remainder of the Rubiaceæ and the Compositæ, by Sir Joseph Hooker, and various minor orders by Mr. C. B. Clarke, whose work on the Indian Composites has also been made use of by Sir Joseph Hooker in his revision of the order.

—— Disease in Conifers.—We have received an account of a malady which has caused the destruction of a plantation of Douglas Pines amidst Scotch Firs and Spruce, with a slight admixture of Abies Menziesii, most of which are dead. The specimens communicated to us were three in number, of which two belong clearly to the Douglas Pine, in one specimen of which half the stem is absolutely dead, but the other specimen is not in the same condition, so that we cannot attribute the peculiar condition to partial decay, inducing an abnormal development of resin-passages. These are small and inconspicuous in healthy Douglas Pines, and not at once clear in a transverse section, as in ordinary Pines. In the present case the passages burst through the bark and protrude in the form of pustules, which in some cases send out the resinous matter in the shape of a white resinous discharge, which at first looks as if they were caused by some coccus. But there is no trace of insect or fungus. When the resin has been discharged a pit is left, lined with decomposed bark, and sometimes at the base there is a globule of hard resin. The pits which are left bear a certain analogy to those left by the pustules of small-pox. In the case where the side of the stem had been dead for some time the pustules were entirely confined to the other portion of the stem, and were now highly developed and filled with liquid resin. In A. Menziesii, where the resin-passages are more evident, the condition was just the same, the pock-marks being general. It is clear, then, that the disease, which is very curious, has arisen from some peculiarity in the soil, and is very different from any disease in Larch which we have seen, the cause clearly being due to something which must be ascertained by analysis of the soil. The root, however, in the specimens sent, it should be remembered, was dead, with the exception of the main divisions, and there was here and there a little patch of white mycelium. It would be advisable to examine their condition generally, as that might throw some light on the case. *M. J. B.*

—— Enkyanthus quinqueflorus. — In the Winter Garden at Kew a good specimen of this South Chinese shrub—one of the most handsome and desirable of cool-house decorative plants—is now flowering freely. The large drooping bell-shaped wax-like blossoms, like miniature Crown Imperials, spring from the tufts of long linear prettily-coloured deciduous bracts, deep rosy-red in an early stage, becoming shaded with pale purple before falling off. In colour the flowers are red at base, fading into pale flesh at tips of petals.

—— Injurious Insects. — Miss Ormerod's notes of observations for the year 1880 are valuable contributions to the subject. The great pest of the year was the grub of the Crane-fly, or Daddy-long-legs (Tipula oleracea). The Carrot-fly and the Onion-fly did much harm in various places. The destruction caused by the Crane-fly was in some places very large. The most successful plan of dealing with the injury seems to be high manuring, which enables the plants to tide over the attack. In future years it is intended to publish a similar report, not only, as heretofore, on certain selected insects, but also on any others that circumstances may bring under notice.

—— Indigofera australis.—This handsome dwarf shrub, which is widely distributed throughout the Australian continent, makes a charming pot plant for cool conservatory decoration. It is of neat habit, and produces with but little care a profusion of dense racemes of reddish-purple flowers. Specimens are now in flower in the Winter Garden at Kew.

—— Water.—Captain Oliver sends us sketches illustrative of an idea of his for securing a supply of water in desolate tropical islands devoid of vegetation, and with scanty or infrequent rainfall. The idea was suggested by the broad Banana-like leaves of the Urania speciosa, the Traveller's Tree of Madagascar, and which, upraised on a tall stem, are well suited to intercept the rainfall. Our correspondent's notion is to erect on the hill-tops lines of artificial dew-catchers made in metal and in the semblance of the plant in question. The dew would be deposited on the broad blades, which are to be arranged at such an angle that the moisture shall trickle down, by means of channels and tubes, to a reservoir with which all the dew-catchers are to be connected. In point of fact, the notion is that of a number of rain-gauges of such a form as readily to admit of the deposition and collection of dew and of rain. We do not doubt that some such contrivance would be useful.

—— Primula rosea. — Few early-flowering hardy plants can vie with this Himalayan Primrose in simple beauty, as well as in brilliancy of colour. When the umbels of flowers first expand they are a clear bright rose-carmine, later on they gradually become paler with a shade of purple. High up in its native mountains, where it is found in flower from June to August, the species affects—according to Dr. Aitchison, to whom English gardens are indebted for its introduction—boggy spongy places like those in which our Bird's-eye Primrose, P. farinosa, is generally found. In winter a thick covering of snow protects it from the intense cold of those inhospitable regions. It is now in flower in the Herbaceous Department at Kew.

—— Rudgea macrophylla.—In the T range at Kew this noble stove shrub is now in flower. It has very large leathery Ficus-like leaves and dense clusters of creamy-white blossoms, the individual ones somewhat like the bell of a Hyacinth. A native of Rio de Janeiro. A full-page illustration was published in our columns at p. 245, vol. xii.

—— Hybrid Amaryllis.—Mr. Farquarson, nurseryman, of Wrexham, sends a flower of a hybrid Amaryllis, raised between A. vittata fertilised with pollen of A. formosissima. The seedling has narrow flower-segments of a rich velvety crimson, like those of the male parent, but regular in form, and with a central white stripe; the leaf is narrow lanceolate, also like that of the male parent.

—— Catalogue Collectors.—With the commencement of the flower show season appears also that inveterate frequenter of these popular resorts, the catalogue collector. In the majority of instances these beings are of the feminine gender, and they may be seen gliding about the show as a hummingbird-moth hovers over a garden, now pouncing down here and now there, gathering up the books so temptingly laid about by the florists to attract the attention of intending customers. But to simply collect catalogues in dozens, without further evidence of interest, would but raise suspicion and lead the florists to regard such acquisitors as of questionable merit; therefore the regular collector has a neat little note-book and a dainty little pencil, and as he or she flutters here and there may be seen apparently making voluminous notes of the names of striking plants. How the mouth of the uninitiated assistant waters at the prospect of big orders coming in presently, and such an one will volunteer to the collector much useful information that he thinks will make the chance of selling more certain. Sad delusion! the order never comes. The only "paper" which the inveterate collector can flourish is that which composes the tradesmen's catalogues, and of which during the season a big pile must be collected. Whether this wholesale diversion of costly lists into the hands of persons who have neither intention nor means to purchase plants is satisfactory to the tradesmen is for them to decide, but without doubt they would find an effectual check upon these collectors if they were to place their catalogues in the hands of their attendants for distribution, and then bestow them only upon such as would give their names and addresses. This no *bonâ fide* horticulturist would hesitate to do, whilst it would not only put a check upon the peripatetic collector but also upon children, who may often be seen running about flower shows with half a dozen bulky and costly catalogues in their hands or pockets, all of which are presented at home as trophies from the show, and henceforth find early acquaintance with the fire-grate.

—— Sparmannia africana.—In one of the large span-roofed houses in the Botanic Garden at Manchester, standing at intervals on each side of the centre path, are a number of the best managed plants of Sparmannia africana we have met with. They were struck about this time last year, and have evidently been liberally treated, for they occupy large pots and have stems half as thick as a man's wrist, and heads from 5 to 6 feet high by 3 feet through. Few things naturally last so long in flower, although there can be no doubt that when managed so as to get them large and strong, as these are, they will bloom both longer and more profusely. With Mr. Findlay they keep on uninterruptedly from Christmas to May, during which time their distinct and singular white yellow-anthered flowers are very effective. The plant, as often seen, has a poor effect as compared with the strong, large examples under notice.

—— Mandragora vernalis.—This is one of the most interesting of the early flowering plants in

the Cambridge Botanic Garden. It has reached a splendid development, owing, no doubt, to the favourable position in which it has been placed. The longer leaves reach a height of little less than 2 feet, and deep down in the nest of foliage is protected a number of its peculiar looking flowers, each on a stalk of its own. They have a corolla deeply divided into five segments, and of greyish or pale greenish white colour. The leaves are extremely handsome, on account of their luxuriant health, fine formation, and bright fresh-looking green. There are two plants, both under a wall of the houses; but the finest is situated in an angle open to the south and protected from the east and west, as well as the north winds.

—— Rhododendron arboreum.—The fashion now so prevalent of, in a great measure, confining the kinds of plants grown under glass to such as can be kept in a small state, has come about through the demand for things that can be used for room and table decoration, and has, so far, its advantages; but on the opposite hand it has been the means of reducing the interest attached to our greenhouses and conservatories by, in a great measure, banishing many of the grand old shrubs that require size and age to admit of their being seen to advantage, which is especially the case with the Rhododendron in question. In Mr. Hardy's conservatory at Timperley there is now an example of this fine Rhododendron some 10 feet high by 8 or 9 feet through, clothed with its glowing heads of scarlet flowers backed by ample healthy foliage, which, even when it is out of flower, gives an attractive appearance to the plant. On the back wall of the same house are several Camellias planted out, which by their fine condition at once show how much better they do when, as here, they get plenty of light compared with the half-starved appearance they often have when used as a wall covering. They are kept trained moderately close to the wall, and completely hide the surface over which they have extended by their dense clothing of healthy leaves, which for a lengthened period at this season is relieved by an abundance of flowers. They are from 8 to 12 feet high—the kinds are Queen of Beauties, Tricolor and Donckelaari; these half-double varieties, although not coming up to the florist's standard of doubleness, are the most elegant, but are less favourably looked upon than they deserve.

—— Messrs. Jackman's Clematis Show.—We learn that Messrs. G. Jackman & Son have this year made arrangements with Mr. J. F. Johnson, on behalf of the lessees of the Alexandra Palace, to make a show of his specimen plants of Clematis there during the ensuing spring. The plants in question are in excellent trim, and give promise of a very fine bloom. The exhibition will take place during the month of May.

—— School of Gardening.—We are informed that the directors of the Crystal Palace Company have decided to establish a School of Horticulture in connection with their educational department. The School of Gardening and Practical Floriculture is to be under the direction of Mr. Milner, and is to comprise two main divisions—1, landscape gardening, under the direction of Mr. Milner; 2, that of practical gardening and floriculture, of which department Mr. W. G. Head is chief instructor. We have so long and so strenuously advocated the establishment of a school of horticulture comparable with those in Belgium and Germany that we can but rejoice to see the idea not only again broached but likely to assume a practical shape. It is clear that in the first division the Crystal Palace offers exceptional facilities for instruction; but as to the practical management of the various departments of a large or complete garden establishment, the scheme seems open to improvement, and the Palace at present supplies but few of the requirements. Nevertheless, these might be supplied, or arrangements might be made whereby pupils thoroughly grounded in the principles at the Palace school might afterwards pass some time in various public and private establishments to acquire that practical knowledge of details which could not be obtained in the Palace itself. The success of the scheme depends in great measure on the zeal and capabilities of the teachers; but, given these, there is no reason why the scheme should not be made a success, a want supplied, and a reproach removed. We leave further criticism of details till another opportunity, confining ourselves now to a few extracts from the prospectus.

"This School is designed to afford students of the art of landscape gardening an opportunity, much needed, of entering the profession by systematic mastery of its details, acquired from practical instruction. It is also intended to present similar tuition to gentlemen who are likely to be the owners, the conservators, or the managers of great estates, or who desire to cultivate artistic and natural taste, as a means of enhancing the value, as well as the pleasure derived from the possession of land. A further purpose of the directors is to utilise the exceptional capabilities of the Crystal Palace to this end, under the most favourable conditions.

"The course is of two years, and is inclusive of instruction in Division II. (practical gardening and floriculture), which work is an essential part of studentship in landscape gardening. The course is divided thus: Six months' work in Division II.; six months' surveying and office work; twelve months' practical professional work. During the year seven weeks will be allowed as holiday, but such holiday will be fixed, as to time, in the absolute discretion of the Principal.

"The curriculum for the course in the School of Landscape Gardening consists of practical gardening and floriculture; outdoor work; greenhouse work; propagation and nursery work; study of plants and their cultivation, &c.; land-surveying; levelling; practical fieldwork; office work; drawing, plotting surveys, levels, &c.; drawing out plans of estates and gardens from dimensions; constructional works; earthworks, drainage, roads, lakes, bridges; hothouses, designs of various forms and requirements for heating; practical constructional works—order of proceeding with, and best times; designing; sites and approaches, formation and planting; plants and planting; woodcraft and forestry; superintending, &c. Lectures—on art, architecture, engineering and agriculture, in their application to gardening, and intended particularly to illustrate the work that is practically carried on—are given systematically throughout the course. Special lectures and demonstrations on the practical application of the science of botany in gardening, and particularly floriculture, as appointed. The instruction will include visits to the best gardens in England.

"At the close of his two years' course the student will undergo a fitting examination conducted by eminent professional examiners, and can gain a certificate of competency, which will be endorsed in accordance with his attainment of proficiency in the principal divisions of his profession; and such certificate may be endorsed for bad personal conduct during his studentship, but such certificate can only be gained for the completed two years' course.

"A student may enter for either the first year or the second year of the course separately, but he cannot obtain the certificate in either case. A student entering for the second year's course can only do so after passing an entrance examination in practical gardening and floriculture, arboriculture, land surveying and levelling, drawing, plotting and office work.

"The fee for the course of two years is £110; for the first year's course, £60; for the second year's course, £60. All fees are payable in advance.

"Practical Gardening and Floriculture.

"This division of the School is designed (*a*) For the educational training or preparation, by practical instruction, of young men intending to be professional gardeners or nurserymen; (*b*) For the tuition, by special lectures and demonstrations, of students or amateurs in the practical application of the science of botany in gardening, and particularly floriculture.

"The course is of one year; but students may, if they choose, stop one or two additional years, but not more than three years altogether, under the conditions. The course is continuous from date of entry. During the year four weeks will be allowed as holiday, but such holiday will be fixed as to time, in the absolute discretion of the superintendent.

"The instruction comprises all that can be learnt systematically from the work necessary for the proper keeping of the Crystal Palace interior gardens, the exterior gardens, the park, &c., as well as the care of the heating appliances, &c. On appointed evenings special lectures and demonstrations are given on practical operations in horticulture. For instance—relating to particular plants or races of plants, modes of cultivation, hybridisation or propagating, grafting, &c.; lectures on botany, the classification and division, &c., of plants, their distribution, &c., but particularly those features of the science that are capable of practical application.

"Students in this division are subject to the same regulations as the men employed in the garden department, exterior and interior, of the company; they keep the same hours and are absolutely under the orders, during business, of the superintendent of the garden department for the time being, or his proper representative; they are, in fact, rated under exactly the same conditions as the other men employed (except as regards a holiday), and are amenable to direction for work and instruction at the discretion of the superintendent.

"All intending students in this division must be approved by the garden superintendent before they can be accepted. The premium for a student is £30 for the year, payable in advance. While he attends for work each student serving his course in this division will receive as wages: 1st year, 10*s.* per week; 2d year, 15*s.* per week; 3d year, £1 1*s.* per week.

"A student who has passed the year's course, or more time in this division, is eligible to enter the School of Landscape Gardening, and can claim an abatement of one-half of the fee for the first year's course in Division I., and the corresponding time (six months) will be deducted. In certain circumstances, the student may be accepted to enter Division I. after six months' service, but the allowance of fee and time deducted will be the same.

"If the course in this division be not taken as preliminary to the profession of landscape gardening (Division I.), then efforts will be made to facilitate the reception of students in other known gardens, nurseries, &c., in pursuance of the particular branch of the profession or trade of which they are seeking special experience."

—— Daphne Blagayana.—This charming little hardy evergreen shrub (figured at p. 245, vol. xiii.) certainly merits the First-class Certificate awarded to it when it was first exhibited a season or two ago by Messrs. Veitch. It has powerfully fragrant creamy-white flowers, and is decidedly one of the best of early-flowering shrubs, either for pot culture or rockwork. It is a native of the Carniolan and Syrian Alps. Specimens at Kew are now in bloom in the open air.

—— Flower Show Tricks.—We perceive that the practice, which is not wholly unknown in the mother country, of an exhibitor showing as his own produce articles which he has obtained by purchase, has been imported into South Australia, where it has, we are glad to see, met with the outspoken denunciation such conduct deserves.

—— The Weather.—General remarks on the weather during the week ending March 28, issued by the Meteorological Office, London:—The weather has been moderately clear generally, but some snow or cold rain has fallen in all districts. The temperature has been much below the mean in all parts of the kingdom, the deficit ranging from 4° to 7°. The lowest reading recorded was 17°, and was registered at Nairn on the 22d. In most places, however, the readings were lowest during the last two or three days of the period, when the thermometer fell to between 21° and 25° at nearly all our central, eastern, and southern stations, as well as over central Ireland. The rainfall was slightly less than the mean in "England, E.," "England, N.E." and the "Midland Counties;" but slightly more elsewhere. Bright sunshine was more prevalent in "England, S.W." and over Ireland than in other parts of the kingdom, but in no district was it deficient. The percentages varied from 30° in "England, N.W." to 56° in "England, S.W." Depressions obeserved:—No. 1 was rather deep, and advanced from the southwestward, and at 8 A.M. on the 24th was off the northeast of Scotland; by the 26th it had disappeared from our neighbourhood. It caused southerly to southwesterly gales or strong winds in all parts of the kingdom, which subsequently veered to W. or N.W., still blowing strongly. No. 2 passed from west to east across the north of Scotland on the 27th, and caused strong westerly winds at our extreme northern stations. During the latter part of the week an area of low pressure existed over France, so that at all our more southern stations moderate or light easterly breezes were experienced.

—— Gardening Appointments.——Mr. Hugh Ross, who, during the last fourteen months has been Gardener to J. B. Manly, Esq., at Oaklands, Harborne, and during the previous five years was Gardener and Bailiff to Mrs. Wakeman at Coton Hall, Salop, has been appointed Gardener to Henry Wiggin, Esq., M.P., at Metchley Grange, Harborne.—Mr. John Richardson, formerly Gardener to the Earl of Leicester at Holkham Hall, and latterly of Messrs. Methven's Nurseries, Edinburgh, has just been appointed Superintendent of Morningside Cemetery, Edinburgh.

# Home Correspondence.

**Hardy Fruit Trees.**—If things in gardens wear just now a somewhat deplorable aspect, there is at least a silver lining to the cloud, and that is seen in the appearance of our hardy fruit trees. It is indeed sad to find here, at the end of March, when we ought to be busy sowing and planting or getting the ground well prepared for cropping, that over large breadths the water lies; and elsewhere, wherever we may attempt to dig, the water is within 6 inches of the surface. How soil so saturated is to be brought into a dry pulverised condition, fit for the reception of seeds, is indeed a problem which Nature alone can solve for us. To attempt to mend it ourselves in the shape of digging or ridging is, until the water subsides, to make matters worse. We look for March winds and dust, cold, dry, sweeping movements of air, which bake the surface hard almost as frost can bake before the moisture deeper down has evaporated. These winds are not our best friends, but gentle breezes and genial sunshine may soon mend matters, and give bright gleams of hope where now all is despair. But the silver lining to the cloud still exists, and no biting blasts or intense frosts have apparently robbed it of its abundant promise. A few days of milder air have caused the buds on Apples and Pears to swell, and now we can discern how many and how strong they are. If these were not there, we should have no hope for a fruit crop; but as they exist, we may hope, in spite of the gloomy forebodings of some croaking pessimists, who will remind us that we are not yet out of the wood. I do not wish to revive the threshed-out root pruning discussion, but I cannot avoid noting how Nature, in dealing with the non-root-pruned trees that a year or two since were so rich in fruitless wood, has ultimately brought her equivalents, for the wood, let alone, has grown shorter each succeeding year, till now it is studded with masses of fruit spurs. May the glorious promise of our spring ripen into an abundant autumn. *A. D.*

**Dondia Epipactis.** — This neat little spring-flowering plant seems to like a moist spot at the base of a rockery. I have tried in vain to raise it from imported dry roots; but last summer I received a patch of it from a lady in North Wales, which has made two large clumps with about thirty quaint little yellow flowers out at once on each, and more below-ground to follow. The flowers have a curious habit of opening underground. Knowing that they ought to be expected in February, at the end of that month I examined the plants, and found the flowers already expanded just beneath the surface. They last a long time. *C. Wolley Dod, Edge Hall, Malpas, March 28.*

**Hooper's Manures.**—We beg to thank you for your notice and analysis of our manures in your impression of March 19. Your remarks about the prices require a brief reply or explanation, for which we ask a few lines in your columns. It seems only necessary to point out the difference between selling manures in small quantities in tins (with their accompaniments of labels of instruction, wrappers, &c.), and in large bulks, for it to be understood that, however correct your calculations are as based upon the retail quantities, they have no bearing upon the subject of the prices in bulk. Our manures are sold as cheaply as any in the market in tins, and in that form are admirable for the amateur's use: in large quantities they would also be sold as cheaply or more so than any others of equal strength. *Hooper & Co., Covent Garden.*

**Aquatics in Plant Stoves.**—We are just erecting a span-roofed house running east and west for Orchids and stove plants. There will be a centre table, path round and side tables, all made of stone slabs. I am desirous to make the house as interesting as possible, both under the stages and over them. I am thinking of getting some paraffin casks, burning them inside to purify them, cutting them in two, and inserting them at intervals alongside the pathway under the centre table with a view of growing some aquatic plants. Please give me the names of a few that you think would grow in such a position. I have Ouvirandra fenestralis. *H. J. C.* [Such plants as Pistia Stratiotes, Pontederia crassipes, Azolla pinnata, and Ceratopteris thalictroides will grow under such circumstances, but you can hardly expect flowers to be produced. Eds.]

**Ivies and Coal Smoke.**—As Mr. Hibberd, the Champion of Ivies' Rights has addressed you on this subject, allow me to state more exactly than in my former note, what the frost and smoke have done with our Ivies. We have twenty-two sorts, and the following are killed:—Hedera coriacea (Rœgneriana), H. marginata, H. marginata major, H. minima, H. maculata, and H. Cullisii. All the foliage is dead on H. elegantissima, H. aurea, H. palmata aurea, H. deltoidea, H. palmata, H. viridis (algeriensis), H. Helix argentea, H. japonica, and H. longilineata. Foliage mostly killed on H. Helix. Slightly injured:—H. grandifolia, and H. grandifolia var. arborescens. Uninjured:—H. dentata, H. donerailensis, H. lucida (poetica), and H. chrysocarpa. The last four have escaped uninjured through the last three winters. They are planted in the open borders in ordinary garden soil. We get a full share of east wind, and the place is not crowded with trees. I wish I could have given as good a report as Mr. Hibberd has done of his plants. Not one leaf of the variegated sorts is left, and even the fruiting shoots of H. Helix on the top of a wall have lost their leaves. The grand old plants on Hornsey Church, I notice, are uninjured, though more exposed than our plants, and growing in clay. I shall get Mr. Hibberd's Emerald, and hope that gentleman may continue to have better luck than we have at Hammersmith. *J. Croucher.*

**Bentley's Patent Water Spray.**—This is the invention of Mr. T. H. Bentley, of Scarborough, and is one of the best mechanical novelties that we have seen for some time. To gardeners, both amateur and professional alike, it will be especially welcome for dewing, syringing, or washing plants with pure water, or for readily applying such insecticides as paraffin, Fir-tree oil, &c., that must be thoroughly diluted with water to be used in safety. All this can be done with the patent syringe, or with the ordinary

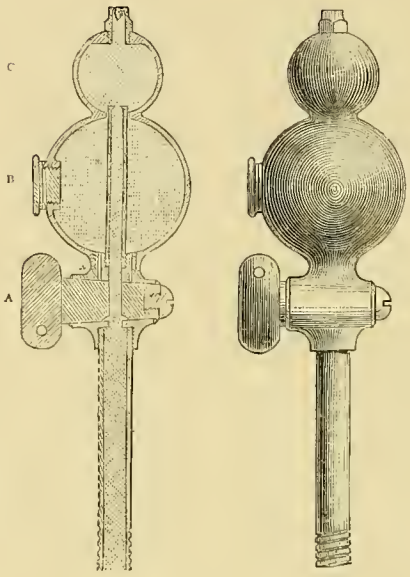


Fig. 85.—Bentley's Water Spray.

hose by attaching one of the water sprays (see fig. 85); while the latter proves also to be one of the best of appliances for washing carriages, and would be very useful for extinguishing fires. In the garden, the vineyard, or the hop garden Mr. Bentley's invention can be made extremely useful for applying insecticides and mildew-destroying solutions, and at no great expense. The dew or mist produced by its aid may be one of three degrees of density, while the same syringe, by putting on an ordinary rose, can be as easily used for any of the purposes now employed. For Orchid growers and propagators it is an especially useful article. The insect exterminator or deodoriser is placed in the bulb B (fig. 85), and when the tap A is turned on, or the bulb in fig. 86 turned round, the water is forced through the bulb B into the chamber C, where the insecticide, &c., becomes mixed and is discharged in an evenly-diluted stream of fine spray. A great advantage of this method is that if only one or two plants want cleansing, the operator has only to stop the flow of the liquid out of the bulb B.

**Double Violet, Swanley White.**—I am pleased to say that the white Violet from Italy which you reported on and figured in *Gardeners' Chronicle* (433, vol. ix.) has proved with me equal to the description, and is by far the best white I ever saw. We have named it Swanley White. *H. Cannell, Swanley.*

**Leeks.**—Regarding the Leek, attention to which is being very much drawn just now owing to its exceeding hardiness and excellence as a vegetable, I would remind growers of the true type of Musselburgh Leek. This is by far the hardiest, and quite equal in excellence to any variety. Out of many thousands grown here not one has rotted or gone wrong. If they are lifted after this season, and laid in on a north aspect, we continue the supply till the early ones come in, and in this way we are never without Leeks. We sow in February indoors, and in April outdoors, and as soon as ready to plant furrows are drawn 6 inches deep, and in them planted from time to time. If large Leeks are required they are planted in trenches somewhat as in the case of Celery; but for quantity and general excellence the furrow system is adhered to. The frequent hoeing adds soil to the young plants, and ultimately levels the ridges. It is astonishing to what size those who make the Leek a specialty grow them by early sowing, potting, and other extra care devoted, and planting in deep trenches heavily manured, records of which have been frequently given in these pages. *H. K.*

—— This humble potherb is known everywhere, and, I may add, that wherever it is known it is respected. For something like half a century I have cultivated its acquaintance, and generally speaking I have seen little to admire in the Welshman's bunch of Leeks; and, if I knew no better, I should prefer a Portugal Onion to the ordinary thick-necked and strap-shaped foliage of the Leek. We seem to have left the Leek to its fate, for who ever heard of any one improving such a common bulb? In short, this plant hardly reaches up to the character of a bulb, a mere bundle of loose leaves. In bygone days it appears from Holy Writ to have been considered a luxury, for when the Israelites left Egypt, the headquarters of the Onion tribe, they longed for this potherb, and even were rebellious for the want of savoury things, as the Garlic and the Leek. A brother (gardener) of the trade who was my next neighbour two or three miles off—a man sadly overworked and underpaid—related his experience in growing Leeks, and brought a specimen to show the fact. It was one of four that went to table in what is known as a four-cornered dish, and as he had trimmed off the leaves and whatever long neck the Leek had, these were not exhibited, so that the bulb appeared quite globular, and just resembled a small white Turnip. This was a specimen of a fine globe Leek that had been grown two summers, but not allowed to flower and seed, and when the judges at an Edinburgh exhibition saw this quaint-looking dish, they asked the exhibitor what it was for. "O, ho, ho, but the nose would show," for in its properties it still cries back to the Allium, to which it belongs. The common Leek, transplanted into rich compost and prevented from flowering, will do the next best thing in its power, viz., increase the thickness of its foliage, and although it seldom attains the true Onion habit with a thin neck, yet by a little trimming, such as a florist would give to a faulty Pink, you will get the globular shape, and, what is more, the mild flavour of the blanched Leek. This is not the first time I have named this subject, not only to gardeners, but to editors of our garden literature. I have not seen my friend's Leeks equalled. The Princedom of Wales has the Leek as its escutcheon, and wherefore no? Should this meet the eye of my informant, let me thank him for the service done, but as it was acted when I was in my first situation in England some forty years ago, he may be where "the weary are at rest." *Alex. Forsyth.*

**Mangel Wurzel Fly, Anthomyia betæ.**—In your number of the 12th ult. you draw attention to the excellent papers by Mr. E. A. Fitch, published in the *Entomologist*, giving an account of this fly; but as this useful magazine may not be at hand to all your readers, I offer a few notes regarding the insect. Up to the time of John Curtis it had been so little prevalent that he was only acquainted with the male; this may be described generally as a small ashy-grey two-winged fly, less than a quarter of an inch in length, and somewhat less than half an inch over in spread of the wings. There is some difference in the black markings respectively in the male and female, but to general observation they are distinguishable by the abdomen being linear in the male, enlarged behind the thorax and then tapering to a blunt point in the female; also the eyes nearly touch on the top of the head in the male, and are further apart in the female; the flies are sprinkled with black bristly hairs, and have bristly legs. The maggot is about the third of an inch long, white or pale greenish, somewhat pointed at the head, and obtuse at the tail, and altogether bears a strong resemblance to the Celery-leaf maggot. The Beet maggot feeds between the two sides of the leaf, clearing away the cellular substance between, and thus causing large blister-like patches, and damaging the crop according to the amount of this injury to the leafage. In last year maggots were noted at work as early as June 20. When full fed they leave the foliage (in all the instances noted), and turn to pupæ in the earth near the root of the Mangel, from which the flies make their appearance so shortly as to allow time for two, or possibly three broods in

the course of the summer and autumn. From observations in various parts of the country it appears the fly occurred in the South of Scotland, across England from east to west, and was especially noticed in Norfolk and Shropshire, and near Isleworth; also it occurred near Killarney, in Ireland. As it is stated that the eggs are laid on the lowest side of the Beet leaves there does not appear any way of counteracting attack as far as oviposition is concerned, and plants stunted by drought or sickly from any other cause go down before the attack from loss of their leafage. Where the ground is in good heart and weather moderately favourable so as to push on growth, and thus repair, or rather replace by growth the amount destroyed by the maggot, the injury appears to have been fairly held in check. *O.*

**Asparagus Culture.**—In the cultivation of this valuable and wholesome vegetable our French brethren excel, but whether their success is to be attributed to a different and superior mode of cultivation or to a climate more favourable to its growth, or to both combined, may be a matter of opinion only. Certain it is, however, that the "grass" sent to Covent Garden Market during the season by the French growers is much larger and finer than our home produce. The French growers, as is well known to most of your readers, allow a greater area for the development of the individual plants than has hitherto been given them by English growers; and this may have been an important factor in the French production of Asparagus above referred to. However, within the last few years a fresh impetus has been given to gardeners in this country for the production of good Asparagus, partly by handsome prizes being offered, which are to be awarded in this and subsequent years for the best productions of "grass" to be grown in the French style, but chiefly through seeing and reading in the horticultural papers of the splendid examples of Asparagus which are sent to London in the season by the growers from the neighbourhood of Paris. Planting.—The ground having been trenched as previously advised, we open trenches 4 feet from centre to centre, 9 inches deep and 15 inches wide, in the centre of which little hillocks a couple of inches high are made 3 feet apart, on which the roots of the plants are spread out equally in all directions, and then covered with an inch or two of fine soil, and subsequently with a little well-decomposed manure, and afterwards watered through a fine rose to settle the soil about the roots. For this purpose we prefer one-year-old plants, which we plant as soon as the young shoots appear through the soil in the nursery beds, pressing the soil moderately firm around the roots with the hands at the time of planting, after which we put a small stick to each plant to which to tie it for support later on. In addition to the trenches we still plant in beds, but in a modified form, for instead of planting three longitudinal lines in each 4-feet bed we plant two only. The beds, as already stated, are 4 feet wide, with alleys 2 feet wide between them, and are marked out for two rows of plants in each bed at 9 inches on either side the centre; drills are then drawn about 3 inches deep, and in these the roots—taking half of them in one hand and half in the other—are placed, with the crowns in an elevated position 18 inches apart in the rows, and the soil pressed about the roots with the hands; the plants are then sticked, and the surface mulched, as recommended above. This is a more expeditious way of planting Asparagus roots than the system resembling "laying of Box," and the plants do equally as well. To supply plants for forcing the fourth year after planting we plant in drills, as above recommended, 15 inches asunder, and the same distance from plant to plant in the row, and in such a way that the plants in the second row stand angle-wise to those in the first (this remark also applies to those in beds, these being planted in consecutive drills), and so on with each succeeding row, which gives the individual plants more room to develope themselves than if planted opposite. In the meantime rows of Cauliflower, Cabbage or Broccoli can be planted between the Asparagus trenches, which are 4 feet asunder, without in any way interfering with the growth of the latter. *H. W. Ward.*

**Mushrooms.**—That Mushrooms can be grown in abundance and of good quality in a temperature of 50° I firmly believe; I never let my Mushroom-house get higher than 55°, and always have plenty of Mushrooms from October to May. And that very severe frost will not injure the beds when once the spawn has got fairly through them has been proved here this winter. We had the roof off our house from January 1 until the middle of February, with no protection whatever to the beds, so that they were frozen quite through—the bottom-heat thermometers in the beds stood at 20° for days. After we had got the roof on again and the frost out of the beds, I had them well watered, and three weeks after all the beds were quite covered with Mushrooms, except one which had been spawned only a week before they were exposed. I do not believe that everything depends on the quality and freshness of the spawn, as Mr. Horsefield seems to think, as I have used spawn two years old and had good crops from it; and from one bed I last year put no spawn into I had a crop of Mushrooms. A noble lord visiting here told me that if I got the droppings from the stallions and prepared them well, and made the beds up with them, I should have Mushrooms without using spawn. I doubted, but tried it, and I certainly had a crop of Mushrooms, but not such a crop as I like to see on my beds. I don't mean to say that bad spawn or no spawn will always bring Mushrooms; but I believe a great deal more depends on the preparation of the material and on the making of the beds than on anything else. The spawn I use is from Messrs. C. Lee & Son, Hammersmith, and I could not wish for better. I send you a sample of Mushrooms from my first bed, which has been bearing since October, except when it was frozen. *R. Williams, Gopsall Gardens, Atherstone, Leicestershire.* [A very good sample indeed. Eds.]

**Floods, and the Way to Prevent Them.**—In many things, or perhaps we might say it is always the rule, the most effectual remedies are the most simple. Before an effectual remedy can be prescribed, however, it is necessary that the case be thoroughly understood in all its details. Now, in the matter of floods which are produced by rainfall, the case in all its details (these being of the simplest kind) may be thoroughly comprehended with the utmost ease. Whenever there is a fall of rain a portion of the water reaches the streams or natural water-carriers of the country, and when the fall is very heavy or prolonged more runs into them than they are able to carry off within their banks, and then they overflow, and what is called a flood is produced. Whatever assists or hastens the water after the rain has fallen to the streams tends to increase the floods in the valleys of the rivers, and whatever helps to retard its passage, or to retain the fallen water tends to lessen them. When the rain over a large surface of country is hurried quickly into the streams floods result, but where the conformation of the country is such that the rain principally sinks into the ground, or where it is held in suspension by dense growing and decaying vegetation, no more reaches the streams than they are able to carry off within their banks. When the population of a country becomes dense and keeps increasing, a large and ever-growing portion of its surface becomes covered with buildings and with streets, paths and roads having hard surfaces, through which little or no water can pass into the earth; consequently, the rain that falls on them runs off, and is assisted in its passage to the streams and rivers by pipes, drains, &c., as quickly as possible. Again, in order that wet land may be made more productive, all sorts of arrangements are made for pouring any surplus water which may fall on it or come out of it into the nearest stream. From these few remarks it will be seen that the more population increases and the more the surface of the country is "improved" according to the methods now in vogue, the more frequent and the more sudden will floods become. Bearing in mind, then, the causes which contribute in wet seasons to make and increase floods it does seem very extraordinary that the simplest means for counteracting them have never yet been suggested or acted upon. All our present arrangements for dealing with surplus water tend to increase the rapidity with which it is hurried into the streams, and the smallest intellect can grasp the fact that by these means floods are very much increased both in frequency and in volume. Surplus water should be dealt with so that it does not reach the streams more quickly than it can be carried off by them and so that it may be retained where it is likely to be useful during periods of drought. It may also be admitted as a fact that, rainfall properly dealt with, such a thing as surplus water from this cause could hardly be said to have an existence. As much as possible of the water which falls on the roofs of buildings should be stored in tanks for domestic and other use, but that which cannot be stored in this way, should pass, together with the surface water off streets and roads, into open ponds or reservoirs of sufficient dimensions to contain for a shorter or longer period all the surface water from the area they are allotted to drain. These ponds and reservoirs would also require to have their capacity and formation in other respects adapted to the requirements of the districts in which they were placed; some, for instance, would be made water-tight up to a certain point, for the purpose of retaining water for use; others would be made with a view to the gradual and judicious discharge of their contents into a stream or river; others again with porous floors, with a view to permitting the water to sink from them down into the "bowels of the earth," and all of them for the purpose of intercepting the mud and silt which would otherwise have been carried into the rivers and streams, and which, when there, would tend to form shoals and banks to the detriment of their carrying capacity. This mud and silt would occasionally have to be cleared out of the ponds and reservoirs at convenient seasons, and would be valuable as a dressing to garden ground, pasture lands, &c. In most places the making of these ponds and reservoirs would be a very simple and inexpensive affair; but in other districts—where, for instance, the country is very flat, the land wet, and the natural drainage bad—it might in some cases be comparatively expensive. In parts where the surface of the country is well undulated it would be very easy. A drive about the country roads during wet weather soon shows one how and where floods commence, and where ponds are required. In towns there is less ocular demonstration with regard to these matters, because the water is conducted by underground pipes, &c. The water which falls on woods and on fields, except where the land is of a very stiff and clayey nature, does not run off, but sinks in after the vegetation and surface have been wetted, and passes gradually down into the soil; but that which falls on buildings and roads, not being able to sink in, runs off and downhill, ever accumulating as it goes, and quickly reaches the rivers. Ponds and reservoirs, as before mentioned, should be placed in convenient positions to catch this water. The making of ponds in one or two parishes, or by one or two landowners over their estates, would not much affect a large flood; but if in all the parishes included in the watershed of a river, beginning at its source to sufficiently near its mouth, the system were carried out, floods from rainfall in the valley of that river would be next to an impossibity, unless it were a tidal one from the sea in its lower parts. How to form these ponds and reservoirs, and how tidal floods should be counteracted, are subjects on which I have set myself to treat on a future occasion. It is next to useless to attempt to deal with floods once formed, and in those parts where they cause damage. They must be attacked in their infancy—those from rainfall, all over the face of the country, as soon after the rain has fallen as possible, and those from exceptionally high sea tides as near as possible to the portion of the river where the tidal wave enters. *J. E. Ewing, Eaton, Norwich.*

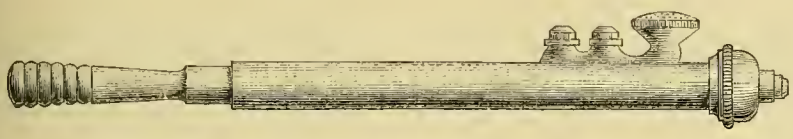

Fig. 86.—Bentley's patent syringe. (see p. 438.)

**Hyacinthus candicans.**—Having seen your notes on the hardiness of Hyacinthus candicans, I planted it here on an exposed border last spring, and it flowered in the autumn. I find the bulbs are now perfectly sound, although only planted 2 inches deep, which proves it to be perfectly hardy here, 3½ miles from the centre of the town of Birmingham. *E. C.*

**Neglected Azaleas.**—We have an abundance of information supplied from time to time upon the best methods of cultivating plants for almost every purpose, but are seldom favoured with practical hints upon the management of plants that from a plurality of causes have grown into bad condition. Plants that are severely cut annually are often to be met with in a very pitiable state, the disproportion of the plant to the size of the pot in which it is growing being a sure sign of the barbarous treatment to which it has been subjected. In other cases plants make little growth, and dwindle on for years in a pot-bound state, while others become a prey to insects because of an injurious system of potting whereby the centre of the ball does not take water equally with the newly added compost. In many cases this evil arises from the fact that imported plants are potted in different material from that generally used in England, but the chief cause is that the plants are potted when the ball is dry instead of being in a free mellow state. With regard to potting I have noticed that objection is

taken to the use of a sharp-pointed stick or other instrument for breaking the outside of the ball of plants when potting them, and when I was a beardless gardener I used to think the same thing. Of course in some cases it is unnecessary, in other cases it would be barbarous, but in many other cases it is sound practice indispensable as a means of recruiting neglected plants. I will therefore venture to give one or two practical illustrations bearing upon the point. Many years ago, when assisting to pot a collection of hard-wooded plants, many of which were in a miserable state, my chief pointed out to me the necessity of breaking the outside of the ball of "hide-bound" plants as be called them, and by way of convincing me a Dicksonia antarctica Fern that you could have kicked about the potting-shed without breaking the ball was potted with ball intact—twelve months afterwards it was turned out of the pot, when not a fresh root had ventured into the new soil. In the ordinary course of things it came to my turn to be a head gardener, and one of my first duties was to undertake the management of a collection of Azaleas, which I had little hope would ever pay for the labour of potting. There were large plants of A. amœna which had been riddled with insects, and the cause appeared to be chiefly "dry balls." I had sharp-pointed iron spears made at the blacksmith's shop, and after turning the plants out of their pots the balls were pierced lengthwise and crosswise, and were then put in a tank of water until the balls of earth were perfectly saturated. They were then put in one of the houses, and the balls covered with earth until they were in a fit state for potting, when the spear was again used to break the outer surface of the balls effectually, and the plants were then firmly potted in peat and sharp sand. They were placed in a growing temperature, and carefully shaded, and in course of time grew and set their flower-buds, and subsequently flowered early the following spring. In a year or so these same plants grew into a vigorous state, and served the writer well for several winters in succession, coming into flower from November to Christmas. I have another case now before me of a number of Fielder's White Azalea that have been forced in the same pots for years, and that have gradually gone on from bad to worse, making little growth, and as a natural consequence yielding but a small supply of puny flowers. In this case the plants were so pot-bound that when you turned one out of its pot the ball was ridged and marked with every line and indentation of the inside of the pot in which it had been grown. The iron spears (not the same ones) were again called into request, and after potting these plants were placed in a north house, where gentle warmth was given them, and considering the ordeal through which they had to pass, they made astonishing progress last year. As our object is to work them in for early flowering they were started with the early Peach-house this year, and a more promising batch of plants (not handsome in shape) no one could wish to see. Two of the plants that were not potted, but otherwise treated the same, are hardly pushing a single growth yet, and are a miserable contrast to the healthy young growths on the plants that not twelve months ago were in a similar condition. These facts will speak for themselves, and may serve to inspire wavering cultivators with fresh courage to undertake improvement where success heretofore looked but a very remote possibility. *Cultivator.*

**Effects of the late Severe Frosts on Vegetation in Westmoreland.**—Lying as we do here only some few feet above the level of the sea and about one mile south-west distant from Morecambe Bay, where are thousands of acres of sands and marsh, with numerous mountains at no great distance, we have a superabundance of "droppy" weather, especially in autumn, which frequently retards the ripening of the wood of our trees and shrubs for the trying ordeal of winter. Although this county has escaped much easier than many further south, still the frost of January, 1881, will give the horticultural craft here good reasons not to forget it in a hurry. The damage done amongst forest trees by "bursting" can as yet hardly be rated. As I stated in your columns two years ago, the injury done in the park and woods here was amazing. Since then I have been endeavouring to find out the reason of so many trees bursting, and have come to the conclusion that most of our trees, being of great age, do not stand the intense frosts with such impunity when situated on the limestone formation as on other strata; such at least has been the case here. Some trees which have been taken down since first I noticed this bursting are in every instance found to be suffering from dry rot; and the water becoming located in their centres may in some measure cause the bursting. Numerous trees with fine clean boles of 20 to 30 feet in length, and squaring 1 foot to 2 feet 10 inches, are split from top to bottom—in some cases in no less than three places. The trees which have suffered most severely are Oak, Sycamore, Beech, and Elm. I do not feel so much surprised at the last-mentioned going, as they are frequently "shaky" trees (as termed by the trade here). On the blue-stone formation on this estate I have failed to find a single damaged tree; hence I believe the bursting must be caused to a large extent by dry rot prevailing in the centres. Shrubs seem to have fared better than during the two previous winters; still, a goodly number are cut down. I observe that in every exposed place the Irish Ivy has perished; most of the Jasminums are cut down, as also are Clematis; Ericas are all killed; climbing Roses, such as Maréchal Niel, La Marque, Belle Lyonnaise, and many others, are much damaged; dwarfs and standards have fared somewhat better, although many choice pets are *hors de combat*. I am glad to say that those with high pedigrees seem none the worse for being exposed to 33° of frost (the most severe experienced here, on January 17), and notwithstanding that for four days the thermometer never registered much less than 20° of frost; even in the middle of the day it rose very little above that figure. As might have been expected, kitchen garden crops have suffered most, hardly a green leaf being left. Brussels Sprouts still seem to have a little vitality remaining. Fine quarters of Broccoli, which looked very promising, have hardly a live plant left; I may add that most of the standard varieties of the latter are grown, and the only one apparently alive is Osborn's Winter White. Curled Greens have shared the same fate. Even Leeks are completely killed, as also winter Onions and Spinach, and Celery will doubtless be useless. Nothing equals Cottagers' Kale for standing the winter; it is very choice when cooked, and ought to be more cultivated. The damage done to herbaceous plants can as yet hardly be estimated; still I am thankful to say that fruit trees of all kinds are well studded with fruit-buds, which, let us hope, may make some amends by-and-bye for our other losses. *R. Craig, The Gardens, Levens Hall, Milnthorpe, Westmoreland, Feb.* 18.

**Phaius grandiflorus.**—Orchids are generally considered difficult plants to grow, and the majority of them really are so; but the cultivation of Phaius grandiflorus is a very easy matter, and may be accomplished by any one having the use of a stove or other warm house, where a temperature not lower than about 55° can be kept up during the winter. Although this should be the minimum of heat they like more, and if the glass runs up between 70° and 80° with sun in the day all the better, as then their roots are kept healthy and active, which enables them to send up and develope their fine spikes of bloom. As these are formed in the summer the thing is to treat the plants liberally all through the growing season by giving them plenty of atmospheric moisture with weak liquid manure to the soil; but in order for this to pass freely through the drainage must not be neglected, as the Phajus, like all Orchids, is very impatient of anything that is stagnant and sour. In preparing the pots, which should be rather large if fine specimens are aimed at, the best way is to place a large 60 in an inverted position over the hole at the bottom of the one to be used, and then to fill up around it with small crocks, which will secure the drainage required; and this done, the potting may proceed by using good rough lumps of fibry peat and loam in about equal proportions, together with a fair sprinkling of clear sharp sand to keep the whole open. Some growers mix rotten dung with the soil, but unless very carefully watered it is apt to be a source of mischief instead of a benefit, and any stimulant required can always be given in liquid form at a time and season when most required, and withheld when it is desired to give the plants rest. This rest should be brought about in the autumn, after growth is complete, by reducing both temperature and root moisture; and if a plant or two is then brought on in brisker heat at intervals of a week or two, the flowering of a batch may be prolonged to a very late period. The proper time to divide and increase stock is soon after blooming, when they will bear separating with safety, as early in spring they break again around the base of the pseudobulbs, and begin to make their fresh shoots and foliage. Not only is Phaius grandiflorus a fine decorative subject in a pot for use in embellishing warm greenhouses and conservatories—where, if kept rather dry, it stands well without injury—but the spikes are fine for cutting to place in vases, in which they form bold centres to other flowers, and produce a striking effect. Having large porous stems they take up water freely, which enables the blooms to stand the arid atmosphere of rooms, where they remain fresh for a great length of time. *J. S.*

**Eupatorium odoratum grande and riparium.**—These are unquestionably grand autumn and winter free-flowering greenhouse plants, and should be grown in every garden where there is a winter demand for cut flowers and small gracefully-growing plants for house decoration. To supply these the above-named Eupatoriums are very suitable objects, especially E. riparium, which should be grown without being stopped, which would spoil the graceful appearance of the plants, and by flowering in large 60's and 48's; from seed sown now and with ordinary after-treatment, they will attain a size of from 16 to 20 inches high and as much through by next January. The Eupatoriums are of very easy culture. E. odoratum grande commences flowering early in October; the flowers, which are borne in large clusters on the top of spikes, which are thrown well above the dark green ovate lanceolate leaves, which are leathery with a smooth glossy surface, are white, and borne in such profusion as to weigh down their erect-growing and somewhat stout flower-stalks. E. riparium, which, as already stated, is dwarfer and more graceful in habit than the preceding, begins to unfold its Kalmia-like flowers early in January. They are produced in great profusion in small trusses on stems about 3 inches long from the axils of the leaves for a few months onwards. The leaves, which are similar in shape to those of E. odoratum grande, but very thin and slightly serrated, are of a palish green colour. E. odoratum grande is easily increased by cuttings, and E. riparium from seed saved the previous year, or else from the earliest flowers of the current year, which will strike or germinate freely at any time if put in heat. Unless, however, the object in view be to grow the plants to the largest possible size in one year, I prefer this operation being carried out in February or March. As soon as the cuttings are rooted, and the seedlings are large enough to handle, they should be potted off singly in large 60-pots, and put in heat again near the glass, and as they increase in growth more air should be admitted to the plants, which should be gradually hardened off by the end of May, when they should be turned out of the pots, and planted in rows at from 18 to 24 inches between the rows, and the same distance in the row, in a compost consisting of three parts light sandy loam and one of short well-rotted manure. The plants, which should have a thorough soaking of water at the roots a few hours before being turned out of the pots, should be planted about an inch deeper than they were in the pots, and the soil pressed firmly around the base of each plant, and so as to form a hollow for the reception of water around each plant, and the intervening space should be mulched over with a couple of inches of short dung. After this, the only attention the plants will require is to be supplied with water when necessary, kept free from weeds, and in the case of E. odoratum grande stopped a couple of times until the middle of August, when they should be ringed with a spade, as far from the stems as the size pots into which they are intended to be potted, which should be done early in September in a mixture the same as that in which they had been planted, of which they will only require sufficient to fill in the chinks between the balls of the plants and the pots. After this process, should the weather be bright, the plants should be shaded for a few days, after which they will have thoroughly re-established themselves and will speedily fill their pots with healthy and hungry roots. The plants should be taken indoors before they get nipped with the frost. Eupatorium riparium, as already stated, should not be stopped in any stage of growth further than cutting the plants into shape when they have done flowering preparatory to being again planted out. After two seasons' growth the plants, however, become too large for any ordinary sized greenhouse or conservatory. By way of illustrating this assertion, and also to show to those of your readers who may not have been cognisant of the easy culture of these plants what a large size they can be grown to in so short a time, I may be permitted to state that we have five plants now which last June were planted out for the second time, of E. riparium which measure from 15 to 21 feet in circumference each, and from 3 to 3½ feet high in the centre from the bottom of the pots and furnished to the stage with floral drapery. These plants, notwithstanding their grand appearance and great dimensions, will have to be thrown away when they have done flowering, for want of more room. *H. W. Ward.*

**Abutilons.**—It is not many years ago that there was only one Abutilon known or cared for, the name of which was A. striatum. This plant used to be grown principally as a climber or pillar plant; but now, thanks to hybridisers, who have taken them in hand, we have many remarkable either for their beauty of their foliage or flowers. One of the best in the first category is A. Sellowianum marmoratum, which has large leaves very handsomely marked with irregular rich yellow blotches traversing the green ground, but this variety, being rather more tender than the others, only does well under glass. Another fine kind is A. Darwinii tessellatum, the variegation of which is exceedingly rich and attractive, the foliage being marbled with bright gold, and as the flowers are of a cinnabar-red, veined with crimson, the contrast between the two is most striking and effective. A. Thompsoni is an older variety, having leaves of a glossy green, blotched after the manner of the two named, but with less colour, yet, being of a hardier stamp, it is the

only one that can be relied on for bedding—a purpose for which it is specially adapted, as it makes grand groups associated with dark-leaved Cannas, Coleus, Iresine, Chilian Beet, or other plants of that character, with which it shows up in most pleasing contrast. A. Darwinii tessellatum and A. Sellowianum marmoratum make very beautiful objects in pots, and are most valuable for the embellishment of greenhouses, conservatories, or windows, as are also nearly all the plain-leaved sorts, of which there are now some fifty or sixty varieties. The flowers being bell-shaped and pendulous, the stiff growers look best trained as standards, as then the plants can be arranged with their heads above others, or stood in conspicuous positions in pairs, in either of which ways they show off to the greatest advantage. Those of a more drooping or fragile habit have a good effect suspended in baskets, over the sides of which they may be pegged or tied, and made to trail and depend in a natural manner, while others again are adapted for clothing pillars or trellises on walls, to which they may be tied and allowed to feather out and furnish with their young flowering shoots. When grown in this way all they want is a good border for their roots and to be pruned in every spring just before they start, so as to cause them to break and make fresh wood on which all the blossoms are borne. The border in which they are to be planted should be well drained and filled with good fibry loam mixed with a little sharp sand to keep it open and porous. The same kind of soil is also best to grow them in in pots, as it is not gross shoots that are wanted but medium-sized ones, which always bloom freest, and ripen up best in the autumn. The way to treat old plants, then, is to rest them by keeping them dry at the roots, when they may be stood by in any cool house for the winter, and then partly shaken out and started again. Cuttings made of the young growth strike readily in heat, especially if inserted in bottles of water, which is a good way of treating them, as they are sure to grow, and are soon ready for potting, which should be done before the roots get advanced, or they are apt to become broken or injured. The best among the white varieties are Boule de Neige and Purity, both of which have large flowers, with rich satiny petals of good substance, and therefore very lasting when cut. By taking out the pistils and stamens with the anthers and turning back the petals the blooms form good substitutes for the Eucharis for ladies to wear, but the purpose for which they look best cut is to dress epergnes or tall vases, where they can be seen drooping over the sides; in which way, used with others of bright colours like Fire King or Vesuvius, they produce a striking effect. Besides scarlets and whites there are yellows, pinks, buffs, and a violet-coloured one named Violet Queen, which is quite a new departure among Abutilons, so that by continuous crossing there will be no lack of variety. If grown plunged outdoors during the summer and kept stopped back occasionally Abutilons of most kinds may be had in flower the greater part of the winter by subjecting them to a temperature of about 50° and keeping them supplied with liquid manure, which they should have frequently when they require moisture at the roots. *J. S.*

**Trees in London Churchyards.**—Who is responsible for the lopping of the trees which stand in the churchyard of St. Clement Danes, Strand? They were once shapely, and pleasant to behold in so crowded a thoroughfare, but have just been reduced to the semblance of clothes-props by some ruthless Vandal. More hideous objects, to any one accustomed to the graceful lines of Nature, it is impossible to conceive. *A Lover of Trees.*

**Nertera depressa.**—This pretty little scarlet-berried plant is, when richly berried and beautifully grown, "a thing of beauty" in the greenhouse or conservatory during the dull winter months. To grow it well it should have a clean, smart-looking cold frame situated so that the plants at all times may be shaded from the influence of the sun. Grown on in low flat round seed pans it looks extremely well; but it is much better for general purposes to grow it on in 3 or 4 inch pots, for when intermixed with small plants similar to itself, round the lower side and centre staging of the greenhouse, it is seen to much greater advantage, and improves the appearance of the house in a highly satisfactory manner. In the selection of a suitable place to put the frame, choose one which at least is not likely to be exposed to the influence of the sun at any time during the summer months, and which will save the unnecessary trouble of shading. It delights in a peaty soil, with a liberal dash of rather rough silver-sand to keep the whole open and porous. Drain the pots effectually with small crocks, putting a layer of fresh clean moss over the whole, filling up the pots afterwards with the soil, elevating or raising it a little beyond the rim or edge of the pots, so that the plants, or rather the berries, may be seen to better advantage. After the plants have been removed from the seed pan, or the pan they may have been formerly grown in, let them be removed to the frame at once, should the weather continue mild about this time; otherwise, whilst it is advisable to do so, remove them to some damp shady place where they may receive and be benefited by a little heat for some time. Having removed them to the cold frame selected, plunge the pots neatly and orderly amongst coal ashes, or, what is much better, as a matter of cleanliness, if they can be procured, in some nice clean small white silver shells or small gravel. Keep the frame close and damp, bedewing the plants occasionally, whenever it is thought necessary and beneficial to do so, with clean, soft water, a little warmer than the temperature of the frame is. Never allow the plants to become dry, nor even to suffer from want of water, or they are sure, to a great extent, to be injured. Give them sufficient water at all times, which, if it be hot overhead, will greatly assist and benefit them. Grown on, these plants will flower and produce their little scarlet berries, and by the end of summer or the beginning of autumn they may be removed to the greenhouse or conservatory, and devoted to those purposes I have indicated, retaining them there until the spring of the following year, when they may be removed back to the frame. *George Drummond, Brosamouth Gardens, N.B.*

**Fumigating.**—This is the most unpleasant operation connected with gardening, at least I always found it so, and I never knew but one man who could face it with perfect indifference, and he was such an inveterate smoker that he used generally to have his pipe going at the same time he was puffing away with the bellows to get the tobacco-paper to burn; or if not smoking, he was singing and whistling, to show, I suppose, how happy and jolly he was. Although I envied him his lightness of heart, I had no wish to inhale the same air, but was always content to remain outside and leave him to settle with the aphis, for I had then, as I have now, a distinct remembrance of my first trial with the noxious weed, when I vowed to myself if I survived the effects, which were very dire, I would touch it no more, and I have fought particularly shy of it ever since. So vile are the fumes in my estimation, that I should be glad if there could be a way found out to fumigate houses without men having to stay in; and the wonder is that some of our tobacconists do not contrive something whereby this could be done, for were some of the waste parts of tobacco compressed with sawdust, rags, or paper, and so made into a kind of pastile that would smoulder and not blaze, the thing would be easy enough, and we could look through the glass with a feeling of grim satisfaction that our enemies were being despatched without those concerned in their death suffering the slightest discomport. As it is, they are nearly choked, and often out of sorts for days through the effect it has on the system. I have often thought when seeing fusees burn, that the man who invented them might go a step further, and make some about the size of cricket-balls, with tobacco in them, that could be lighted and dropped about, or laid in bottom-pans, and placed in houses where they might be left to do their work. Perhaps some day we shall get what I have here suggested, or some substitute for tobacco, which, as there is such a heavy duty on it, is a serious item in garden expenses. As it is, we can only go on with the cloth or paper, and the best preparation of either of these is the cheapest, on account of possessing most strength. Some kinds will kill thrips easily, while others appear to have no moisture in them, and are therefore comparatively useless. For any to be effectual, much depends on the weather and the condition of the atmosphere at the time it is used, the most favourable being when the air is very still, just after or during rain, as then the laps of the glass are full, and there is no escape for the smoke; whereas if wind is blowing it is out directly, and it is almost impossible to get a house full. If blinds can be let down and wetted they are a great help, but whenever fumigating is done it should be at night, and followed up again in the morning, as then the insects have no chance of escape, and two or three light whiffs in quick succession are safer and more effectual than a heavy one, which, when foliage is tender, often does irreparable damage. The best fumigator I have yet found is a cylinder with bars all round and below, between which air passes and keeps the fire going without any blowing if charcoal is used. With this and plenty of damp moss to spread over the top of the tobacco, the smoke comes away steadily and cool without danger of the burning material bursting out into flame. Peach-houses should always be fumigated before the buds open, as it is injurious to the flowers, and often makes them cast their petals immediately; and the same remark applies to plants in pots, which are often spoiled when in bloom. *J. S.*

**Peaches and Nectarines.**—I notice that Mr. Everson has written in high praise of the Goshawk Peach, but whatever that variety may be under glass, I fear, from my experience of it on the open walls, that the tree is too tender to be relied on, as it has suffered more with us from the hard winter and cold spring of last year than any other variety we grow, and although it has recovered well since, it is minus one of its branches on the left side, the loss of which has spoiled its appearance. In Hogg's *Fruit Manual* and many of the catalogues the Goshawk Peach is spoken of as being of excellent quality, but if it should lack hardiness of constitution that will be greatly against its usefulness, and lead to disappointment if planted. The Dymond I have not tried yet, but it must be good to beat Noblesse, which is still, I think, the finest Peach in existence, and it will take much to beat such old favourites as Royal George, Bellegarde, Violette Hâtive and Grosse Mignonne, and those later varieties, Barrington and Walburton Admirable, any of which are deserving a place as select in the smallest of gardens. Pourpre Hâtive, too, is a kind I can strongly recommend, and as to Nectarines the Humboldt is all Mr. Everson says of it, as although remarkably handsome and rich looking it has all the other qualities so wanting in many that present an attractive appearance. New Nectarines have been very disappointing, but in Lord Napier we have a decided acquisition, as the fruit is large, ripens early, and is of excellent flavour. For a late crop I do not know a better than Pitmaston Orange unless perhaps it be Rivers' Pine-apple, which is a good deal like it, and a great bearer. Elruge is still one of the best earlies, and this, with those mentioned and Hardwick Seedling, Imperatrice or Violette Hâtive, are all any one need care to possess. *J. S.*

## Forestry.

Inducements for Planting.—After a winter of unusual severity of frost and protracted snowstorms, unequalled by any within the memory of any living man, all energies should now be well directed, and efforts put forth to make up for lost time and to overtake the work now so far in arrear. In ordinary seasons the work of planting would by this time have been in many cases nearly finished, whereas at the present time, as matters stand, in the majority of cases it is scarcely commenced, and although the time allotted for doing the work must now, of necessity, be limited, yet by concentration, well directed efforts and keeping in abeyance as far as practicable every other kind of work, and turning to account all available strength, a very great amount of work may yet be overtaken in this and the succeeding month. It is often felt to be a matter of deep and lasting regret that planting had from some trifling cause been suspended for a time or, as it is termed, a more convenient season. It is often to be deplored that the incentives and inducements to plant are not as strong and powerful in the human breast as are those to cut down and dispose of timber; and could he upon whom devolves the work of planting only but know and realise, to anything like an adequate extent, the delight and profit which the work of his hands will afford to others, whether of this or succeeding generations, it would not be every trifling or small obstacle that would thwart or divert him from his purpose, for in planting, as in most other things, if once a man's motives rise high enough, he will not be easily turned aside from carrying out his purpose. Now, if there is one inducement more than another that could accelerate action and maintain interest in this direction, it is just the circumstance of looking upon and having before him a noble specimen tree, stately group, majestic grove, or well managed forest. I have had the pleasure of going through various descriptions of Pine, Fir, and hardwood plantations on different estates both in England and Scotland, and have heard the fortunate proprietors say their forest subjects and denizens of the grove bore a true and favourable comparison in point of money value with their sheep and oxen.

"I am always well pleased," said one of the proprietors, "on going through my mature Pine and Fir plantations, to find that their market value is equal to that of my sheep reared in the neighbourhood;" and to show that this is no vain theory or speculation, in the wilds of Badenoch, not by any means the best Pine or Fir growing district in the country, I can vouch for the fact of a landed proprietor there refusing £300 for 100 Larch trees, and also for another case, though a far distant and widely different one, viz., at Pensrock, a small property in Sussex a few miles south of Tunbridge Wells, at an auction sale in 1855 a lot of 100 Oak trees was sold for £1000. Mr. Stenning, an extensive wood merchant in East Grinstead, Sussex, informed me that he had paid as high a sum as £50 for a single Oak tree, adding, "Others I know have paid considerably higher sums." On this estate, from

its northern aspect, or rather maritime exposure, forest trees do not attain the same height or proportion in the same time they do in more favoured places, yet even here, and under many adverse circumstances, trees of all kinds attain fair dimensions and realise a profitable revenue. At the annual auction sales that have taken place here within the last fourteen years Elm and Ash trees have realised as high as £16 each, and Oak and Larch £9 to £10 each. It is not, however, the large sums realised for individual trees that constitutes the criterion of the value of woodlands; for, as a matter of fact, from the circumstance of single trees ramifying so much and spreading their branches so widely, they do not so well pay for the ground they occupy as trees grown in groups closely together with their branches confined within due limits. "The most valuable crop I ever saw," said a respectable wood merchant with whom I was in conversation on the subject some years ago, "was on his Grace the Duke of Bedford's estate in Bedfordshire, where the Oak timber stood upon the ground at from 6 to 8 feet apart, representing a money value so fabulous that he declined to name it." The most valuable piece of plantation, or rather natural forest, I ever myself saw, was upon the Rothiemurchus estate in Strathspey; the group was only a comparatively small one (about 3 acres), and consisted exclusively of Pinus silvestris, the money value of which, at 8*d.* per cubic foot, was fully £300 per acre. It would not, however, have actually realised much over half that sum in the situation, state, and condition in which it stood, on account of not a few of the trees being decayed in the heart, having stood considerably past their proper stage of maturity, and the period at which they ought to have been cut.

My object at present, however, in thus writing is not so much for the purpose of showing the value and profitableness of trees and woodlands, as to encourage and stimulate the faint or faltering in the grand enterprise of planting, for although, as I have frequently endeavoured to show, plantations in general have more frequently proved a failure than a success, and yielded loss rather than profit, yet I should have no difficulty in showing sufficient examples of success and profit to induce the most sceptical and parsimonious to invest their capital and plant extensively on almost every estate I have ever seen. It would be unsafe and unwarrantable for any one to say which are and which are not the most profitable trees to plant in this or any other country, for there are so many items to be taken into account in making the calculation that anything said positively and definitely on the subject might tend more to mislead than to guide those requiring advice. This, however, may be regarded as a leading principle and general outline of direction in regard to planting—First: Not to let an opportunity or season pass without adding to the forest its due and legitimate contribution by "sticking in the tree." Second: Never plant fast-growing trees on soils that are calculated to produce only stunted and slow growth. Third: Plant only such trees as the soil at command warrants the growing to perfection of the species planted upon it. Fourth: Plant only such kinds as can be turned to a good and profitable account within such distance of where they are grown without absorbing in the transit so much of the value of the crop as to constitute the investment one of loss instead of gain. Fifth: In planting use trees only of such a size as the properties of the soil will sustain and promote without any check in the growth of the plant. On good friable soil much larger plants may be used with safety than upon thin gravelly hard surfaces. Sixth: In the work of planting itself the most necessary thing to observe is to see that the bark of the tree is not bruised or injured in any way, whether in the stem or root; that the roots are properly inserted and well spread in the active soil in which they are placed; and that the stem is put at the proper depth, being about half-an-inch deeper than it stood in the nursery ground. *C. F. Michie, Cullen House, Banffshire, March 9.*

## Reports of Societies.

**Royal Botanic**: *March* 30.—The authorities at Regent's Park had a bitterly cold day for their first spring show, which was one of the best—and certainly one of the largest—they have ever had. Rude Boreas without was keen and searching, but within the large conservatory and long corridor all was gay, warm, and enjoyable, and the plants generally had an air of freshness and perfection of condition that was very pleasing. A few, however, we regret to say, had been nipped by the frost while in transit to the show. As usual at these early shows, the majority of the subjects staged, and certainly the most generally attractive subjects, were to be found in the miscellaneous class, which included on this occasion a large mixed group of plants from Mr. B. S. Williams—one of those interesting collections which contains "something of everything," and is more or less pleasing to everybody; large and very fine groups of Hyacinths and Tulips from Messrs. Veitch & Sons, and Messrs. Osborn & Sons; a brilliant array of Amaryllis, and a pretty little lot of forced Roses, also from Messrs. Veitch; a magnificent exhibition of Cyclamens by Mr. H. B. Smith; a large bank of Hyacinths, Tulips, Spiræas, and Dielytras, staged by Captain Patton; a large and brilliant display of Camellias, cut blooms, from Messrs. William Paul & Son, of Waltham Cross; a large and showy collection of Indian Azaleas, and seedlings of Azalea mollis; Tulips and Camellias from Messrs. W. Cutbush & Son, Highgate; Hyacinths, Spiræas, and Dielytras, from Messrs. James Carter & Co.; a couple of immense plants of Imantophyllum miniatum, shown by Mr. A. Ratty, gr. to R. Thornton, Esq., The Hoo, Sydenham; a collection of Cyclamens and other florists' flowers from Mr. H. Little; a group of a dozen and a half pots of well grown and beautifully flowered plants of Lachenalia luteola, from Mr. H. Eason, gr. to B. Noakes, Esq., Highgate; a good collection of Hyacinths from Messrs. H. Williams & Son, Fortis Green, Finchley; and a group of small succulents from Mr. Boller.

The competitive subjects were for the most part of only the usual average order of merit, and therefore do not call for more than passing comment. The class for twelve stove and greenhouse plants in flower was a poor one, only the 1st prize lot, which came from Mr. G. Wheeler, gr. to Lady Louisa Goldsmid, being worth mentioning. For six Roses in pots Messrs. Paul & Son, of Cheshunt, had the 1st prize, and for half-a-dozen Azaleas Mr. A. Ratty had a similar reward. The best of three collections of six pots of Lily of the Valley came from Messrs. Cutbush & Son; and Mr. H. B. Smith had the best dozen Cyclamens, though he was closely run by Mr. H. Little, who in the next class, for amateurs, had all his own way. In the amateurs' class for a dozen Hyacinths, Mr. James Douglas beat Captain Patton for 1st honours, Mr. H. Eason coming in 3d; and the same order of merit was observed in the corresponding class for Tulips. Messrs. Osborn & Son were a good 1st in the trade classes for Hyacinths and Tulips—2d and 3d with the former being Messrs. H. Williams & Son and Messrs. W. Cutbush & Son, and for the latter Messrs. Cutbush & Son and Messrs. Wiggins & Son. For a dozen pots of Narcissus Messrs. Osborn & Son also came in 1st, and Mr. James Douglas took the 2d prize, these being the only competitors. The last named exhibitor also took the 1st prize for six Deutzias with large and grandly flowered plants. The best half-dozen Primulas, and also of Amaryllis, came from Mr. H. Little; and Mr. Baxter, gr., White Lodge, East Barnet, was a good 2d for the latter.

A considerable number of new plants were brought forward, and Botanical Certificates of Merit were awarded to Messrs. James Veitch & Sons for Anthurium Andréanum; Gymnogramma schizophylla, an elegant cut-leaved species with lance-shaped fronds; and Odontoglossum Pescatorei grandiflorum, a very fine variety, with pure white sepals and petals, and a showy rosy-purple spotted lip. To Mr. B. S. Williams for Lælia harpophylla, a new ally of L. cinnabarina, but having cinnabar-orange flowers; for a nice thriving plant of the Palm-like Actiniopteris radiata var. australis; and for Asplenium Saundersoni, a pretty little South African pinnate Fern adapted for baskets, the pinnæ in form somewhat resembling those of Adiantum caudatum. To Mr. J. D. Richards, Orchid grower to T. A. Titley, Esq. Gledhaw, Leeds, for Cœlogyne cristata alba, a fine variety of the tall-growing type of C. cristata, with not a stain of yellow in its blossoms. Mr. Richards showed a good specimen with from eighteen to twenty spikes. To Mr. Boller, for Mammillaria Caput-Medusæ, a broad roundish mass of mamillæ; and for Haworthia Bolleri, a neat triangular spirally twisted bronze-leaved form. Florticultural Certificates were voted to Messrs. Veitch & Sons for Hyacinth Magnificence, semi-double, but forming a close spike, porcelain-blue in colour, and specially remarkable for its smooth solid bells; for Hyacinth Primrose Perfection, which was even finer than at Kensington last week, and is indisputably the finest yellow-flowered variety yet seen. For Amaryllis Cecilia, a broad handsome flower, blood-red in colour, but having the apices of the segments boldly tipped with white, which is purer than in the allied forms; Madame Albani, a large, bold, long-tubed flower, white striped with rich deep lake; Storr's Beauty, the finest and most pleasing of all the new varieties—a flower of exquisite shape and very bright colour—a soft shade of scarlet; and Empress of India, perhaps the largest of the new flowers, being of noble size, good form, and bright orange-scarlet, with a light centre—a striking umbel of seven flowers; and for Azalea indica Roi Leopold alba, an exact counterpart of the well-known variety Roi Leopold, but pure white, the flowers of medium size and fine substance, and the habit of the plant all that can be desired—one of the very best of novelties. To Mr. H. B. Smith, Ealing Dean, for Cyclamen Queen Victoria, a very fine pure white flower, with large, well-rounded petals, and neat habit of growth—one of the giganteum section. To Messrs. Barr & Sugden, for Narcissus Pseudo-Narcissus plenus alboaureus, a large double yellow, silver-tipped flower—a very showy and distinct variety; and to Mr. J. Wiggins, gr. to H. Little, Esq., for Cyclamen Ruby Gem, the same very dark ruby-crimson flower that was similarly honoured at Kensington last week.

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**Fulwood Horticultural**: *March* 23 *and* 24.—This Society, which has been a few years in existence, has for its principal object the promotion and encouragement of the cultivation of such plants and flowers as can be had in bloom during the early spring.

The exhibition was held in the spacious central area of the Preston Corn Exchange, and was a decided success, both in the number and quality of the plants and flowers displayed. Flowering bulbs, comprising Hyacinths, Tulips, and Narcissus, as might be supposed, were a leading feature. Azaleas were present in considerable quantities, the smaller examples especially being well bloomed. Cyclamens, Primulas, and Lily of the Valley, were fairly represented. Hoteia japonica, Dielytra spectabilis, and Deutzia gracilis, were in great force, forming collectively a very effective bank, occupying one side of the exhibition; these were all remarkably well done, being large and finely bloomed. The Deutzias particularly were deserving of notice, laden with a profusion of their snow-white flowers—the plants, of unusual size, showing what this most useful subject is capable of doing, for although perfectly hardy it is never seen in such condition as when treated through a considerable portion of the year as a greenhouse plant. A few Orchids were shown in very good condition, though not large being healthy and well flowered. Last, but by no means the least deserving of notice, were the miscellaneous plants, of which there were several competing groups, consisting of flowering and fine-leaved kinds in nice condition. Besides these, Mr. Troughton staged, not for competition, a large and very effective group, containing some fifty Azaleas, consisting of greenhouse varieties, and A. mollis, 200 Hyacinths, Primulas double and single, Lily of the Valley, Genistas, Dielytras, Spiræas, Epacrises, and Camellias, relieved with small-sized Palms, Dracænas, and Ferns, the whole backed up and flanked right and left with larger fine-leaved plants, comprising tree and other Ferns, Palms, specimen Gleichenias, and similar things with green and variegated foliage. This group was deservedly awarded the Society's Gold Medal. Mr. E. Payne, of the Floral Nurseries, Fulwood, also exhibited, not for competition, a nice collection of mixed flowering and fine-leaved plants, which received a Silver Medal. We cannot find space to particularise more than the exhibits in a few of the most important of the eighty odd classes of which the schedule was composed.

In the open class for twenty miscellaneous plants Mr. Troughton was 1st, with a very good lot, consisting of medium-sized Azaleas, very well flowered; Dracænas, Palms, Cordylines, and others of like character; amongst them was a good plant of Dracæna Goldieana. Mr. Newton, gr. to W. Birley, Esq., The Larches, Ashton, near Preston, was 2d, with a nice even collection, which included a handsome example of Croton Weismanni; Mr. Rigg, gr. to J. Forshaw, Esq., was 3d. Of six Azaleas Mr. Newton was the only exhibitor, and took the 1st prize with moderate sized specimens. Mr. Rigg was also 1st with three Azaleas, staging amongst others a good example of Duc de Nassau. Ferns were shown in good condition, moderate in size, with the tree species excluded. Mr. Hargreaves, gr. to P. W. Hawkins, Esq., was 1st, his best example being Adiantum tenerum, 5 feet in diameter; Mr. Rigg, who was 2d, staged in a nice trio Davallia Mooreana, from 7 to 8 feet across. For three Deutzia gracilis Mr. Hargreaves took the lead, having unusually large plants well bloomed. Mr. J. B. Jones was 1st for a single specimen.

Cinerarias were large and well bloomed. In the class for three, Mr. Hargreaves was 1st, and Mr. Gould, gr. to Colonel Cross, came in 2d. For three Dracænas, Mr. Newton was to the fore, his best being D. Baptistii and D. Fraseri. For six pot Roses Mr. Newton had 1st honours; and for three Orchids Mr. Rigg was 1st, with nicely-bloomed plants. For twenty-four single varieties of Hyacinths Mr. Troughton came in 1st with an even lot of flowers, and Mr. Atherton was 2d. Mr. Troughton was also 1st for twenty-four double varieties. A Silver Cup offered by Mr. Troughton for twelve single Hyacinths brought a very close competition, and the prize was won by Mr. Atherton; and a similar prize offered for twelve double varieties was won by Mr. J. B. Jones. For the special prizes offered by Messrs. Daniel Brothers, Norwich, for twelve Hyacinths, six single and six double, Mr. Atherton was 1st, and Mr. J. B. Jones 2d; and the special prizes offered by the Messrs. Webb for a collection of miscellaneous bulbs in flower was won by the same exhibitors.

Dinner-table plants were well shown, light, elegant, and not too large for the purpose: Mr. Gould took 1st, Mr. Rigg 2d. Cut flowers were well done, especially bouquets, which were composed of good suitable flowers artistically arranged. For a bride's bouquet the 1st prize went to Mr. A. Barker, Mr. Newton being 2d. For a ball bouquet Mr. Barker was 1st; 2d, Mr. Hargreaves. Vase of flowers: 1st, Mr. J. B. Jones; 2d, Mr. Newton. In the class for a basket of flowers the positions were reversed, Mr. Newton taking 1st, Mr. Jones 2d. (*From a Correspondent.*)

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, March 30, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mar. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 21 | 29.22 | −0.06 | 48.0 | 41.0 | 7.0 | 43.7 | + 1.6 | 36.0 | 74 | W. | 0.15 |
| 25 | 29.31 | −0.04 | 46.3 | 33.5 | 12.8 | 38.1 | − 3.9 | 28.1 | 69 | WNW: W. | 0.02 |
| 26 | 29.63 | −0.14 | 43.0 | 30.0 | 13.0 | 35.1 | − 7.4 | 26.8 | 71 | W.:S.W | 0.03 |
| 27 | 29.74 | −0.03 | 52.0 | 28.0 | 24.0 | 37.6 | − 5.1 | 29.7 | 73 | E. | 0.00 |
| 28 | 29.70 | −0.07 | 49.0 | 29.0 | 20.0 | 39.5 | − 3.5 | 31.6 | 74 | E.N.E. | 0.00 |
| 29 | 29.65 | −0.11 | 52.7 | 31.3 | 21.4 | 38.8 | − 4.5 | 31.3 | 74 | WNW: E. | 0.00 |
| 30 | 29.86 | +0.10 | 47.5 | 29.0 | 18.5 | 37.6 | − 6.1 | 27.7 | 68 | NE.: N. | 0.00 |
| Mean | 29.59 | −0.18 | 48.4 | 31.7 | 16.7 | 38.7 | − 4.1 | 30.2 | 72 | Var. | 0.17 |

March 24.—Dull, cloudy morning, somewhat brighter afternoon.
— 25.—A fine day: windy. A fine but cold night.
— 26.—Fine but dull morning; sun shining after 11 A.M. Snow falling between 2 and 3 in small flakes. Very fine and cold night.
— 27.—Temperature on grass in the morning, 22°. A fine but cold day and night.
— 28.—Fine day; warm in sun and cold in wind; overcast at night.
— 29.—Misty morning; sun's place just visible till 11 A.M.; clear and cloudy alternately afterwards. Wind changed to E. at night, which was cold.
— 30.—Morning bright. A fine day, but very cold.

London: *Atmospheric Pressure.*—During the week ending Saturday, March 26, near London, the reading of the barometer at the level of the sea decreased from 30.06 inches at the beginning of the week to 29.66 inches by 3 P.M. on the 21st; increased to 29.97 inches by midnight on the 22d; then turned to decrease, and was 29.87 inches at 9 A.M. on the 23d; then decreased more rapidly to 29.36 inches by the morning of the 24th; was 29.47 inches by 3 P.M. on the same day, and remained nearly stationary at this reading till after 3 P.M. on the 25th; after this time it increased quickly, and was 29.93 inches at the end of the week. The mean reading at the level of the sea was 29.69 inches, being 0.52 inch lower than last week, and 0.30 inch below the average for the week.

*Temperature.* — The highest temperature in the week was 52°, on Monday, the 20th, the next in order being 48°, on the 24th. The least of the high day temperatures were 43°, on the 26th, and 43½° on the 22d. The mean of the seven high day temperatures was 46°.5, being 10°.4 lower than last week. The lowest temperature in the week was 29°.9 on the morning of the 23d, the next in order being 30°, which also took place early in the morning of the 30th; the temperature at midnight of the 30th was 32°. The highest of the low temperatures was 41°, on the 24th, and the next in order was 40°, on the 20th. The mean of the seven low night temperatures was 34°.2, being 3°.2 lower than last week.

The greatest range of temperature in one day was 17°.1, on the 23d, the next in order being 13°, on the 26th; the smallest range was 7°, on the 24th; The mean of the seven daily ranges was 12°.3.

The mean daily temperatures were all low, and below their averages, excepting those of March 20 and March 24; they were 45°.7 on the 20th, 38°.8 on the 21st, 36°.1 on the 22d, 39°.3 on the 23d, 43°.7 on the 24th, 38°.4 on the 25th, and 35°.1 on the 26th. Those of March 20 were 3°, and of March 24, 1°.6 above their averages; the others were 3°, 5°.8, 2°.7, 3°.9, and 7°.4 below their averages respectively.

The mean temperature of the week was 39°.6, being 5°.9 lower than last week, and this low temperature was chiefly due to want of heat by day; the nights were cold, three of them having had a temperature below 32°.

The highest reading of a thermometer placed in the full rays of the sun was 102°, being below that of any one in the preceding week. The mean of the seven readings was 86°, being 20° below the mean of last week. The mean reading of a thermometer with its bulb placed on grass was 30°.

*Rain* or *snow* fell in small quantities on five days; the total amount was 0.35 inch.

The weather was generally dull; some snow fell on the 21st and 22d. Both days and nights were cold.

England: *Temperature.*—During the week ending March 26 the highest temperatures were 57°.9 at Plymouth, 56°.9 at Nottingham, 56°.2 at Wolverhampton, and 54° at Truro and Brighton. The lowest of the high day temperatures were 45°.3 at Liverpool, 47° at Sunderland, and 48° at Hull. The mean from all stations was 51°.4.

The lowest temperatures in the week were 23°.5 at Wolverhampton, 25° at Hull, and 25°.5 at Nottingham. The highest of the low temperatures were 31° at Norwich, 30°.3 at Plymouth, and 30° at Truro. The mean from all stations was 28°.2.

The range of temperature during the week was greatest at Wolverhampton, 32°.7, the next in order were 31°.4 at Nottingham, and 27°.6 at Plymouth. The least ranges were Liverpool, 15°, Norwich, 18°, and Sunderland, 19° The mean from all stations was 23°.2.

The mean of the seven high day temperatures was highest at Plymouth, 52°.4, the next in order were 51°.4 at Truro, and 47°.2 at Brighton and Bristol. The lowest of the seven high day temperatures, 42°.6 at Liverpool, being nearly 10° lower than at Plymouth; the next in order were 44°.1 at Sunderland, and 44°.2 at Sheffield. The mean from all stations was 66°.4.

The mean of the seven lowest day temperatures was lowest at Hull, 30°, Wolverhampton, 30°.6, and Nottingham, 32°.3, and was highest at Truro and Plymouth, 37°.8. The mean from all stations was 33°.7.

The mean daily range of temperature was greatest at Hull, 15°.7; the next in order were Wolverhampton, 15°.6, and Plymouth, 14°.6. The least daily ranges were 9°.4 at Liverpool, 10°.5 at Sheffield and Bradford, and 10°.7 at Norwich. The mean from all stations was 12°.7.

The mean temperature for the week was highest at Plymouth, 44°; the next in order Truro, 43°.5, and Bristol, 40°. The lowest mean temperature was 36°.8 at Hull; the next in order were 37°.3 at Wolverhampton, and 37°.4 at Sunderland. The mean from all stations was 39°, being 5½° of lower temperature than that of the preceding week.

*Rain* or *snow* fell at all stations; the largest fall was 1.02 inch at Plymouth; the next in order was 0.76 inch at Brighton, 0.68 inch at Truro, and 0.65 inch at Liverpool. The smallest falls were 0.13 inch at Cambridge, 0.21 inch at Norwich, 0.22 inch at Leicester, and 0.23 at Bristol. The general average was 0.46 inch. Snow in small quantities fell generally on the 21st and 22d, and in many places on the 23d, 24th, and 25th, and at a few places on the 26th. At Sunderland it fell on every day in the week excepting the 26th. Hail fell frequently. The week was one of cold and cloudy weather.

Scotland: *Temperature.*—During the week ending Saturday, March 26, the highest temperature of the air was 54° at Paisley, at Aberdeen the highest temperature was 42°.7. The general mean was 45°.9. The lowest temperatures were 18° at Dundee, and 18°.9 at Aberdeen; the highest of the low temperatures was 25° at Paisley and Leith. The general mean was 21°.9.

The mean temperature was highest at Paisley, 36°.9, and lowest at Dundee, 32°.9. The general mean was 35°.

*Rain* or *snow.*—The largest fall was 1.02 inch at Greenock, and the smallest was 0.42 inch at Leith. The average fall was 0°.77 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

Rhododendron Nuttalli. — The Editors would feel obliged to any correspondent who would send them a little pollen of this species.

## Answers to Correspondents.

Cinerarias: *H. Cannell.* A very fine strain for general decorative purposes. The flowers are large without the extreme coarseness which sometimes accompanies size, and the colours are rich and varied, including some very striking blues and bright violet-purples. Some of the blooms measured 2¼ inches across.

Cucumber Disease: *T. H. W.* Your specimens appear to be affected with the too common disease, but you send no roots. We should recommend you to examine these, and compare with Mr. Smith's figures and remarks at p. 331, March 12.

Erratum.—At p. 406, in the report of the Floral Committee's meeting, for "Messrs. Wm. Paul & Son, Cheshunt," read "Messrs. Wm. Paul & Son, Waltham Cross."

Names of Plants: *A Constant Reader, Eltham.* Cornus mas (the Cornelian Cherry).—*Subscriber.* 1, Cryptomeria japonica; 2, Ruscus aculeatus; 3, Sequoia sempervirens; 4, Correa cardinalis; 5, one of the Dracæas, but the specimen is too immature to say which. — *Thomas Spencer.* Coelogyne ochracea. — *W. A. Miller.* Melaleuca pulchella.—*J. G. Nelson.* A good variety of Odontoglossum triumphans; much above the average.—*B. J. W.* 1, Tropæolum tricolorum; 2, Lygodium japonicum.

Orchella-Weed: *W.* This name is applied to several species of Roccella, a genus of Lichens, valuable for their properties as dye-weeds. See the *Treasury of Botany*, part ii., p. 819.

Scale on Camellias: *R. Smith.* The insects, where accessible, should be first dislodged as far as possible by a flat blunt piece of wood, and then washed with a solution of tobacco and soft-soap. It is a troublesome job, but must be persevered in if you wish to clean the plants.

White Metal: *J. M.* Spence's Metal. You will find the letter in which it is described in our number for March 27, 1880, p. 404.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* Advertisements, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

Rawlings Brothers, Old-Church, Romford—List o Dahlias.

Rodger, M'Clelland & Co., Newry—New and Rare Trees and Shrubs, Herbaceous Plants, and Florists' Flowers.

V. Lemoine, Rue de l'Etang, Nancy, France—Stove and Greenhouse Plants, &c.

Communications Received:—Prof. Henriquez.—R. Sim (with many thanks. The specimen is destined for the museum, not the fireplace).—B. D.—W. T. T. D.—C. W. D. (with thanks).—H. J. M.—G. S.—F. v. M.—D. M., Jamaica.—A. J. Keen (not a very unusual occurrence).—C. H. B.—J. R.—T. Curtis.—Foster's Seedling.—One in the Locality.—H. E.—J. C. S.—J. E. R.—A. F.—J. Tomkins.—D. T. F.—P. J.—J. K.

# Markets.

*COVENT GARDEN, March 31.*

We have been well supplied with Strawberries during the week, and prices have had to give way considerably, but Grapes are in good demand, and making their full value. Importations of American Apples are falling off, and samples are indifferent, causing much loss. Trade generally quiet. *James Webber, Wholesale Apple Market.*

Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 2 0– 3 0 |
| Grapes, per lb. | 10 0–18 0 | Strawberries, per lb. | 8 0–10 0 |
| Lemons, per 100 | 4 0– 6 0 | | |

Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Garlic, per lb. | 1 0– .. |
| Asparag., Fr., bndl. | 3 0–25 0 | Herbs, per bunch | 0 2– 0 4 |
| — English, bund. | 8 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Beans, French, p. lb. | 2 0– .. | — Cos, each | 0 4– 1 0 |
| — Broad, per lb. | 1 0– .. | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 6 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 2 6– .. | Parsley, per bunch | 0 4– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Radishes, per bun. | 0 2– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Rhubarb, per bund. | 1 0– .. |
| Chilis, per 100 | 3 0– .. | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 1 0– 2 0 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| | | Tomatos, per lb. | 0 9– 1 0 |

Potatos:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 4*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 sprays | 1 0– 3 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Azalea, 12 sprays | 0 6– 1 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Bouvardias, per bun. | 1 0– 3 0 | Narcissus, in variety, 12 sprays | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Pelargoniums, 12 spr. | 1 0– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | — zonal, 12 sprays | 0 6– 1 0 |
| Crocus, 12 bunches | 1 6– 2 6 | Primula, double, per bunch | 0 9– 1 6 |
| Cyclamen, 12 blms. | 0 3– 0 6 | — single, 12 sprs. | 0 6– 1 0 |
| Daffodils, single, 12 bunches | 2 0– 6 0 | Roses (indoor), doz. | 3 0– 9 0 |
| — double, 12 bun. | 3 0– 6 0 | — red French, per dozen | 3 0– 4 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Stephanotis, 12 spr. | 8 0–12 0 |
| Eucharis, per doz. | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Euphorbia, 12 sprays | 1 0– 3 0 | Tulips, 12 bunches | 10 0–12 0 |
| Gardenias, 12 blms. | 3 0– 9 0 | Violets, 12 bunches | 9 0–12 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | — Neapolitan, Fr., per bunch | 3 0– 5 0 |
| Hyacinth, Roman, 12 sprays | 0 9– 1 0 | — Czar, Fr., bunch | 0 8– 1 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | | |
| — red, 12 blooms | 1 0– 3 0 | | |
| Lilac, Fr., per bunch | 6 0– 8 0 | | |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Ficus elasticus, each | 1 6– 7 6 |
| Azalea, per doz. | ..30 0–42 0 | Foliage Plants, various, each | .. 2 0–10 6 |
| Begonias, per doz. | .. 6 0–12 0 | Genista, per doz. | .. 9 0–18 0 |
| Cineraria, per doz. | ..10 0–12 0 | Hyacioths, per doz. | .. 8 0–12 0 |
| Cyclamen, per doz. | ..12 0–24 0 | Lily of the Valley, per pot | .. 1 6– 2 6 |
| Cyperus, per dozen | 6 0–12 0 | Myrtles, per doz. | .. 6 0–12 0 |
| Dielytra, per dozen | 9 0–12 0 | Palms in var., each | 2 6–21 0 |
| Dracæna termionalis | 30 0–60 0 | Pelargoniums, doz. | 18 0–30 0 |
| — viridis, per doz. | ..12 0–24 0 | Primula, single, per dozen | .. 5 0– 6 0 |
| Erica, in variety, doz. | 18 0–30 0 | Roses, various, doz. | 12 0–30 0 |
| Euonymus, various, per dozen | .. 6 0–18 0 | Scillas, 12 pots | .. 9 0–12 0 |
| Evergreens, in var., per dozen | .. 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, in variety, per dozen | .. 4 0–18 0 | Tulips, 12 pots | .. 6 0– 8 0 |

## SEEDS.

LONDON: *March* 30.—The weather having now for some time been exceedingly favourable for field work, considerable progress has been made in seeding the land, and there is in consequence a very active demand for Clover seeds, &c. Prices for all varieties continue at the moderate level previously noted. Arrivals, moreover, are small, and stocks light. For grass seeds the sale improves. Hemp seed is firm. The trade for Canary seed is flat. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CORN.

At Mark Lane on Monday the demand for Wheat was exceedingly dull. Fine English maintained their value, but secondary qualities were very unsaleable, and offered 1*s.* per quarter lower. Foreign Wheats were obtainable at quite 6*d.* reduction in many cases. Flour tended in buyers' favour. Good malting Barley upheld late values; grinding descriptions met a slow sale at previous rates. Beans, though in good supply, were not pressed for sale on lower terms. Peas were quoted the same as Monday se'nnight, but sold slowly. Maize was dull and easier in all positions—On Wednesday, with limited transactions all round, prices for Wheat were not quotably altered. Flour was quiet and unchanged. Malting Barley met less inquiry. Grinding descriptions were rather firm, and the same may be said of Beans and Peas. Oats were firmer, and quoted 3*d.* dearer than on Monday. Maize was rather stifier.—Average prices of corn for the week ending March 26:—Wheat, 43*s.* 1*d.*; Barley, 32*s.* 2*d.*; Oats, 21*s.* 8*d.* For the corresponding period last year:—Wheat, 47*s.* 3*d.*; Barley, 34*s.* 5*d.*; Oats, 22*s.* 10*d.*

## CATTLE.

At the Metropolitan Market on Monday diminished supply caused a steadier trade in the beast market, but there was a great want of animation, and the market cleared very slowly. Quotations were pretty firmly upheld. Sheep met a slow sale, but the tone was more cheerful than of late. Lambs were scarce and very dear. Prime calves met inquiry, while the pig trade was depressed. Quotations:—Beasts, 4*s.* 4*d.* to 4*s.* 6*d.*, and 4*s.* 10*d.* to 5*s.* 4*d.*; calves, 5*s.* to 6*s.* 8*d.*; sheep, 5*s.* 4*d.* to 5*s.* 10*d.*, and 5*s.* 10*d.* to 7*s.*; lambs, 9*s.*; pigs, 4*s.* 2*d.* to 5*s.* 2*d.* — Trade showed no change on Thursday. Beasts moved off slowly at barely Monday's rates. Sheep were quiet and unaltered, and lambs dear. Calves and pigs were without change.

## HAY.

At Tuesday's Whitechapel Market the demand was very slack, and the moderate supplies sold slowly at the following rates:—Prime Clover, 100*s.* to 118*s.*; inferior, 60*s.* to 90*s.*; prime meadow hay, 80*s.* to 105*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 44*s.* per load. — On Thursday there was a moderate supply of fodder on sale. The trade was dull, but prices were without alteration. —Cumberland Market quotations: — Superior meadow hay, 95*s.* to 108*s.*; inferior, 55*s.* to 84*s.*; superior Clover, 110*s.* to 120*s.*; inferior, 78*s.* to 95*s.*; and straw, 42*s.* to 46*s.* per load.

## POTATOS.

The Borough and Spitalfields markets reports state that supplies of English are fair, of foreign liberal, especially German. The demand is confined chiefly to best qualities. Prices ruled as follows:—Scotch Regents, 90*s.* to 100*s.*; Champions, 70*s.* to 80*s.*; Victorias, 90*s.* to 110*s.*; Essex Regents, 80*s.*; Champions, 75*s.* to 80*s.* per ton; Belgian kidneys, 4*s.*; German reds, 4*s.* to 5*s.* 6*d.* per bag.—The imports into London last week were:—290 bags Bordeaux, 1312 bags Boulogne, 107 bags Dunkirk, 1891 bags Ghent, 38,605 bags 200 baskets Hamburgh, 1502 bags Antwerp, 40 bags Harlingen, and 105 tons Roscoff.

## COALS.

The following are the prices current at market during the week:—Bebside West Hartley, 14*s.* 9*d.*; East Wylam, 16*s.* 6*d.*; Walls End—Hetton, 16*s.* 6*d.* and 17*s.*; Hetton Lyons, 15*s.* and 15*s.* 6*d.*; Original Hartlepool, 16*s.* 6*d.* and 17*s.*; South Hetton, 16*s.* 6*d.* and 17*s.*; Hawthorns, 15*s.* 3*d.*; Lambton, 16*s.*; Wear, 15*s.*; Tunstall, 15*s.*; Chilton Tees, 15*s.* 6*d.*; Thornley, 16*s.*; Tees, 16*s.* 3*d.*; Radford Navigation, 17*s.*

**Government Stock.**—On Monday Consols closed at 99⅞ to 100 for delivery, and 99 15/16 to 100 1/16 for the account. Tuesday's figures were, for delivery, 99⅞ to 100, and 100 to 100⅛ for the account; and at the close on Wednesday the record was the same. The final quotations on Thursday were 99⅞ to 100 for delivery, and 99 15/16 to 100 1/16 for the account.


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**NECESSARY IMPORTANT CAUTION.**

**Visitors to the late Paris Exhibition, and Others intending to purchase the 1st Prize Lawn Grass Seeds, should procure their supplies direct from JAS. CARTER & CO.**

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In sealed packets, price 1*s.* (post-free, 1*s.* 4*d.*), 1*s.* 6*d.* and 2*s.* 6*d.* per packet.
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Price per Bushel .. .. 25*s.*
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ORDINARY LAWN GRASS .. .. 20*s.* per Bushel
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THE BEST

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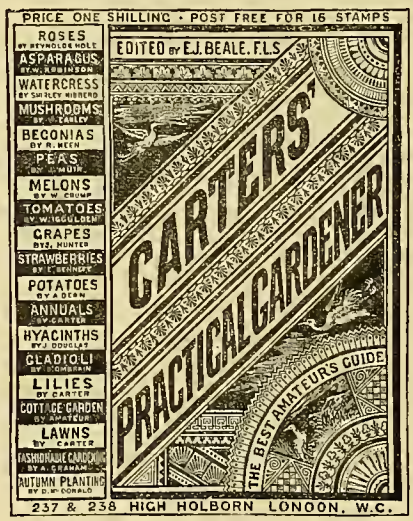


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*By Permission of the Hon. Board of Customs.*

(Free of Duty.)

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An effectual and speedy Eradicator of

**Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight,**
and all
**Parasites affecting Plants, without Injury to Foliage.**

*It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.*

**Especially adapted for the Destruction of Blight on the Coffee Plant.**

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general INSECTICIDE.

It has now undergone a thorough test by some of the most Practical Men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with PERFECT SAFETY TO FOLIAGE.

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**Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.**

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PRICES from TWENTY-FIVE SHILLINGS.
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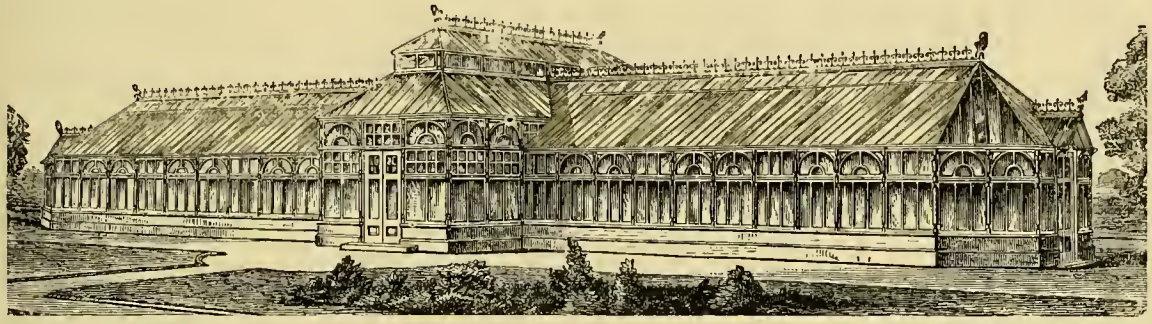

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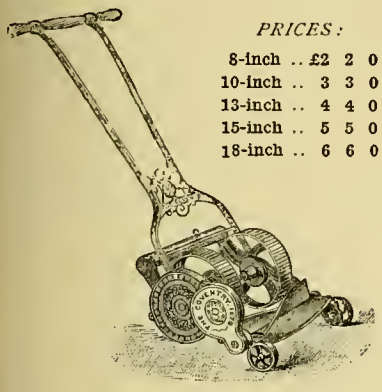

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The great success which has attended "THE COVENTRY" LAWN MOWER during the two seasons in which it has been before the Public, enables the Manufacturers to recommend it with increased confidence as the best and cheapest yet introduced; for lightness and ease in working it cannot be surpassed.

It has all the improvements which have of late been introduced into this class of Machine, either in England or America.

It will cut wet or dry grass of any length, will turn in its own width, and is so light that a lady can use a 15-inch Machine of this make with greater ease than a 10-inch of the ordinary kind.

It is made, as it name implies, at Coventry, by skilled English workmen, and of best English Steel and Iron.

These Machines can also be supplied with ROLLERS at the same price, and with Grass Boxes at the following extra cost:—8-inch, 6*s.* 6*d.*; 10-inch, 7*s.*; 13-inch, 7*s.* 6*d.*; 15-inch, 8*s.* 6*d.*; 18-inch, 9*s.* each.

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# PATENT TURF CUTTER

## And Combination Garden Implement.

This simple Machine will cut Turf and Grass, at the same time clearing the lower part of the pathway which forms the gutter, throwing the rubbish on one side, making a clean cut of the Turf, and leaving a smooth bottom to the pathway. Acts for Weeding Gravel Walks, Hoeing, and Gathering the Refuse. It will cut out all kinds of Ornamental Flower Beds, Watercourses, and Gutters, &c. This Patent Machine has been shown in Hyde Park, where there are upwards of twenty miles of Turf-edging, and is considered to be the best implement for the purpose ever seen. It was sent to the Crystal Palace, where there are about ten miles of Garden-edging, besides all their Ornamental Flower Beds, and gave every satisfaction, a supply being sent in at once.

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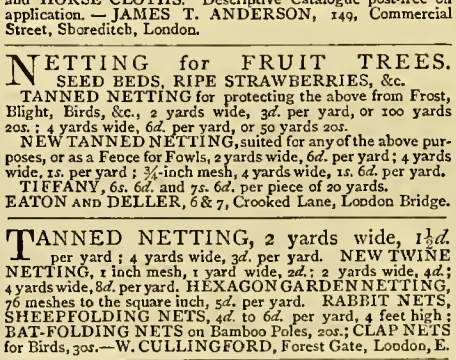


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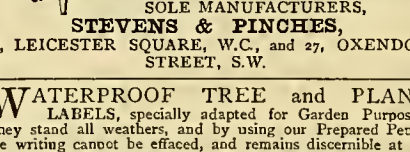
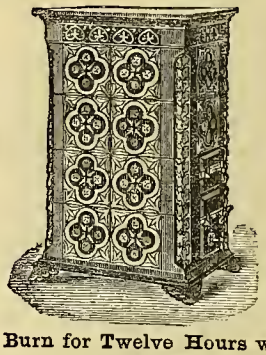



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

**DOULTON'S LAMBETH**

## RADIATING TILE STOVES.



No Cleaning.
No Fixing.
No Danger.
No Sweeping.
No Attention.
No Dust.
No Smell.
No Waste.
No Dirt.

For Studios.
For Halls.
For Surgeries.
For Schoolrooms.
For Waiting Rooms.

**Burn for Twelve Hours with 5 lb. of Coal.**

## DOULTON & CO.,

LAMBETH POTTERY, LONDON, S.E.
**May be had of the Principal Ironmongers.**

## THOS. W. ROBINSON,

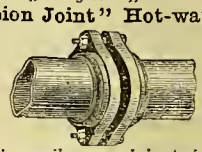
*DENNIS PARK IRONWORKS, STOURBRIDGE,*
MANUFACTURER OF
**HOT-WATER PIPES,**
IMPROVED "EXPANSION JOINT" PIPES,
**BOILERS,**
SPOUTING, PUMPS, TANKS, WROUGHT-IRON TUBING,
And every description of Ironwork for Horticultural and Building Purposes.

**SOCKET HOT-WATER PIPES.**

| | s. | d. | | s. | d. | | s. | d. | |
|---|---|---|---|---|---|---|---|---|---|
| Pipes (6 ft. long)— | 2-in., 1 | 6 | 3-in., | 2 | 8 | 4-in., | 3 | 4 | each. |
| ,, (9 ft. long)— | ,, | — | ,, | 3 | 9 | ,, | 4 | 6 | ,, |
| Elbows (No. 12)— | ,, 1 | 1 | ,, | 1 | 8 | ,, | 2 | 0 | ,, |
| Tees (No. 33)— | ,, 1 | 5 | ,, | 2 | 4 | ,, | 3 | 3 | ,, |
| Syphons (No. 23)— | ,, 1 | 3 | ,, | 2 | 0 | ,, | 3 | 0 | ,, |

**"Expansion Joint" Hot-water Pipes.**

The "Expansion Joint."



The Best and Quickest Made.

*This Joint, being easily removed, is specially adapted for Tenants.*

| | s. | d. | | s. | d. | | s. | d. | |
|---|---|---|---|---|---|---|---|---|---|
| Pipes (6 ft. long)— | 2-in., 1 | 5 | 3-in., | 2 | 3 | 4-in., | 2 | 11 | each. |
| ,, (9 ft. long)— | ,, | — | ,, | 3 | 4 | ,, | 4 | 3 | ,, |
| Elbows (No. 3)— | ,, 0 | 8 | ,, | 0 | 10 | ,, | 1 | 0 | ,, |
| Tees (No. 13)— | ,, 0 | 11 | ,, | 1 | 2 | ,, | 1 | 4 | ,, |
| Syphons (No. 16)— | ,, 1 | 0 | ,, | 1 | 4 | ,, | 1 | 6 | ,, |

Joint complete, with Rubbers and Pins, 2-in., 10d. each; 3-in., 1s. 2d.; 4-in., 1s. 4d.
Delivered into Trucks or Boats. Illustrations and Price Lists free.
*Terms—Cash against Invoice less 2½ per Cent. Discount.*
Estimates for Heating given from Plans.
ALL CASTINGS SUPPLIED OF FIRST QUALITY ONLY.

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CORRY, SOPER, FOWLER AND CO. invite buyers to inspect their Show of WREATHS and CROSSES in Metal, Porcelain, and Dried Flowers, in great variety—made on the premises, 18, Finsbury Street, E.C.

**Geometrical Mosaic and Encaustic**

TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
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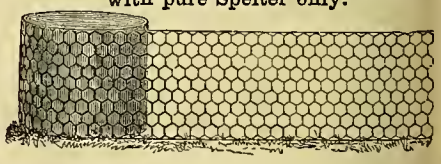
**With Registered Selvage, Galvanised with pure Spelter only.**



*Prices per Lineal Yard, 24 in. high:—*

| Mesh. | Mostly used for | Gauge. | | Gauge. | | Gauge. | |
|---|---|---|---|---|---|---|---|
| 2 in. | Poultry .. .. | 19 | 3d. | 18 | 3½d. | 17 | 4¼d. |
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**NO INFERIOR LOW PRICED NETTING SOLD.**

No false gauges of Wire used—robbing the public (and injuring honest Makers of Netting)—under the fraudulent pretence of "cheapness."

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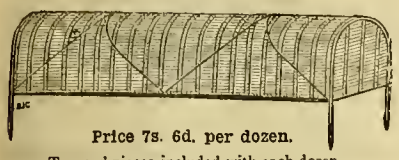
## PEA and SEED GUARDS.

GREAT SUCCESS.
**REDUCED PRICES, SEASON 1881.**
Superior Quality. Galvanised after made.
*NEW PATTERN WITH DIAGONAL STAYS.*
No. 76.—3 feet long, 6 inches wide, 6 inches high.



**Price 7s. 6d. per dozen.**

Two end pieces included with each dozen.

The above are strongly recommeded, being much smaller in the mesh than the ordinary diamond pattern, and proof against the smallest birds. *Orders executed on receipt.*

Illustrated and Priced Catalogues of Horticultural Wirework, Fittings for Wiring Walls, &c., on application.

*** Five per cent. discount allowed for cash with order. Special quotations for large quantities.

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## DOULTON & CO.,
LAMBETH POTTERY, LONDON, S.E.

**VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,**
IN
IMPERISHABLE TERRA COTTA·

PLAIN AND ORNAMENTAL PAVINGS;
TILES FOR LINING WALLS OF **Conservatories.**

ART POTTERY, including JARDINIERES
AND OTHER
**Table Decorations and Vases, Fountains, &c., for the Conservatory, in**
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**Show Rooms, Albert Embankment, S.E.**

**Rosher's Garden Edging Tiles.**

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone very durable and of superior finish, and in great variety of design.

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Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

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KENT PEATS or LOAM supplied at lowest rates in any quantities.

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15-oz. and 21-oz., in Boxes containing 200 feet,
**Carriage Paid to any Railway Station in England.**
*Price Lists on application.*
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Can be obtained in all sizes and qualities of
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B. & Son have always a large stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. and 21-oz.; and also large sizes in all qualities for cutting-up purposes, in 200-ft. and 300-ft. cases.

**Established 150 years.**
WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

| | Inches. | Inches. | | | | | |
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| 15-oz., | 6 × 4 to 7½ × 5½, | 9s., | 10s., | 11s., | 12s. | | Per 100 ft. Box. |
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| | 10½ × 8½ to 14 × 10, | 10s., | 12s., | 13s., | 14s. | | |
| | 15 × 10 to 18 × 12, | 11s., | 13s., | 14s., | 15s. | | |
| | 20 × 12 to 24 × 16, | 11s 6d, | 13s 6d, | 14s 6d, | 15s 6d. | | |
| | 20 × 17 to 24 × 18, | 12s., | 14s., | 15s., | 16s. | | |
| | Inches. | Inches. | | | | | |
| 21-oz., | Orchard House, 20 × 12, | 20 × 15, | | | | 16s., | 17s. 3d., |
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15-oz., for Cutting up, 34s., 41s., 42s. 6d., 53s. per 300 feet case.
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LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.
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REMOVED to 43, Commercial Street, London, E.

GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest Prices of
WATSON AND SCULL, 90, Lower Thames St., London, E.C.

THE **PRESIDENT,** LATEST **American Lawn-Mower,**

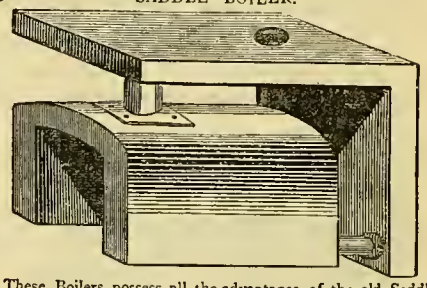
Awarded twenty-four First-class Gold, Silver, and Bronze Medals at the Principal Exhibitions and Trials in America and Europe.

**New Pony and Horse Mowers,** Carriage paid to any Station. Hand sizes—8-in., 42s.; 10-in., 63s.; 12-in., 84s; 14-in., 105s.; 16-in., 126s.; 18-in., 147s.; 22 in., 189s.

is, without question, the best in the world, and its sale exceeds any other. The makers challenge competition on the following points: Mechanical Construction, Excellence of Material, Workmanship, Finish, Simplicity, Durability, and Lightness of Draught when Cutting Long or Short, Wet or Dry Grass. See it and try it before you buy any other. Every Machine is unconditionally warranted.

**THOMAS M'KENZIE & SONS, Limited,**
16, Holborn Viaduct, London, E.C.;
Dawson Street, Dublin; and Victoria Street, Belfast.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. | | | To heat of 4-in. Pipe. | Price. | | |
|---|---|---|---|---|---|---|
| High. | Wide. | Loog. | Feet. | £ | s. | d. |
| 20 in. | 18 in. | 18 in. | 300 | 7 | 0 | 0 |
| 20 ,, | 18 ,, | 24 ,, | 400 | 8 | 0 | 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 | 0 | 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 | 0 | 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 | 0 | 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 | 0 | 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 | 0 | 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 | 0 | 0 |

Larger sizes if required.

*From* MR. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

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When ordering Boilers please refer to the above advertisement.

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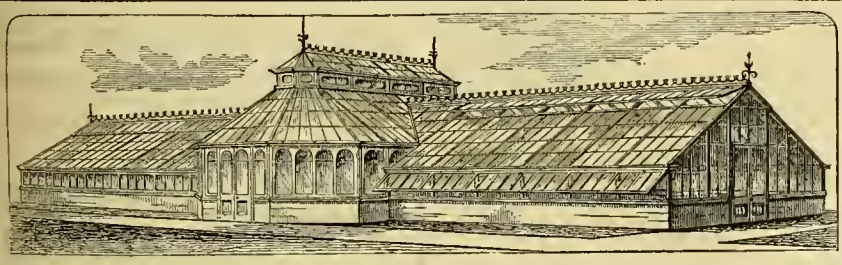
Have the largest and most complete stock in the Trade to choose from.

## HOT-WATER BOILERS, PIPES, and CONNECTIONS,
And all CASTINGS for HORTICULTURAL PURPOSES.

*Their New Illustrated Catalogue, 10th Edition, now ready*
(*price One Shilling*).

**Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.**
*Price List on application free.*



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Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price*. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.

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Will sow every description of Farm and Garden Seeds.

There is no spring and slide to get out of order and damage the seed, being worked by a brush. The rows can also be put in at equal distances without a line.

Price, with 2 wheels, 20s. each.
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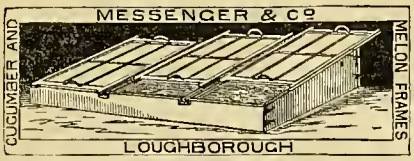


Always in stock, made on a new and improved principle.
1-light Frame, 6 ft. × 4 ft., £2 2 0. Packing Case, 3s.
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Lights only painted 4 coats and glazed, 16s.
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Carriage Paid on Orders amounting to 40s.
One half allowed for Packing Cases returned, carriage paid.

GREENHOUSE SASHES,
6 feet by 3 feet,
Best Pine,
Primed and Glazed,
15-oz., 9s.,
21-ounce, 10s. 6d.
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A new Illustrated Pamphlet on this subject will be sent free, with Estimates for this class of Work to any extent, on receipt of dimensions, &c., of what is wanted.

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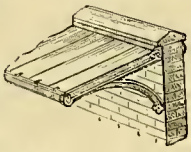
2 feet wide, at £10 per 100 feet long.



LEAN-TO PEACH-HOUSES, completely Glazed and Painted, from 10s. to 21s. per foot run, for 8 to 16 feet on slope.

Price LISTS free, on application to

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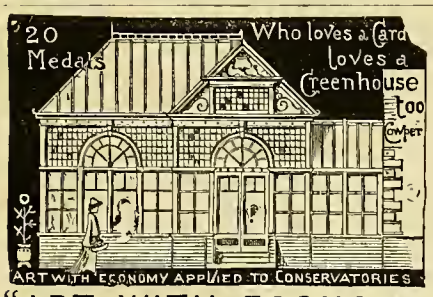
Horticultural Work of every description executed in the very best manner.

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HORTICULTURAL BUILDINGS
Of every description Made, Erected, Fitted and Heated.
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THE COTTAGE POULTRY HOUSE,
TENANT'S FIXTURE,
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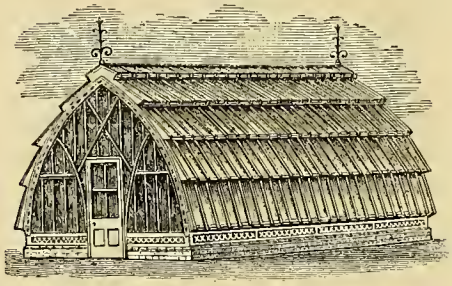
BOULTON AND PAUL, Manufacturers, Norwich.

WRIGHT & HOLMES.
Practical Horticultural Builders and Hot-water Engineers.



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Further particulars on application to
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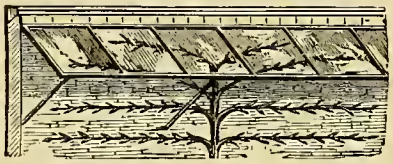
Certain Protection from Spring Frosts.



Eight years' experience has proved that
PARHAM'S PATENT GLASS WALL COPING secures a certain crop of Apricots, Peaches, Pears, and all other Wall Fruit, on the Trees protected by it.
Price, in painted Iron Framing, with 21 oz. Glass, and Rods for front Curtain, 2 feet wide, 2s. 6d.; 3 feet wide, 3s. 9d. per foot run.
Testimonials, References, and Prospectus free.
WM. PARHAM, Northgate Works, Bath; and 280, Oxford Street, London. Specimens may be seen at either address.

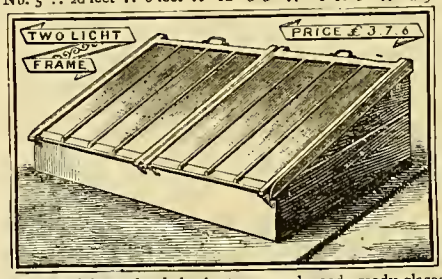
BOULTON & PAUL,
HORTICULTURAL BUILDERS, NORWICH.

No. 74. — NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.

This Illustration shows a new Frame, specially adapted for Growing Cucumbers, Melons, &c., and for Storing Plants, giving greater height, more convenience, and better access to all the plants inside than our ordinary Melon and Cucumber Frame, No. 75.

Prices—Carriage Paid.

| Size. | Long. | From front to back. | Gearing extra to 8 ft. size and upwards. | Packing Cases. |
|---|---|---|---|---|
| No. 1 | 4 feet | 6 feet | £3 0 0 | — | £0 4 0 |
| No. 2 | 8 feet | 6 feet | 4 15 0 | £0 15 0 | 0 5 0 |
| No. 3 | 12 feet | 6 feet | 6 10 0 | 1 2 0 | 0 6 6 |
| No. 4 | 16 feet | 6 feet | 8 5 0 | 1 10 0 | 0 8 6 |
| No. 5 | 20 feet | 6 feet | 10 0 0 | 1 16 0 | 0 9 6 |




Our stock is made of the best seasoned wood, ready glazed with 21-oz. English glass, painted three coats of best colour, and easily put together in a few minutes.

Prices—Carriage Paid.

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|---|---|---|---|
| 2-light Frame | 8 feet by 6 feet | £3 7 6 | 4s. 0d. |
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| 4-light " | 16 feet by 6 feet | 6 7 6 | 5s. 0d. |
| 5-light " | 20 feet by 6 feet | 7 17 6 | 6s. 0d. |
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Lights only, 6 feet by 4 feet, unglazed and unpainted, 6s. each
Glazed with 21-oz. sheet glass and painted three coats, 16s. each.
All Orders amounting to 40s. Carriage paid to any Railway Station in England and Wales; also to Edinburgh and Glasgow, Dublin and Belfast.
Any damage in transit made good if advised immediately.

ESPALIERS for FRUIT TREES,
And WIRING for WALLS.
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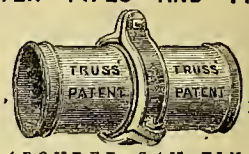


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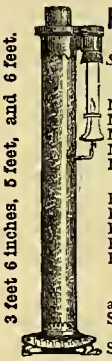


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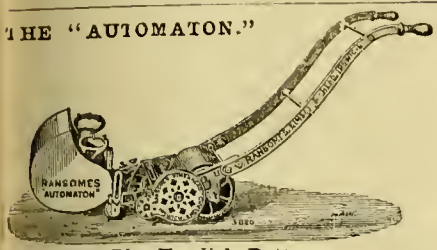


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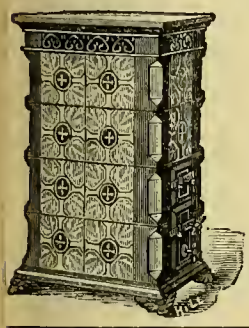

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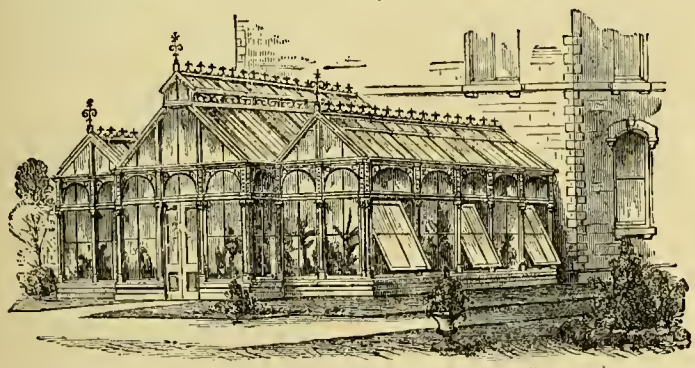

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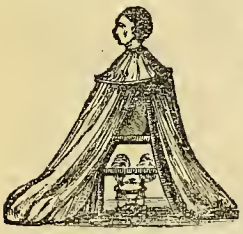

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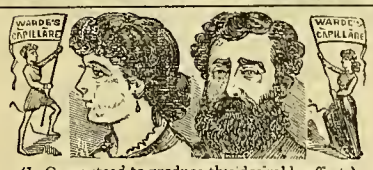


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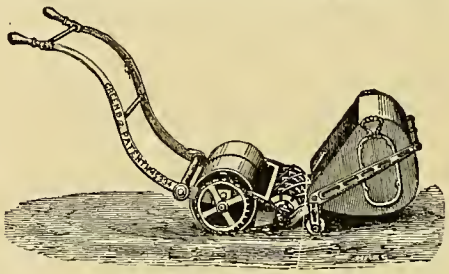

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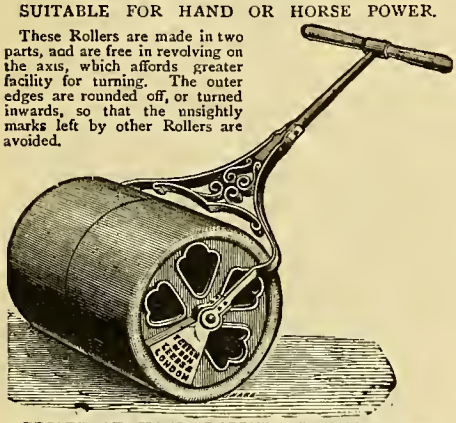

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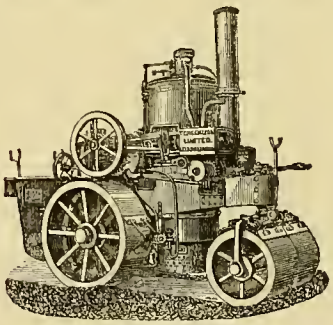

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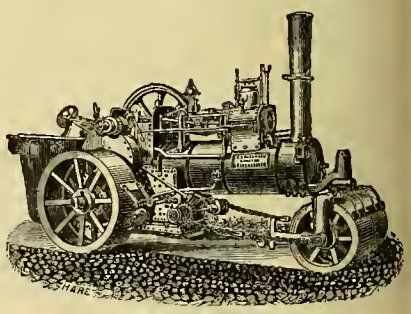

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Editorial Communications should be addressed to "The Editors :" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, April 2, 1881.
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THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 380.—Vol. XV. { New Series. } SATURDAY, APRIL 9, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

*With this Number is presented a Double-page Coloured Plate of "DAFFODILS."*

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## NOTICE TO ADVERTISERS.

FRIDAY NEXT, *April* 15, *being* GOOD FRIDAY, *the* "GARDENERS' CHRONICLE" *will be published on* THURSDAY, *the* 14*th inst., at* 2 *p.m.*

ADVERTISEMENTS *for* NEXT WEEK *must therefore reach the Office not* LATER *than* WEDNESDAY MORNING, *the* 13*th inst.*


ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific, at 1 P.M.; GENERAL MEETING for the Election of Fellows, &c., at 3 P.M., on TUESDAY NEXT, April 12.
N.B.—An EXHIBITION of choice FLOWERS and FRUITS will be held in connection with the Meetings of the Fruit and Floral Committees in the Conservatory.
Band of the Royal Horse Guards from half-past 3 o'Clock P.M. Admission, 1s.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
The NATIONAL AURICULA SOCIETY will hold its Annual EXHIBITION of AURICULAS in the Conservatory of the Royal Horticultural Society at South Kensington, on TUESDAY, April 19. Band of the Royal Horse Guards (Blue) from half-past 3 o'Clock P.M. Doors open at 1 o'Clock. Admission, 1s.
N.B.—The Rev. Francis D. Horner will deliver a Lecture on the Auricula in the Conservatory, commencing at 3 o'Clock P.M.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE TO FELLOWS.—The Council having procured a quantity of CORMS of GLADIOLI are prepared to distribute the same in packets to the Fellows. Applications to be addressed to the SECRETARY, Royal Horticultural Society, South Kensington, S.W. N.B.—If required to be sent by post, 3½d. in stamps must accompany each application.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1881, will Open, as usual, the Friday before Whit Sunday (June 3). INTERNATIONAL HORTICULTURAL EXHIBITION of 1881 will Open on August 24. THREE THOUSAND POUNDS in PRIZES at the above Exhibitions. For Schedule, &c., apply to the undersigned.
BRUCE FINDLAY,
Royal Botanic Gardens, Manchester.

THE HORTICULTURAL EXHIBITION to be held in connection with the Essex Agricultural Society's Show at Southend-on-Sea will take place on WEDNESDAY and THURSDAY, June 15 and 16, when SILVER CUPS and PRIZES to the value of about ONE HUNDRED and THIRTY POUNDS will be offered for Plants, Fruit, Flowers, and Vegetables. No Entrance Fee will be charged to Exhibitors. ENTRIES CLOSE JUNE 1. The Schedule of Prizes, Entry Forms, and full particulars, may be obtained of
Mr. JOHN TAYLOR, Jun., Hon. Sec.
22, Cambridge Terrace, Southend-on-Sea, Essex.

Lawns and How to Make Them.—See CARTERS' PRACTICAL GARDENER. Price 1s.; post-free, 1s. 4d. (Winners of the only Gold Medal for Lawns, Paris, 1878.)
The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.

WANTED, CAULIFLOWER PLANTS. For SALE, cheap, 1 ton MYATT'S ASHLEAF POTATOS, true and sound: surplus stock.
EXECUTORS late G. J. Woollett, Seed Merchant, Caterham, Surrey.

GROWERS having Surplus Stocks of CUT FLOWERS, Choice FRUITS, &c., should communicate with WISE AND RIDES, 3, Tavistock Court, Covent Garden.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS are requested to communicate with
W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

Wanted, Large Palms and other Decorative and FINE FOLIAGE PLANTS.
THE GENERAL HORTICULTURAL COMPANY (John Wills), Limited, will be glad to PURCHASE or EXCHANGE other PLANTS for the above. The Company require large quantities of Plants from 3 to 20 feet high. Send full particulars to
Mr. JOHN WILLS, General Manager, Warwick House, 142—144, Regent Street, W.

Alexandra Palace, London, N.
(JONES AND BARBER, Lessees and Managers.)
WANTED, to PURCHASE or HIRE, First class CUT FLOWER or EXHIBITION PLANTS, for the Saturday Horticultural Marts, now being held Weekly.
J. FORSYTH JOHNSON, Horticultural Director.

WANTED, ABIES MENZIESII, TAXODIUM SEMPERVIRENS, 18 to 24 inches; ABIES MORINDA, 12 to 18 inches. Full particulars to,
JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

WANTED, CALADIUMS, EUCHARIS, CROTONS, or AMARYLLIS BULBS. Any one having a Large Stock to Dispose of, or Overgrown Plants, can have them EXCHANGED for NEW and RARE PLANTS, PALMS, or ORCHIDS, by
J. H. LEY, Royal Nursery, Croydon.

WANTED, Two MAGNOLIA GRANDIFLORA (Exmouth variety), not less than 6 feet high, healthy and well-furnished; must have been grown in pots, or very recently transplanted. Also two ERIOBOTRYA JAPONICA, size and condition as above. State cash price, including careful packing, to
WILLIAM BADMAN, Cemetery Nursery, Gravesend.

WANTED, a quantity of BRITISH BOX EDGING. Sample Yard and Price to
J. NOBLE, Nurseries, Lower Clapton, E.

WANTED, HOLLY, MADERIENSIS, good well-shaped pyramidal Plants. State size and price per dozen. Also CABBAGE PLANTS of sorts. State price to
WM. FELL AND CO., Nurserymen, Hexham.

WANTED, LARGE PALMS.—Any one having large specimens to dispose of can hear of a purchaser by applying to
Mr. W. L. MAITLAND, The Floral Gallery, Station Buildings, South Kensington, S.W.

WANTED, FRUITING CANES of the following VINES:—Buckland Sweetwater, Foster's Seedling, Black Hamburgh, Muscat of Alexandria, &c. State lowest trade price to
D. McFARLANE, The Gardens, Olive Mount, Wavertree, Liverpool.

WANTED, ASPARAGUS ROOTS, strong; PINUS AUSTRIACUS, 3 to 4 feet; RHODODENDRONS, hybrid and ponticum, well grown and good colour, 1½ to 2½ feet, also named varieties; Green Tree BOX; VIOLAS, to name, in variety; CARNATIONS, CLOVE and other border varieties. Send description or sample with lowest cash prices, to
R. H. YERTEGANS, Chad Valley Nurseries, Birmingham.

WANTED, GLOBE ARTICHOKES, strong plants. Send sample and price to
E. COOLING, Mile Ash Nursery, Derby.

To Market Gardeners.
WANTED to PURCHASE, SEAKALE PLANTS. State price per 1000 to
GROWER, 16, Crown Court, Russell Street, W.C.

WANTED NOW, CAULIFLOWER PLANTS. State sort, quantity, and lowest price, Cash with Order, to
AUSTIN AND McASLAN, 16, Buchanan Street, Glasgow.

WANTED, AT ONCE, CABBAGE PLANTS, all kinds, in quantity. State prices, &c.
W. WISEMAN, Nurseryman, Nairn.

TO FARMERS and GROWERS.—Consignments of Cabbage, Savoy, Brussels Sprouts, Broccoli Sprouts, Turnip-tops, and Vegetables in general, wanted for Sale on Commission.—T. BROSNAN, Covent Garden Market, W.C.

SUTTONS' PRIZE GRASS SEEDS. Carriage Free.

SUTTONS' GRASS SEEDS FOR LAWNS.

SUTTONS' GRASS SEEDS FOR CROQUET GROUNDS.

SUTTONS' GRASS SEEDS FOR LAWN TENNIS GROUNDS.

SUTTONS' GRASS SEEDS FOR CRICKET GROUNDS.

SUTTONS' GRASS SEEDS FOR BOWLING GREENS.

FOR FULL PARTICULARS SEE

SUTTONS' PAMPHLET ON LAWNS, &c., Gratis and post-free on application.

SUTTON AND SONS, THE QUEEN'S SEEDSMEN, READING, BERKS.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes in the Trade. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

WILLIAMS' for ORCHIDS either for the Cool-house, Mexican, or East India-house, either in Specimens or small plants. The largest Collection of Specimens suitable for Exhibition in the Trade.

WILLIAMS' for CHEAP ORCHIDS.—B. S. W. having recently purchased several Collections of Orchids in this country, in addition to the large consignments he is constantly receiving from his collectors abroad, is thus enabled to offer a large assortment of these plants, at exceptionally low prices. Price List upon application.

WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSEYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

SUNNINGDALE NURSERY, Direction of, see *Gardeners' Chronicle*, March 19, 1881.

SEND for T. S. MAYOS' LIST (post-free) of HARDY SPRING BEDDING PLANTS, including Choice Show and Fancy Pansies, Violas, Double Daisies, &c.
Highfield Nursery, Hereford.

GUNNERA SCABRA.—Fine strong Crowns, in 5-inch pots. Per dozen, 12s.
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

Tricolor Bedding Geraniums.
ALFRED FRYER offers a large stock of the best varieties. Priced LISTS post-free.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

THIRTY-SIX ACHIMENES, Finest Sorts, for 10s.—Sent carriage free on receipt of cash. Longiflora alba, Mauve Queen, and ten other most beautiful new sorts; very large corms.
J. H. LEY, Royal Nursery, Croydon.

Larch.—Larch.
LARCH.—Fine 1-yr. 1-yr., 100,000 for £22, 50,000 for £11, for Cash on Delivery.
W. WISEMAN, Nurseryman, Nairn.

HOLLYHOCKS.—Strong plants now ready. List of varieties and price upon application.
L. WOODTHORPE, Glazenwood Nursery, Braintree.

JULES DE COCK, Ornamental Plant Nurseries, Ghent, Belgium, offers to the Trade:—AZALEA INDICA, all sizes, with buds; CAMELLIAS, best sorts, without buds, 1 to 1½ foot high; ADIANTUM CUNEATUM (Maidenhair), 28s. per 100; CIBOTIUM PRINCEPS, and CYATHEA MEDULLARIS, 1s. each.

CABBAGE PLANTS.—200,000 Enfield Market, 3s. 6d. per 1000.
JOHN TINDALL, Gardener, Heckington, Lincolnshire.

## SALES BY AUCTION.

### Importation of Lilies from Japan.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 11, several importations of LILIES from Japan, including 4000 Bulbs of Lilium auratum just received in fine condition; 2000 Lilium Krameri, a quantity of unnamed species in varieties, &c.; also a consigement of TIGRIDIA GRANDIFLORA and GLADIOLI from New Jersey; some fine imported plants of TODEA SUPERBA, a consignment of 2000 TUBEROSES from America, HARDY ORCHIDS, and a quantity of Miscellaneous BULBS and TUBERS, &c.

On view morning of Sale, and Catalogues had.

### Aerides Leeanum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 11, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., imported plants in the finest possible condition of the above-named new and lovely AERIDES, named by Professor Reichenbach in honour of William Lee, Esq., of Leatherhead, in whose collection a plant has recently bloomed. The plants were collected in the Philippine Islands by Mr. Boxall, who writes that it is a lovely species, flowers most beautiful magenta colour, with a pure white stripe down the centre of the throat; it is so free-flowering that Mr. Boxall saw quite small plants with ten and twelve flowering spikes, and in many instances two or three from the axil of one leaf. In habit the plant much resembles Aerides quinquevulnerum, and its position in the genus seems to be near Aerides Thibautianum (Huttoni). The seed-pods are deep magenta in colour. A coloured sketch, prepared in the Philippine Islands, will be on view, also dried specimens, clearly showing the marvellous profusion with which the flower-spikes are produced. At the same time will be offered very strong plants of DENDROBIUM HETEROCARPUM PHILIPPINENSIS, some of the bulbs 4 feet in length; good plants of DENDROBIUM GLUMACEUM, AERIDES MACULOSUM, AERIDES CRISPUM and LINDLEYANUM, varieties mixed, many of these with fine spikes.

May be viewed the morning of Sale, and Catalogues had.

### The Second Portion of the Celebrated Collection of ORCHIDS of JOHN DAY, Esq., of TOTTENHAM.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, April 12 and 13, at half-past 12 o'Clock precisely, the second portion of this splendid COLLECTION of ORCHIDS, comprising, amongst other fine things, the following:—

| | |
|---|---|
| Oncidium splendidum | Odontoglossum blandum |
| ,, ornithorhynchum album | ,, nævium majus |
| ,, macranthum | ,, vexillarium (in good variety) |
| Aerides Dayanum | ,, crispum (in good var.) |
| ,, Schröderi | Grammatophyllum Ellisii |
| ,, affine superbum | Cattleya exoniensis (best variety) |
| Vanda Cathcarti | ,, labiata |
| Dendrobium cucullatum giganteum | ,, Skinneri |
| Saccolabium præmorsum | Lælia purpurata |
| ,, guttatum var. Turneri | ,, crispa superba |
| ,, ,, var., Lady Ashburton's | Cypripedium Druryi |
| Angræcum Chailluanum | ,, Spicerianum |
| Masdevallia Macrura | Cymbidium Parishii |
| ,, Trochilus | ,, Dayanum |
| ,, Lindeni | Phalænopsis intermediæ, splendid variety in flower |
| Odontoglossum Andersonianum | &c., &c. |

On view morning of Sale, and Catalogues had.

### Eucharis candida and Odontoglossum crispum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 14, at half-past 12 o'Clock precisely, by direction of Messrs. Shuttleworth, Carder & Co., 191, Park Road, Clapham, S.W., a fine importation of Flowering Bulbs of the charming and beautiful EUCHARIS CANDIDA, which has hitherto been so scarce; also some grand masses of ODONTOGLOSSUM CRISPUM, in especially fine varieties; good plants of ODONTOGLOSSUM PESCATOREI, ONCIDIUM CUCULLATUM, ODONTOGLOSSUM TRIUMPHANS, and ANGULOA CLOWESII.

On view morning of Sale, and Catalogues had.

### Selected Varieties of Odontoglossum Alexandræ.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 21, at half-past 12 o'Clock precisely, 4000 ODONTOGLOSSUM ALEXANDRÆ, collected in flower, which will be sold in their colours. The Sale will also contain large importations of other Odontoglots. For other varieties see large Advertisement.

On view morning of Sale, and Catalogues had.

### Flowering Orchids.

MR. J. C. STEVENS begs to announce that he has fixed the following days for SALES of ORCHIDS in flower or bud:—

| | |
|---|---|
| TUESDAY, April 26 | WEDNESDAY, July 13 |
| TUESDAY, May 10 | FRIDAY, August 5 |
| FRIDAY, May 20 | WEDNESDAY, August 24 |
| WEDNESDAY, June 1 | FRIDAY, September 16 |
| WEDNESDAY, June 15 | |
| WEDNESDAY, June 29 | FRIDAY, October 14 |

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

### Monday Next.

ESTABLISHED and IMPORTED ORCHIDS, many in Flower.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, about 300 lots of ESTABLISHED ORCHIDS, from various collections, amongst which will be found many very fine plants, and a number of them in flower; also 100 lots of IMPORTED ORCHIDS, including extra fine pieces of Odontoglossum Rossii majus, O. Roezlii, O. Hallii, O. Alexandræ, Miltonia flavescens, Cattleya Mendelii, C. Mossiæ, ANTHURIUM ANDREANUM, and others.

Catalogues at the Mart, and at Messrs. P. & M.'s new City Offices, 8, New Broad Street, E.C.

### Monday Next.

IMPORTATIONS from NEW ZEALAND and the WEST INDIES.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, on MONDAY NEXT, at half-past 11 o'Clock precisely, 50 trunks of CYATHEA DEALBATA, 1 to 6 feet, received from New Zealand in splendid condition; also a direct importation from the West Indies of PANCRATUM CARIBÆUM, CRINUM GIGANTEUM VAR. ROSEUM, AMARYLLIS EQUESTRIS and GRANDIS, FOURCROYA GIGANTEA, and CALADIUM TUBERS; DISA GRANDIFLORA from the Cape, and IRIS from Japan. Catalogues as above.

### Important Sale of a First-class Collection of CARNATIONS, PICOTEES, PINKS, CLOVES, &c.

a superb assortment of 400 Standard and Dwarf ROSES, selected FRUIT TREES, hardy CONIFERÆ, SHRUBS, AMERICAN PLANTS, SEEDS, a COLLECTION of GREENHOUSE PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on TUESDAY NEXT, April 12, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 8, New Broad Street, E.C.

### Huddersfield, Yorkshire.

MR. FRANK SMITH is instructed by the representatives of a Gentleman (deceased) to remove from the residence, and SELL by AUCTION on THURSDAY April 14, at 2 o'Clock, in the Large Warehouse lately occupied by Messrs. Read, Holliday & Sons, Westgate, Huddersfield, the Valuable Collection of STOVE and GREENHOUSE PLANTS, comprising about twenty beautiful specimen Azaleas, from 3 to 6 feet high, fine pyramids in good health, and of the best named kinds; Camellias, Orchids, Allamandas, Hoyas, Ferns, Amaryllis, Stephanotis, Gloxinias, Acacia, Cyclamens, Lilium auratum, Yallotas, Epacris, Echeverias, Tropæolums, Clematis, Deutzia gracilis, Geraniums, Petunias, &c. All will be sold without reserve.

### Enfield Highway, Ponder's End, and Nag's Head LANE, ENFIELD, MIDDLESEX.

By direction of Executors.
VALUABLE FREEHOLD and LEASEHOLD PROPERTIES.

MR. ARTHUR JACKSON has received instructions from the Executors and Trustees of the will of the late William Mitchell, Esq., to SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on WEDNESDAY, April 20, at 2 o'Clock precisely, in various lots, the following valuable PROPERTIES:—

A substantially brick-built FREEHOLD RESIDENCE, at Enfield Highway, with every convenience, suitable for a moderately-sized family.

About 40 acres of productive MARKET GARDEN LAND, in a high state of cultivation, of which about 16½ acres are planted with choice varieties of Fruit Trees, now well established; together with an extensive range of outbuildings. About 7 acres are most eligible, and now ripe for building operations.

A valuable FREEHOLD BRICKFIELD, situate in Nag's Head Lane, Enfield, containing 4 acres, of which about 2 acres of the deep beds of clay are unworked.

THREE FREEHOLD DWELLINGS and 1½ acre of FRUIT LAND, situate in the high road at Ponder's End, now also ripe for building operations.

THREE LEASEHOLD DWELLINGS and BLACKSMITH'S SHOP, also at Ponder's End.

THIRTY-ONE FREEHOLD exceedingly well built brick and tiled DWELLINGS in St. James' Terrace and Old Road, Enfield Highway; let to excellent tenants at rentals amounting to £369 4s.

A FREEHOLD BRICKFIELD at the Old Road, containing about 5 acres; well adapted for a building estate.

Also about 57 plots of FREEHOLD BUILDING LAND, in St. James' Road and the Old Road.

Particulars, conditions, with plans, may be had ten days previous to the Sale, of J. R. RIGNALL, Esq., Solicitor, Enfield; at the Mart, Tokenhouse Yard; and of Mr. ARTHUR JACKSON, Auctioneer, Land and Estate Agent, 25, Liverpool Street, E.C., and Enfield, Middlesex.

### London, S.W.—(5120.)

Seven miles from Covent Garden.

FOR SALE, a capital MARKET BUSINESS, doing a good local trade in Cut Flowers and Furnishing, which could be much extended. Comprises an Acre of Ground, five modern Greenhouses, Pits, and Shed. Rent, on lease, £15 per annum. Good reasons for disposal.

Full particulars of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, E.C.

### Yorkshire.—(4831.)

FOR SALE, owing to death of late proprietor, a thoroughly genuine old-established NURSERY and SEED BUSINESS, in the centre of a good agricultural district. In thorough working order.

Particulars and terms of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, London, E.C.

TO BE DISPOSED OF, a FLORIST and SEED BUSINESS, with a good connection. The Shop is well situated in a principal street of Wolverhampton. The stock of sundries and fixtures to be taken to. This is a capital opportunity for a man who thoroughly understands the business.—For particulars apply to C. SHAW, Finchfield, Wolverhampton.

FOR DISPOSAL, on the South Coast, a NURSERY, SEED, and FLORIST BUSINESS, comprising 2 Acres of Land, Two Vineries, Cucumber, Propagating, and Two Span-roofed Greenhouses, Show House, and Seed Shop, Pits, Frames, Potting Sheds, &c. Rent only £25 per annum. Goodwill, Stock, Greenhouses, and all Erections. Price and particulars on application to FLORIST, 96, Alexandra Street, St. Leonards-on-Sea.

TO BE SOLD, with Immediate Possession, a First-class Old-established NURSERY and SEED BUSINESS, in thorough working order, in the leading thoroughfare, five miles south of London; owing to failing health of proprietor. Any one with a fair amount of capital will find this a profitable investment. Apply, in first instance by letter only, to

B. F. S., Messrs. Nutting & Sons, Seed Merchants, 60, Barbican, London, E.C.

FLORIST'S and GARDENER'S SMALL NURSERY of 1 Acre. Good open spot. Two good Greenhouses and Pits. Good Stock to be Sold. About £200. R., 241, Liverpool Road, Islington, London, N.

### Ealing.—To Jobbing Gardeners.

TO LET, FIVE-ROOMED HOUSE, with large Garden (¾ Acre); locality commands at once a good Business. By term of Ten Years, rent 18s. per week. Two and a half Acres joining may be had in three years. Apply DELTA, 4, Ripley Cottages, Castle Bar Road, Ealing.

### To Gardeners.

TO BE LET, a good COTTAGE, with Stable, Shed, Piggeries, and every convenience, and 1 Acre of GARDEN GROUND, wherein is large Peach-house, well stocked, Cucumber-house, and small Stove-house and Conservatory; the Garden well stocked with Trees. Rent, £30. Close to a good Market Town, and within 22 miles of London. Fruit will pay rent. Application to be made to

Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.; or to Messrs. TAYLOR, HOARE AND TAYLOR, 28, Great James Street, Bedford Row, London, W.C.

CHISWICK, TURNHAM GREEN, and DISTRICT HORTICULTURAL SOCIETY.

President—His Grace the Duke of Devonshire, K.G.

GRAND EXHIBITION of FLOWERS, FRUIT, &c., THURSDAY, July 14, in the Royal Horticultural Society's Gardens, Chiswick. Schedule of Prizes and Subscription Forms with full particulars, now ready, and may be had on application to the Hon. Secretary, J. T. MUSGRAVE, Sutton Court Road, Turnham Green; also of the General Manager Mr. A. F. BARRON, Royal Horticultural Gardens, Chiswick.

WEYMOUTH HORTICULTURAL and FLORICULTURAL SOCIETY.

The SECOND GRAND EXHIBITION of FLOWERS FRUIT, and FERNS, will be held in the Alexandra Gardens Weymouth, on AUGUST 10. Schedules of Prizes now ready.

W. MORDAUNT THISELTON, Hon. Sec.

BATH and WEST of ENGLAND SOCIETY (Established 1777) and SOUTHERN COUNTIES ASSOCIATION.

TUNBRIDGE WELL MEETING,

JUNE 6, 7, 8, 9, and 10.

ENTRIES of LIVE STOCK IMPLEMENTS, &c., CLOSE APRIL, 21. POST ENTRIES (with extra Fees) received up to May 1

POULTRY ENTRIES CLOSE MAY 1.

Forms and all information supplied on application to

JOSIAH GOODWIN, Sec.
4, Terrace Walk, Bath.

SUTTONS' FLOWER SEEDS. ASTER

SUTTONS' FLOWER SEEDS. STOCK

SUTTONS' FLOWER SEEDS. BALSAM

SUTTONS' FLOWER SEEDS. ZINNIA

SUTTONS' FLOWER SEEDS. CALCEOLARI

SUTTONS' FLOWER SEEDS. CINERARI

SUTTONS' FLOWER SEEDS. CYCLAME

SUTTONS' FLOWER SEEDS. PRIMUL

SUTTONS' FLOWER SEEDS. In immense variety, 6d. to 5s. per packet, post-fr

THE BEST, AND ONLY THE BES

SUTTONS' CATALOGUE of FLOWE SEEDS, gratis, and post-free on application.

SUTTON AND SONS The Queen's Seedsmen, READING, BERKS.

### Cut Flowers.

W. F. BOFF, 203, Upper Street, Islingt London, N., is a BUYER of all kinds of Ho HOUSE and OUTDOOR FLOWERS. Cash by return post if desired. Where money is objected to ORCHIDS, & MAY BE HAD in EXCHANGE.

WM. FELL AND CO., Wentworth Nurse Hexham, offer the following:—

1-yr. SEEDLING SCOTCH
2-yr. ,, SPRUCE
2-yr. ,, AUSTRIAN PINE
} Prices on appl tion.
POTATO, MAGNUM BONUM, large quantity
,, LAPSTONE KIDNEY
} Prices applicat

EIGHT IMPORTED ORCHIDS, in go condition, for One Guinea.
C. J. R. B., Warmington, Oundle. No Post-cards.

### To the Trade.

POTATOS.—Mona's Pride, Early Kidn Royal Ashleaf Kidney, Myatt's Early Prolific, E Red Kidney, Schoolmaster. All true Stocks, and at very prices (on application).—EDMUND P. DIXON, Hull.

QUICKS, strong, 3 to 3½ feet, 17s. per 10 Common LAURELS, 1½ to 2 feet, bushy, 8s. per Other small Shrubs, cheap.—W. JACKSON, Blakedown, Kidderminster.

### The Chief Bundle of the Season is now Ready

FORTY SEPARATE PACKETS of NE FLOWER SEEDS, all different, for 1s.; double quan for 1s. 9d. We thus eclipse all other offers, hoping to se patronage for our miscellaneous seeds.

AGENTS WANTED to Canvass in spare time; liberal c mission; experience not necessary.

W. H. HOWELL, Flackwell Heath, High Wycomb

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 3½ feet.
SCOTCH.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted.
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

A. M. C. JONGKINDT CONINCK begs to offer large quantities of HARDY PERENNIALS, at very low prices.
Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

TWELVE ORCHIDS, Valuable Winter-flowering Sorts, 21s. — The cheapest collection ever offered. All well established plants of Epidendrums, Odontoglossums, Oncidiums, Cypripediums, Dendrobiums, and other free-flowering and beautiful sorts, in 4-inch and 5-inch pots, strong, and well grown. Will not require repotting for a year. Packages gratis for cash. (Double size, extra strong, 42s per dozen.)
J. H. LEV, Royal Nursery, West Croydon.

**Pelargoniums—Pelargoniums.**
JAS. HOLDER AND SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties, 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

**Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.**
MESSRS. LEVAVASSEUR and SON, Nurserymen, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881. Extra strong SEAKALE, 2s. 6d. per dozen.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Japanese Maples, Orchids, &c.**
THE NEW PLANT AND BULB CO. beg to announce that the leading specialities in their New LIST (No. 51) is an extremely fine Collection of Japanese MAPLES and ORCHIDS. The Maples are fine specimens; the few kinds cultivated or hitherto known in England give but a poor idea of some of the gorgeous varieties. We offer a good representative collection—all are thoroughly hardy. When grown and intermixed with Cool-house Orchids, or in the Conservatory, the beautiful leaf-colouring would light up the predominant shades of green, and break the otherwise monotonous appearance. The Orchids offered are in splendid health and comprise many novelties, and all are, as usual, placed at the lowest remunerative prices Catalogues post-free on application.
Lion Walk, Colchester.

W. B. ROWE AND CO. (Limited) have to offer:—
PEARS, Horizontal Trained, Fruiting.
" Standard, good.
YEWS, English, 2 to 3 feet.
PRIVET, Oval-leaved.
" Common, 2-yr. struck.
ASPARAGUS, 1-yr.
HOLLIES, Seeding, fine.
STRAWBERRY PLANTS.
FIR, Spruce, 1½ to 5 feet.
Barbourne Nurseries, Worcester.

**The Best Potatos for Seed are grown in Dumfriesshire.**
OUR STOCK of SEED POTATOS, which is second to none in the Kingdom, contains all the leading varieties, at very moderate prices. Special quotations for large quantities. Price LIST on application.
KERR AND FOTHERINGHAM, The Royal Seed Establishment, Dumfries.

CABBAGE PLANTS.—Very fine stocks of Robinson's Champion and Early Rainham, in any quantity. Apply to
Mr. T. DAVIES, Tangley, Guildford, Surrey.

**Vines—Vines—Vines.**
J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

**Mangel Wurzel Seed.**
JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

**Clematis coccinea.**
HOOPER AND CO., offer good plants of this pretty Scarlet Clematis, at 5s. each.
HOOPER AND CO., Covent Garden, London, W.C.

**To the Trade.**
MANGEL WURZEL and TURNIP SEEDS.
H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.
Seed Growing Establishment, Wisbech.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

LAPAGERIAS.
WHITE, extra strong, 42s. each; do., 31s. 6d. each; smaller, 21s. each.
RUBRUM, strong, 10s. 6d. each.
ROSEA, strong, 7s. 6d. each.
Price to the Trade on application.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

**Notice.—SEED POTATOS.—Notice.**
At Clearance Prices, for Cash only.
WOOD AND INGRAM beg to offer the following, at greatly reduced prices:—

| | Per cwt.—s. | d. |
|---|---|---|
| CLIMAX (Bresee's) | 7 | 0 |
| EARLY ROSE | 100s. per ton 5 | 6 |
| KING of THE EARLIES (Bresee's) | 6 | 0 |
| SNOWFLAKE | 8 | 0 |
| SCHOOLMASTER | 12 | 0 |
| COVENT GARDEN PERFECTION | 8 | 0 |
| BEAUTY of HEBRON | 8 | 0 |
| DIPLOCK'S EARLY ROUND | 7 | 0 |
| MAGNUM BONUM (Suttons') | 110s. per ton 6 | 0 |
| EXCELSIOR (Porter's) | 8 | 0 |
| SCOTCH CHAMPION | 100s. per ton 6 | 0 |
| MYATT'S PROLIFIC | 120s. per ton 6 | 6 |

And a few other varieties. N.B.—Cwt. Bags, 6d. each.
The Nurseries, Huntingdon.

**Cheap Plants.—Special Offer.**
WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy, Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.
" TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.
" SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.
" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.
" BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.
" Forcing, Show and French vars., 30s. per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

J. H. BATH has the following SEED POTATOS for disposal:—

| | |
|---|---|
| Beauty of Hebron | Early Shaws |
| Myatt's Ashleaf | " Rose |
| White Elephant | Bresee's Prolific |
| Grand Mogul | Paterson's Victoria |
| Magnum Bonum | Scotch Champion |

And other leading varieties.
Apply at 1 and 3, York Street, Borough Market, S.E.

ABIES DOUGLASII, 12 to 18 inches, 25s. per 100; 18 to 24 inches, 35s. per 100; 2 to 3 feet, 50s. per 100.
ABIES DOUGLASII GLAUCA, a distinct compact growing glaucous variety of the Douglas Fir, much hardier than the common, 9 to 12 inches, 12s. per dozen; 12 to 18 inches, 18s. per dozen.
" MENZIESII, 12 to 18 inches, 30s.; 2 to 3 feet, 50s. per 100.
" ORIENTALIS, 12 to 18 inches, 15s. per 100; 18 to 24 inches, 25s. per 100; 2 to 3 feet, 40s. per 100.
CUPRESSUS LAWSONIANA, 18 to 24 inches, 20s. per 100; 2 to 3 feet, 30s. per 100.
" NUTKAENSIS, 2 to 3 feet, 12s. per dozen; 3 to 4 feet, 18s. per dozen.
PICEA CONCOLOR, 9 to 12 inches, 30s. per dozen; 12 to 18 inches, 36s. per dozen.
" LASIOCARPA, 12 to 18 inches, 24s. per dozen; 18 to 24 inches, 30s. per dozen.
" NOBILIS, 12 to 18 inches, 12s. per dozen; 18 to 24 inches, 18s. per dozen.
" NORDMANNIANA, 4 to 6 inches, 10s. per 100; 9 to 12 inches, 6s. per dozen; 12 to 18 inches, 9s. per dozen.
PINUS ARISTATA, 4 to 6 inches, 12s. per dozen; 6 to 9 inches, 18s. per dozen.
" BOLANDERI, a new Californian Pine, equal to insignis in its fine shade of deep green, and as hardy as our Scotch Fir, having stood this Russian winter uninjured, 2-yr., 1-yr. transplanted, 20s. per 100; 2-yr. 2-yr., 30s. per 100.
" CEMBRA: this fine Pine stands the cold blast on our exposed hills better even than the common Spruce; 12 to 18 inches, 8s. per 100; 18 to 24 inches, 12s. per 100; 2 to 3 feet, 15s. per 100.
" CONTORTA, 6 to 9 inches, 15s. per 100; 9 to 12 inches, 25s. per 100; 12 to 18 inches, 40s. per 100.
" MONTICOLA, 12 to 18 inches, 12s. per dozen; 18 to 24 inches, 18s. per dozen.
With many other fine Conifers.
Priced LIST of which may be had on application.
MORRISON BROTHERS, Aberdeen.

**Verbenas—Verbenas.**
VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.
EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Greens—Greens—Greens.**
GREEN KALE.—2,000,000 fine plants (autumn sown), earliest spring supply of Greens, at 7s. per 2000; 60s. per 20,000; £6 6s. per 50,000; or £12 per 100,000. Post-office Orders payable Godalming, or Cheques crossed London and County Bank, Guildford, with order.—Apply
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

**New Roses for 1881.**
SURPLUS NURSERY STOCK.
LIST of NEW ROSES, and other Roses in Pots, now ready. Prices and Particulars of Surplus Nursery Stock, also now ready. Both sent gratis and post-free to applicants.
EWING AND CO. Eaton, Norwich.

WILLIAM BARRON AND SON offer the following, very good and cheap:—
PYRAMID PEARS, in best varieties, extra strong and good, 12s. to 15s. per dozen.
PINUS AUSTRIACA, 2-yr. seedlings, very fine, 3s. per 1000; 12 to 18 inches, very strong, 40s. per 1000.
PINUS LARICIO, 2-yr. seedlings, very fine, 4s. per 1000; 12 to 18 inches, very fine, 70s. per 1000; 18 inches to 2 feet, very fine, 100s. per 1000.
ASH, common, 4 to 5 feet. 35s. per 1000.
NORWAY MAPLE, 3 to 4 feet, 35s. per 1000.
Elvaston Nurseries, Borrowash, Derby.

ADIANTUM WILLIAMSII, and Choice CALADIUMS.—We offer fine healthy Plants of this beautiful new Adiantum, in 4½ inch pots, at 3s. 6d. to 5s. each. Smaller, 30s. per dozen. Also some extra large bulbs of CALADIUMS, choice varieties. Particulars and prices on application.
F. & A. DICKSON & SONS, The "Upton" Nurseries, Chester.

TO POTATO PLANTERS.
Fine selected seed, 1s. 3d. per peck, 4s. per bushel, 7s. per cwt. Bags free.

| | |
|---|---|
| Mammoth Pearl | Late Evergreen |
| Myatt's Ashleaf | Early Ohio |
| Extra Early Vermont | Pride of America |
| Red-skin Flourball | Triumph |
| Feltham's Milky White | Magnum Bonum (Suttons') |
| Fluke Kidney | Hanworth Superior |
| Late Rose | Early Rose |
| Trophy | Paterson's Victoria |
| Beauty of Hebron | Improved York Regents |
| Manhattan | " Red Regents |
| Rivers' Royal | Victoria Regents |
| Headley's Nonpariel | Snowflake |
| Ruby | White Rose |

JERUSALEM ARTICHOKES, 1s. per peck.
Orders executed in strict succession until stock is exhausted. Nett cash with Order.
W. FELTHAM, Potato Grower, Eaton, Norwich.

KALE (Russell's true), 2,000,000—7s. per 2000; 60s. per 20,000; 6 guineas per 50,000; £12 per 100,000. Large, fine, healthy plants. Cash with order.
EDWARD LEIGH, Dunsfold, Godalming, Surrey.

OUR GUINEA HAMPER of HARDY SPRING and SUMMER PLANTS contains a Complete Permanent Garden Collection of 21 dozen Plants, not rooted offshoots, worth £4 4s., all of which will flower at once. We include 6 dozen Violas and Pansies worth the £1 1s., and 6 Spiræa japonica, for carriage. Hamper gratis.
JOHN PIRIE AND CO., Stechford, near Birmingham.

**Violets—Sweet Violets.**
FREDERICK PERKINS has a large stock to offer, now in full flower. Plants suitable for dividing to produce flowers next Autumn, Winter, and Spring.
DOUBLE VARIETIES.

| | |
|---|---|
| *Blandyanum | Neapolitan |
| Belle de Chatenay | Reine des Violets |
| King of Violets | *Patrie |
| *Marie Louise | |

SINGLE VARIETIES.

| | |
|---|---|
| *Victoria Regina, the best | White Czar |
| *Neapolitan, best Light Blue | *The Czar |

Marked thus * will produce flowers all the season in the open ground.
Large clumps, 6s. per dozen, 40s. per 100.
Twelve varieties, small plants, free by post, 4s. 6d.
Trade price on application.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

VERBENAS, strong, healthy, well-rooted cuttings, Crimson, Purple, Scarlet, Pink, Mauve, White, 5s. per 100.
ALTERNANTHERAS, magnifica, paronychioides, do. major, 6s. per 100; amœna, 8s. per 100.
MESEMBRYANTHEMUMS, cordifolium, variegatum, 6s. per 100.
PELARGONIUMS, good named sorts, autumn struck, from single pots, 3s. per dozen.
Cash with order.
E. HORTON, The Nurseries, Bromham Road, Bedford.

**First-class New Coleus.**
GEORGE SMITH has pleasure in offering the splendid HYBRIDISED COLEUS raised by Mr. Eckford, Gardener to Dr. Sankey, Sandywell Park, near Cheltenham. Mr. Eckford has been well known for many years as a very successful raiser of Florist Flowers. He has now many thousands of Seedling Coleus. The following are selected by myself, and they will be found to surpass all in cultivation; they are a Splendid Collection in themselves. The following is a short description of them, viz.:—
No. 1. MATTERHORN.—Leaf large, deeply serrated; surface wavy, light greenish-primrose ground, blotched with dark maroon, shading to a light port-wine colour. Plant striking, habit good.
2. CHOULEX.—Leaves large, smooth, flat; well defined centre of bright scarlet-crimson, shading off to light magenta, surrounded with a distinct border of bright green. Habit compact, branching, very first-rate.
3. MONTFLEURY.—Foliage smooth, oval crenate; centre of leaf bright magenta, veined with crimson, and surrounded with bright scarlet-maroon, tinged with olive, shading off to bright greenish-yellow; young leaves warm reddish-crimson. This is quite a gem. Habit branching, good.
4. MONTE ROSA.—Leaf oval, smooth, evenly crenate; centre bright rose, with crimson vermilion, broadly margined with light yellowish-green and olive, marbled and spotted with dark green. A splendid variety. Habit good.
5. COPPET.—Leaf long, oval, medium size; centre mottled white and rose, deeply veined with pink, and broadly margined with bright green. A distinct variety, of fine habit.
6. AUBONNE.—Leaves medium sized; centre rich rosy crimson, surrounded and veined with clear magenta, margined with bright green. A most distinct and desirable variety.
7. CHILLON.—Leaves large and smooth; centre rich crimson-lake, veined with maroon; edge crenate, mottled with light green. This is new, and in every way first-class.
3s. 6d. per Plant, or 21s. the Set.
Strong Plants, Third Week in April.
Tollington Nursery, Hornsey Road, Islington, London, N.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

PALMS for DECORATION.—Twelve large and graceful Palms for 42s. Fine, strong, clean, well-grown plants, in 5-inch pots, fit for table or any decoration, including Euterpe edulis, Latania, Corypha, Areca, &c., in pairs or all distinct. Packages and extra Ferns gratis, to compensate for carriage any distance, for cash with order.
J. H. LEY, Royal Nursery, Croydon.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

SURPLUS STOCK.—ALDER, 4 to 5 and 5 to 6 feet; BIRCH, 5 to 6 and 6 to 8 feet; CHESTNUT, Spanish, 3 to 4 and 4 to 5 feet; do. Horse, 6 to 8 feet; ELM, Wych, 8 to 10 feet; do. Chichester, 10 to 16 feet; FIR, Scotch, 2 to 3 feet; do. Spruce, 2 to 3 and 3 to 4 feet; HAZEL, 2 to 3 and 3 to 4 feet; POPLAR, Black Italian, 6 to 10 feet. CATALOGUES on application.
JAMES BIRD, Nurseries, Downham.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

TWELVE ADIANTUM CARDIOCHLÆNA for 12s.—This rare Fern is a grand rival of the beautiful A. farleyense, and forms a fine companion for it. Grows 3 feet high, fronds 3 feet over, and of a beautiful glaucous-grey colour. Strong plants, raised from spores for the first time, are now offered at one-fifth of all other Nurserymen's Catalogues. Equally valuable for Cutting, Decoration, or Exhibition. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, West Croydon.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" " ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

**To the Trade.—New Roses for 1881.**

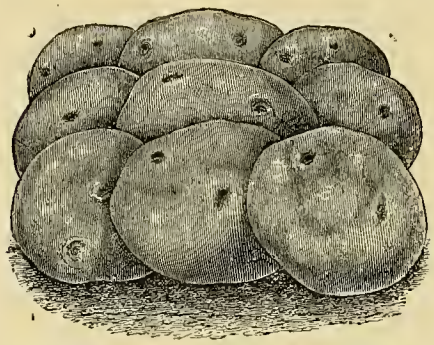
LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,
Gratis and post-free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

FLOWER SEEDS in PENNY PACKETS.—One hundred of the most showy, popular, and beautiful varieties, including finest double ASTER and Ten-week STOCK, Scarlet LINUM, MIGNONETTE, NEMOPHILA, SWEET PEAS, CONVOLVULUS, Dwarf NASTURTIUMS, CLARKIA, COLLINSIA, CALLIOPSIS, &c., post-free, 8s. 50 packets, including as above, post-free, 4s. 2d.; 25 ditto, 2s. 2d.
Each packet contains sufficient seed for making two or three nice patches. Excellent for distribution amongst cottagers or children. All the varieties are easy of cultivation.
DANIELS BROS., The Queen's Seedsmen, Norwich.

TWELVE HARDY EXOTIC and BRITISH FERNS, 10s. 6d.—Many being dormant, this is the best time to purchase, no injury being received by young fronds. Osmundas from America, Polystichums and Athyriums from Japan, Aspleniums from Jersey, &c. Strong plants for garden, rockery and other purposes. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, West Croydon.

POTATOS.—For Sale, a large quantity of MYATT'S PROLIFIC ASHLEAF, SCOTCH CHAMPION, and other Potatos for Planting. Splendid sample. Write for Prices, which are exceedingly low.
RICHARD BOWE, Potato Merchant, Selby, Yorks.

# WEBBS' SEED POTATOS



## WEBBS' SCHOOLMASTER

(*Improved*). *The Best Potato in Cultivation.*

**3s.** per peck, **10s.** per bushel, **27s.** per sack.

## WEBBS' MAGNUM BONUM

(*Improved*). *The Great Disease-resister.*

**2s. 6d.** per peck, **9s.** per bushel, **23s.** per sack.

**Special Low Rates for Half Tons and upwards.**

20s. *value Carriage Free.* 5 *per cent. Discount for Cash.*

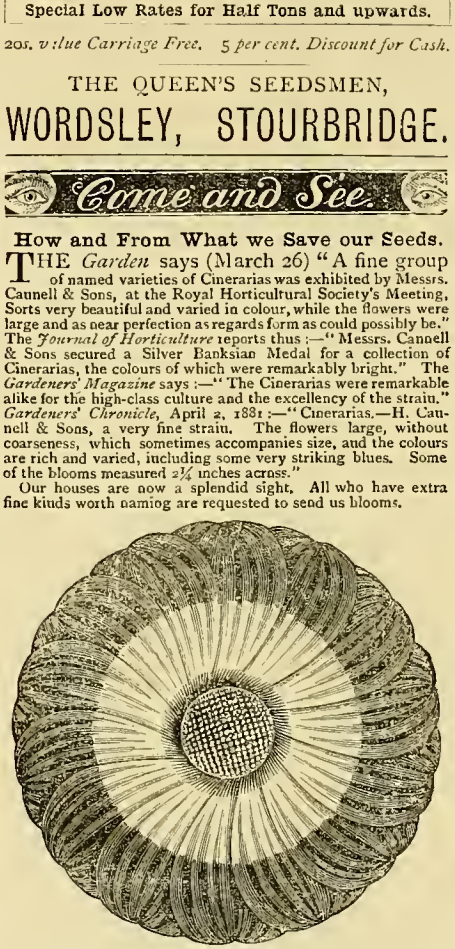
THE QUEEN'S SEEDSMEN,

## WORDSLEY, STOURBRIDGE.

*Come and See.*

**How and From What we Save our Seeds.**

THE *Garden* says (March 26) "A fine group of named varieties of Cinerarias was exhibited by Messrs. Cannell & Sons, at the Royal Horticultural Society's Meeting, Sorts very beautiful and varied in colour, while the flowers were large and as near perfection as regards form as could possibly be." The *Journal of Horticulture* reports thus:—"Messrs. Cannell & Sons secured a Silver Banksian Medal for a collection of Cinerarias, the colours of which were remarkably bright." The *Gardeners' Magazine* says:—"The Cinerarias were remarkable alike for the high-class culture and the excellency of the strain." *Gardeners' Chronicle*, April 2, 1881:—"Cinerarias.—H. Cannell & Sons, a very fine strain. The flowers large, without coarseness, which sometimes accompanies size, and the colours are rich and varied, including some very striking blues. Some of the blooms measured 2¼ inches across."
Our houses are now a splendid sight. All who have extra fine kinds worth naming are requested to send us blooms.



PRIMULAS.

And also to show the superiority of our Primulas Three First-class Certificates have been awarded to us during the winter by the Floral Committee.
A Silver Medal was also awarded for our Cyclamen, and Two First-class Certificates to the same strain this season.

| | Per Pkt.—s. | d. |
|---|---|---|
| CINERARIAS | 2 | 0 |
| CYCLAMEN | 2 | 0 |
| PRIMULAS, SWANLEY RED | 5 | 0 |
| " SWANLEY PURPLE | 5 | 0 |
| " SWANLEY CRIMSON | 2 | 6 |
| The above, mixed, 5s. per packet. | | |
| " COCCINEA | 2 | 6 |
| " CANNELL'S WHITE | 2 | 6 |
| " CANNELL'S MIXED | 2 | 6 |
| " FERN-LEAVED STRIATA | 3 | 6 |
| " FERN-LEAVED WHITE | 3 | 6 |

Half Packets at Half the above Prices.

THE HOME FOR FLOWERS — SWANLEY, KENT.

SCARLET RUNNERS (New English).—For SALE a few Quarters of the above, in good condition, at 17s. per bushel for cash.
W. R. HARRISON, High Street, Maidstone.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.
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"You will observe by accompanying report of Greenock Autumn Flower Show competition that I carried off Two First Prizes for Carnations raised from your Seeds."

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NEW SEEDLING FUCHSIAS,
"Miss Lizzie Vidler" and "Trumpeter."

Circumstances having occurred which prevented the possibility of distributing these lovely varieties as announced by the raiser, Mr. G. FRY, in the spring of 1880, he begs to inform numerous correspondents and the public that the entire stock is in the hands of Messrs. JONES & NORTH, of Hope Nursery, Loampit Vale, Lewisham, who are now prepared to send them out. Blooms have been submitted to the Editors of the *Gardeners' Chronicle, The Florist and Pomologist, Gardeners' Magazine, Garden, Gardening Illustrated,* and Mr. W. EARLEY, weekly writer of "Seasonable Gardening," all of whom speak of "Miss Lizzie Vidler" as being a most distinct and beautiful variety, new in colour, and a valuable acquisition, the habit being profuse, exceedingly neat and compact—in fact, one of the best plant makers in existence; in proof of which SHIRLEY HIBBERD, Esq., in *The Garden Oracle,* has classed "Miss Lizzie Vidler" as one of the best six out of nineteen varieties for 1881.
*Price*—"*Miss Lizzie Vidler*" 5s. *and* 3s. 6d.
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Usual Discount to the Trade.

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"Your seedling, named 'Miss Lizzie Vidler,' is a large and fine flower, very double, and striking in colour." *The Garden,* Oct. 4, 1879.
"'Miss Lizzie Vidler' is a distinct double, and a desirable variety; the sepals are short, broad, recurved, coral-red, the corolla double lilac, passing as it ages from the bluish to the rosy shade of that colour; the tube very short. It is a well-proportioned flower, and should be an acquisition; the foliage, too, is good, not being at all coarse." *Gardeners' Chronicle,* Oct. 4, 1879.
"We consider your seedling Fuchsia, which you name 'Miss Lizzie Vidler,' a valuable addition to the double-flowered class. It is original in colour amongst doubles, the petals being mauve, violet tinted sepals, and tube crimson; it is a fitting companion to 'Lucy Fionts,' and they will 'meet,' beyond doubt, on the Exhibition table."—Mr. W. Earley, Editor of "Seasonable Gardening," *Lloyd's London Weekly Newspaper,* Oct. 18, 1879.
"We have received from Mr. G. Fry blooms of a beautiful new double Fuchsia, named 'Miss Lizzie Vidler.' It is different in colour from any other we know, its corolla being of a light purple-violet; its sepals, which are well recurved, are very thick and wax-like, and of a deep crimson colour." *Gardening Illustrated,* Oct. 18, 1879.
"'Miss Lizzie Vidler' and 'Trumpeter' have been sent us by Mr. Fry, of Lewisham. The first is a very full double sort, with short broad coral-red sepals, and a dense compact corolla of a magenta tint of rose, the flower large and well proportioned. 'Trumpeter' is a single variety, with a long salmony-red tube, and still longer narrowish sepals of the same colour, but brighter in the bud, and a prominent magenta-rose corolla, the petals of which are rolled outwards at the edge, so as to give it a trumpet-shaped outline." *Florist and Pomologist,* August, 1880.
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And other leading sorts. Apply to
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PRIMA DONNA was exhibited at the Royal Horticultural Society's Gardens, June 29, on the occasion of the Pelargonium Society's Show, when it received the award of First-class Certificate of Merit, also First Prize in the Premier Class for Novelties, and attracted universal attention and admiration, and was pronounced by all who saw it to be the finest White Zonal ever exhibited. Price, 5s. per plant.

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GORGEOUS, a large brilliant scarlet.
DAUNTLESS (First-class Certificate), a dark scarlet.
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ILLUMINATOR, a brilliant scarlet.
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The above are Now Ready, in good strong Plants.

All orders from unknown Correspondents must be accompanied by Money Orders.

Tollington Nursery, Hornsey Road, Islington, London, N.

CHOICE PANSIES and VIOLAS.—Extra Strong Bedding Varieties in about twenty finest sorts, 10s. 6d. per 100; Show and Fancy Pansies, extra strong plants, twenty finest varieties, 3s. 6d. per dozen. Trade price on application. All too heavy for post.

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**The Best New Pelargoniums of the Season.**

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The above were awarded the prize for the best three not in commerce in June last.

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POLYANTHUS, choice varieties, including Gold and Silver Chain, Hose-in-hose, &c.
PRIMROSES, double white, lilac, yellow, crimson, and choice single varieties.
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SWEET WILLIAMS, very choice sorts.
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MYOSOTIS DISSITIFLORA, spring Forget-me-not.
COLEUS, in first-class varieties.

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| MIMULUS, Daniels' superb large-flowered | 2 | 6 |
| PHLOX, HERBACEOUS, new and select, including new varieties of 1880 | 6 | 0 |
| ,, very choice varieties, from our superb collection | 3 | 6 |
| PENTSTEMONS, very select, including new varieties of 1880 | 5 | 0 |
| ,, Choice sorts from our very fine collection | 3 | 0 |

*From* R. J. HAMILTON, Esq., *Tunbridge.*

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"I am very glad to say that the Rooted Cuttings I had of you in the Spring turned out very well indeed; not a single failure in the lot."

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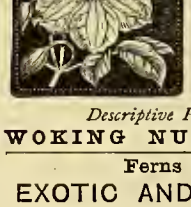

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RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

PANSIES and VIOLAS.—Strong plants of the above, in best Show, Fancy, and Bedding varieties, including the finest sorts for Exhibition or Garden Decoration, at the following moderate prices:—

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| 12 Plants in 12 fine varieties | 3s. | 0d. | 4s. | 0d. |
| 25 ,, 25 ,, | 6 | 0 | 8 | 0 |
| 50 ,, 25 ,, | 10 | 0 | 14 | 0 |
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BEDDING PANSIES and VIOLAS.

Blue, Yellow, White, and all intermediate shades, 1s. 6d. per dozen, 10s. per 100.

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RICHARD GREGORY begs to offer:—

LARCH, 1½ to 2½ feet, at 25s. per 1000.
THORN QUICK, 15 to 24 inches, at 15s. per 1000.
CUPRESSUS LAWSONIANA, 3 to 4 feet, at 45s. per 100.
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The above have been frequently transplanted.

Froggatt Nurseries, Calver, *viâ* Sheffield.

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H. AND F. SHARPE have still to offer all the principal kinds of SEED POTATOS, at considerably reduced prices, in order to clear out. Special quotations on application.

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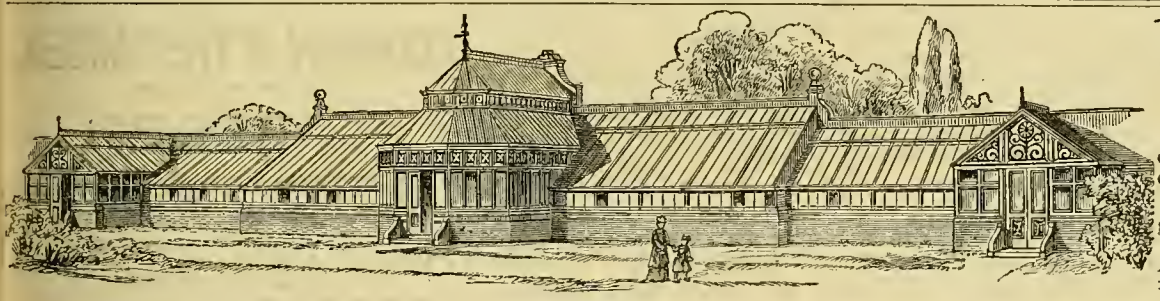

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Horticultural Buildings of every description made, erected, fitted, and heated.

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# COTTAGER'S CALENDAR

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ORIGINALLY COMPILED BY THE LATE SIR JOSEPH PAXTON, M.P.

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# EUCHARIS CANDIDA AND ODONTOGLOSSUM CRISPUM.

## SHUTTLEWORTH, CARDER & CO.,

**ORCHID AND NEW PLANT IMPORTERS, 191, PARK ROAD, CLAPHAM, LONDON, S.W.,**

BEG TO ANNOUNCE THAT

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, April 14, at half-past 12 o'Clock precisely, a fine Importation of the charming and beautiful EUCHARIS CANDIDA, which has hitherto been very scarce—the bulbs are in splendid condition; also some grand masses of ODONTOGLOSSUM CRISPUM, in especially fine varieties; good Plants of ODONTOGLOSSUM PESCATOREI, ONCIDIUM CUCULLATUM, ODONTOGLOSSUM TRIUMPHANS, and ANGULOA CLOWESII.

*On view the morning of Sale, and Catalogues had of Mr. J. C. Stevens, 38, King Street, Covent Garden, W.C.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# NEW and VERY EXTENSIVE IMPORTATIONS of ORCHIDS.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER, of St. Alban's, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 21, and THURSDAY, April 28, at half-past 12 o'Clock precisely, ODONTOGLOSSUM CONSTRICTUM, in largest masses, some with over 100 Bulbs.

## MASDEVALLIA WAGNERIANA,

offered for the first time in Europe. The small, thick leaves give no idea of the size of the flowers; these are, from tip to tip, 4 inches, and perfectly cover the plant; they are extremely lovely and beautiful. Professor Dr. Reichenbach, in an article which will shortly appear in the *Gardeners' Chronicle*, writes:—"This fine little gem has just been introduced by Mr. F. Sander. Nobody may be so satisfied by the fact as I am, since I had the honour of being very often asked whether my new Masdevallia xanthina was not old Masdevallia Wagneriana." Among the importation is a splendid mass with over 100 leaves; the plants are in magnificent condition. CATTLEYA TRIANÆ and ALBA, a specially large and fine consignment; collected in flower, and each plant described. CYPRIPEDIUM VITTATUM BREVE, Rchb. f; the plant is not believed to be in Europe; description will shortly appear (see plate and flowers). A splendid lot of the true LÆLIA FURFURACEA (see drawing); this is very rare. EPIDENDRUM PALPIGERUM; this new species is fully described in *Gardeners' Chronicle*, July 12, 1879. Professor Reichenbach says:—"The dwarf clusters of flowers, arranged in a panicle, are of remarkably exquisite lilac colour." CYRTOPODIUM PUNCTATISSIMUM. Very extensive consignment of AERIDES LEEANUM; Mr. Robelen writes:—"This is a most lovely species, very abundant flowering, in the way of Burbidgei and Huttoni." DENDROCHILUMS, DENDROBIUM HETEROCARPUM PHILIPPINENSE, CATTLEYA DOWIANA and MENDELII, ODONTOGLOSSUM PESCATOREI; several new species, which are expected to arrive in a few days, and further particulars of which will appear in next week's *Gardeners' Chronicle*.

*On view morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# OSBORN & SONS

*HAVE FOR SALE, AT EXCEPTIONALLY LOW PRICES,*

A QUANTITY OF

**RHODODENDRONS**—Finest named sorts, in different sizes.

**AMERICAN AZALEAS**—Some remarkably fine specimens, well set with flower-bud.

**HOLLIES**—Common Green, of different sizes, and a Large Collection of the best Green and Variegated Varieties; also some very handsome Specimen Plants.

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**CARTERS' GOLD MEDAL LAWN GRASS**

In sealed packets, price 1s. (post-free, 1s. 4d.), 1s. 6d. and 2s. 6d. per packet.
(A 1s. 6d. packet will sow 1 rod of ground).

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| Price per Bushel .. .. | 25s. |
| Price per Acre (of 4 bushels) .. | 90s. |
| ORDINARY LAWN GRASS .. .. | 20s. per Bushel. |

20s. value Carriage Free.

LAWNS and HOW to MAKE THEM.—See CARTERS' PRACTICAL GARDENER. Price 1s.: post-free, 1s. 4d. (Winners of the only Gold Medal for Lawns, Paris, 1878.)

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**Popular Boxes of High-class Seeds**

**Are Ready for Immediate Despatch.**

CARTERS' 12s. 6d. BOX of SEEDS
Is suitable for a COTTAGE GARDEN.
Sent, Package Free, on receipt of Post-office Order for 12s. 6d.

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Is suitable for a VILLA GARDEN.
Sent to any Railway Station in England, Carriage Free, on receipt of Post-office Order for 20s.

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Is suitable for LARGE GARDENS.
Sent to any Railway Station in England, Carriage Free, on receipt of Post-office Order for 40s.

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CARTERS' POPULAR BOXES of SEEDS of BEAUTIFUL FLOWERS.
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# WILLIAMS' NEW PRIMULAS FOR 1881.

*POST-FREE.*

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA ALBA "MAGNIFICA."**

(Raised by Messrs. J. & J. Hayes, Edmonton; purchased by B. S. Williams.)

The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.

Awarded a First-class Certificate by the Royal Botanic and Horticultural Society of Manchester, March 15, 1881.

**Per Packet, 5s.**

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA "CHISWICK RED." Per Packet, 5s.**

For Opinions of the Press and Testimonials see *B. S. W.'s Illustrated Seed Catalogue for* 1881, Post-free.

## NEW and CHOICE FLOWER SEEDS.

| | Per packet—s. | d. |
|---|---|---|
| **Balsam**, Williams' Superb Strain .. .. 2s. 6d. and | 1 | 6 |
| **Begonia**, New Bedding variety, finest mixed, 2s. 6d. and | 1 | 0 |
| **Calceolaria**, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. & | 1 | 6 |
| **Carnation**, finest mixed .. .. .. .. .. | 1 | 6 |
| **Celosia pyramidalis plumosa** .. .. .. .. | 1 | 0 |
| **Cineraria**, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and | 1 | 6 |
| **Cockscomb**, Williams' Prize (New) .. .. .. | 2 | 6 |
| **Cyclamen persicum**, Brilliant (New) 5s., 3s. 6d., and | 2 | 6 |
| **Cyclamen persicum giganteum** 5s., 3s. 6d. and | 2 | 6 |
| **Cyclamen persicum giganteum rubrum**, 5s., 3s. 6d. and | 2 | 6 |
| **Cyclamen persicum**, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and | 1 | 6 |
| **Dahlia**, Single, Yellow, Scarlet, or Mixed .. .. | 1 | 0 |
| **Mignonette**, New Hybrid Spiral .. .. .. .. | 1 | 0 |
| **Musk**, Williams' New Giant.. .. .. .. .. | 1 | 6 |
| **Picotee** finest mixed .. .. .. .. .. .. | 1 | 6 |
| **Polyanthus**, Wiggins' Prize Strain .. .. .. | 1 | 0 |

| | | |
|---|---|---|
| **Primula sinensis fimbriata coccinea**, 5s., 3s. 6d. and | 2 | 6 |
| **Primula sinensis fimbriata**, Williams' Superb Strain, Red, White, or Mixed, 5s., 3s. 6d., 2s. 6d. and | 1 | 6 |
| **Primula sinensis fimbriata rubra magnifica** .. | 3 | 6 |
| **Primula sinensis fimbriata**, Queen of the Whites.. | 3 | 6 |
| **Pyrethrum aureum selaginoides** (New) .. .. | 1 | 6 |
| **Stock**, East Lothian Collection, three varieties .. .. | e | 6 |

**B. S. WILLIAMS,**
Seed Merchant and Nurseryman,
**VICTORIA AND PARADISE NURSERIES,**
UPPER HOLLOWAY, LONDON, N.



# NEW PLANTS FOR 1881.

## MR. WM. BULL'S ILLUSTRATED CATALOGUE FOR 1881

is now in the Press,
And will be issued the end of this month; price 1s.

**It will contain Names, Descriptions and Prices of the following New Plants; which will be sent out in May:—**

ADIANTUM ANEITENSE
ANTHURIUM INSIGNE
,, SCHERZERIANUM MAXIMUM
ANTIGRAMMA BRASILIENSIS
APHELANDRA PUNCTATA
ARUNDINARIA KHASIANA
AZALEA BALSAMÆFLORA
CARLUDOVICA WALLISII
CHAMÆCLADON RUBENS
CROTON BROOMFIELDII
,, EBURNEUS
,, ELEGANTISSIMUS
,, FORMOSUS
,, KINGIANUS
,, ORNATUS
,, VITTATUS
DAVALLIA FIJIENSIS
DIEFFENBACHIA COSTATA
,, INSIGNIS
,, NITIDA
,, TRIUMPHANS
DIPLADENIA CARISSIMA,
,, DELECTA
,, DIADEMA
DRACÆNA LINDENI
ERANTHEMUM EBORACENSE
HELICONIA AUREO-STRIATA
ISOLOMA HIRSUTA
IXORA BELLA
,, EXIMIA
,, ILLUSTRIS
,, ORNATA
,, PICTURATA
,, SPLENDIDA
LATHYRUS SPLENDENS
MICROSTYLIS CHLOROPHRYS
,, METALLICA
MUSA URANOSCOPAS
PITCAIRNIA BROMELIÆFOLIA
POTHOS AUREA
PRITCHARDIA GRANDIS
RHODODENDRON ASSAMICUM
SCHISMATOGLOTTIS LONGISPATHA
SPARMANNIA AFRICANA FLORE-PLENO
TECOMA ROSEA
ZAMIA PRASINA.

Twelve NEW TYDÆAS of sorts.

Six NEW GLOXINIAS, with erect flowers, of sorts.

Four NEW FUCHSIAS of sorts.

Six NEW SHOW PELARGONIUMS of sorts.

Six NEW SPOTTED PELARGONIUMS of sorts.

Six NEW FANCY PELARGONIUMS of sorts.

Twelve NEW ZONAL PELARGONIUMS of sorts.

Six NEW NOSEGAY PELARGONIUMS of sorts.

Six NEW DOUBLE-FLOWERED ZONAL PELARGONIUMS of sorts.

Eight NEW BEGONIAS, with Variegated Foliage, of sorts.

Five NEW HYBRID HANDSOME-FLOWERED BEGONIAS of sorts.

Sixteen NEW COLEUS of sorts.

Eight NEW FRINGED COLEUS of sorts.

**PRIZES FOR NEW PLANTS.**

**Twelve Handsome Silver Cups,** *specially designed by Messrs. Elkington & Co., are offered as Prizes for* **Twelve New Plants** *of Mr. William Bull's introduction, at the Great Summer Show of the Royal Horticultural Society, to be held at Kensington, June* 3, 4, 6 *and* 7, 1881.

Establishment for New and Rare Plants,
KING'S ROAD, CHELSEA, LONDON, S.W.

THE

# Gardeners' Chronicle.

*SATURDAY, APRIL* 9, 1881.


## A TRIP TO SIKKIM.

ONE of the first things which strikes one on arrival in Sikkim from the plains of India is the entire and sudden change in the country, its inhabitants, flora, and climate; and though one would naturally expect a considerable difference to exist between plains and mountains in any part of the world, yet nowhere is the change so rapid and complete as here. In the North-west Himalayas it is very different, because the mountains do not rise so suddenly and abruptly from the plains as they do in Sikkim, and also because, on account of the much shorter rainy season, the greater cold of winter, and greater heat and drought of spring, the vegetation is incomparably, less dense, less varied, and less beautiful, at elevations of from 2000 to 7000 feet, than it is in Sikkim and in other parts of the Himalayas east of Nepal. Considering the comparative ease with which Darjeeling can now be reached from Calcutta, a rail and tramway journey of twenty-eight hours being sufficient to traverse the whole distance, whilst no other hill station in the Himalaya can be reached without a railway and carriage journey of from three to four days, it is surprising that Darjeeling is not more frequented than it is. It is true that visitors from the plains complain with justice of the extreme damp, and constant mist, of the rainy season from May to October, and though the cold of winter, to those used to a tropical climate, is sufficiently unpleasant from December to February, yet both these climatic defects are to a great extent overcome by residing at an elevation of from 4000 to 5000 feet, instead of at Darjeeling, which is from 7000 to 7500 feet above the sea. To my mind the climate of Sikkim at such moderate elevations is as nearly perfect as possible for about eight months in the year, and though the rains from June to September are by far more abundant than is pleasant, yet the extraordinary luxuriance in the vegetation, and in the growth of all subtropical and many temperate plants, fully make up to the planter or gardener for the damp and mist of these months.

To attempt to describe the flora and scenery of Sikkim would be impossible in the limited space of a letter or two, for if even Sir Joseph Hooker in his admirable *Himalayan Journals*, which give not only by far the most complete and faithful account of Sikkim, but form as well one of the most charming and interesting books of travel ever published, could only partially describe the wonders and the beauties of the Sikkim forest, it is not likely that I could do so.

Mr. Gamble, the conservator of forests in the Darjeeling district, has published a very good account of the district under his charge in the *Indian Forester;* and I must refer those who wish to know more about the country to this and to the *Himalayan Journals*.

The principal points of interest in Sikkim, from an economic point of view, are Tea and Cinchona. The planting interest is one of the most important in India, and has turned what was formerly an almost continuous forest into a populous and, for India, a wealthy country. When Tea planting was first commenced, now twenty or more years ago, it was supposed that

the shrub would succeed best at elevations of 6000 feet; but as the plantations were extended almost always down hill, it was soon discovered that the lower the elevation the more rapid was the growth of the plant and the larger the production of leaf, and in consequence almost all the gardens which have been made in recent years are below 4000 feet, and most of them in the Terai at the foot of the hills. Though the Terai gardens are probably the most profitable when well managed from the first, yet they are by no means so pleasant to live at as the hill gardens between 3000 and 5000 feet, on account of the great heat and the liability to fever, which, though not so bad as it used to be before a good deal of the forest was cleared and cultivated, is still the cause of much illness and many deaths, especially among the natives who are employed as labourers. These are nearly all Nepalese, who have immigrated in such large numbers since the planting commenced, that they now form by far the most numerous part of the population; the natives of Sikkim, who are Lepchas and Bhoteas of Indo-Chinese race and character, having a dislike to steady work, such as that of a plantation. The abundance and cheapness of labour, as well as the healthier and cooler climate, and the quickness and facility of transport, are three great advantages possessed by Tea planters in Darjeeling over other districts, and now that the price of Tea has reached such a low point that it cannot be produced profitably except under the most favourable circumstances, the prospects of Darjeeling planters, though not perhaps brilliant, are far brighter than in Assam or Cachar. There are many obstacles in the way of the Darjeeling planter's great want, namely, to get his produce into consumption as he grows it, without any mixture of the Chinese rubbish which is drunk by the poorer classes in England under the name of Tea: but the present low prices, though very discouraging, will probably tend considerably to this result, and there is no doubt that few people, having once drunk pure Darjeeling Tea for a week or so, will go back willingly to the abominable stuff which passes for Tea at all places of public resort, and in the houses of many well-to-do people in England.

Cinchona bark is another product which has, during the last few years, become important in Darjeeling, for though the Government plantations at Rungbee and Mongpoo, as well as the large private one at Pomong, were for eight or ten years in an unprofitable and unproductive state, yet the rapid growth of the trees, wherever the climate and soil were suitable, together with the recent great increase in the price of bark, have caused such large returns in the last few years that the Government gardens have not only paid off their whole cost from the first with interest, but the Pomong company have paid 70 and 80 per cent. in two successive years, and have seen their shares rise to four times the price they stood at only three years ago. Whether Cinchona will continue as profitable as at present is a question which many would be glad to have answered, but though the demand for quinine is very much greater than the present supply; yet the large acreage which has been recently planted, especially in Ceylon, Southern India and Java, cannot fail to reduce the price materially when the South American war is over. Allowing, however, for a fall in value of bark to one-fourth its present price there will still remain a good, if not a large margin of profit, always supposing that the conditions of soil and climate are thoroughly favourable, and only such valuable species of Cinchona as have been proved to yield a good proportion of sulphates are planted.

Since I was last at Darjeeling (in 1876) a botanical garden has been opened on land presented by Mr. Lloyd for the purpose below the bazaar, and which is placed under the management of Mr. Jaffrey, formerly of the Government Cinchona plantations. It is intended, I believe, to serve the purpose of a nursery and source of distribution for European plants and vegetables to residents in the district, as well as of a botanical garden, where as many of the native plants as can be grown at this elevation (about 6800 feet) will be brought together. A good deal has already been done in this direction, and the garden is nicely laid out on a piece of land which has many of its original forest trees still standing, but Mr. Jaffrey complains that owing to the vegetable mould which originally covered the surface of the soil having been washed away, forest plants and Ferns do not thrive so well as they would otherwise do. A large number of the finest native plants have already been brought together, and native collectors are constantly bringing in more, so that there will be no lack of materials from the lower and warmer valleys to fill the large conservatory which is now being erected, and which it is to be hoped will be turned to good account. Considering how easy it is to collect any seeds or plants in Sikkim through the Lepchas, whose knowledge of their native flora is remarkably correct, and the short time now necessary to send them home, it is surprising what a number of the finest plants and shrubs are still unknown in English gardens. Some of these, I am in hopes, I shall succeed in introducing this year, but many others await the search of the collector, and as an instance of how much really remains to be done even after so many good botanists have been at Darjeeling, I may say that I succeeded in getting two species of Lily, neither of which, so far as I know, had been found in Sikkim before. One of these is probably L. oxypetalum, only known previously from the North-west Himalaya, and the other may be L. nepalense, or some new form of the longiflorum group. Both are rare and local, as is L. giganteum, the only other true Lily yet known to occur in Sikkim.

One of the first trips I made from Darjeeling was to the Cinchona plantations at Mongpoo, where I found my good friend Mr. Gammie in high spirits at his success both in the growth of the bark and manufacture of the sulphate by a new process he has lately discovered, and which will probably supersede the system now in use. The road to Mongpoo is one of the most beautiful and interesting in the district. After crossing the Jellapahar hill it turns to the east at Jorbungalow, and follows the north side of Sinchal for three or four miles at 7000 feet elevation, through a fine forest of Oak, Magnolia, and Chestnut, which, thanks to the Forest Department, has not been hacked, burnt, and destroyed in the way that forests always are when not strictly protected. This forest is full of beautiful shrubs, plants, Ferns, and Orchids, and extends from the top of Sinchal, 8500 feet, down to about 5000 feet, the level to which cultivation usually extends in Sikkim. Among the most remarkable of its floral treasures are the splendid Magnolia Campbellii, whose great crimson blossoms appear in March before the leaves; Hydrangeas of 20 feet and upwards in height; Daphne papyrifera, which is in full flower in January, and might prove hardy in mild parts of England. Most of the Oak and Magnolia trees are covered at this elevation with quantities of moss, Ferns, and Orchids, and festooned with many species of climbing plants; but one of the most remarkable features of the arboreal vegetation is the number of epiphytical Vacciniums and other plants, which form large woody rootstocks on the branches of the trees, and live entirely on the moisture and such vegetable mould as is formed on the decaying boughs. *H. J. E.*

(*To be continued.*)

## New Garden Plants.

COLLABIUM SIMPLEX, *n. sp.**

A fine-leaf plant, a kind of a rival to certain Dichorisandras. Short terete dirty purple bulbs are placed upon a strong slender bent rhizome, which appears later on to become green, as the older bulbs are of that colour. The oblong acute wavy leaves are light green, with very numerous dark green blotches. The strong peduncle has its own short bulbous base, with what appears to be a bud in the axil of a scale. At end it bears a raceme of flowers in the way of those of a Eulophia, surpassing those of C. chrysoglossum (once vesicatum), but not equalling those of C. (chrysoglossum, Bl., once) ornatum. The sepals and petals are greenish-yellow, with blotches, which are brown outside, purple inside. Lip white, column white, with purple at the base, bent as in a Mormodes or Camarotis obtusa. It comes from Borneo, and was sent a while ago, first by Messrs. J. Veitch & Sons, then by Mr. W. Bull, both of whom I have to thank for very satisfactory living plants. *H. G. Rchb. f.*

BOLLEA PALLENS, *n. sp.*†

For a long while we had neither new Bolleas nor new Pescatoreas. Here is a new Bollea, but it is only a botanical beauty. The sepals and petals are of lightest purple-mauve with greenish-yellow lips, and the most basilar inner border of the lateral sepals is cinnamon-coloured, the lower halves of those organs being lightest yellow. The callus of the lip is orange with some brownish-purple paint, the lip blade is light ochre. The column has at its base numerous cinnamon dots on a sulphur area, when separated by a sulphur angulate zone the greater part is brownish and mauve-purple. The narrow column with median blunt side angles separates it well from all known Bolleas and brings it nearer Pescatorea than any Bollea. It flowered in September in Mr. J. Day's glorious collection. *H. G. Rchb. f.*

EPIDENDRUM (OSMOPHYTUM) STANGEANUM, *n. sp.*‡

A striking botanical curiosity. A tiny plant, 5—6 inches high, with rigid semiterete canaliculate blunt leaves, and a small few-flowered shorter inflorescence of very small green flowers, like those of Epidendrum diffusum. It is one of the rare instances in this vast genus wherein the sepals and ovary are covered with short hairs. It comes from Panama, and was introduced by Mr. F. F. Stange, once the Orchid grower of the late Consul Schiller, now one of our most industrious nurserymen, and who is very famous for growing at his place, Wandsbecker Chaussee, 211, Hamburgh, the most curious Ferns, leaf plants, and last, not least, Disa grandiflora, in any quantity, just as if it were Asparagus. The plant was kindly given to the Hamburgh Botanic Garden, and brought afresh to flower by Mr. Donat. *H. G. Rchb. f.*

CYPRIPEDIUM GRANDE, *n. hyb.*

This is, indeed, a grand thing. It was raised by Mr. Seden at the Royal Exotic Nursery of Messrs. J. Veitch & Sons, from a cross between Cypripedium Roezlii and C. caudatum. Since it is so exceedingly vigorous and quick growing (the fertilisation took place is 1875), there can be no doubt it is descended, not from genuine caudatum, but from the so-called caudatum roseum (Warscewiczii, Rchb. f.), which is so easily understood by its far stronger peduncle, far larger shining flowers, with a very dark, much wider lip, and its dark broad leaves. Our novelty has even broader and larger leaves still. The peduncle is very strong, and though when first flowering it bore only one flower, there can be no doubt of its improvement next year. We might call the grand flower an enlarged edition of C. Hartwegii, had it not both the sepals of oblong lanceolate shape, surpassing the lip—a feature by which it differs from all the group of Hartwegii. The colours are those of the species of that group. There are few hybrids which have given me so much pleasure as this, since I expect it must develope by-and-bye into an even more superb thing, justifying its name. *H. G. Rchb. f.*

* *Collabium simplex*, n. sp.—Foliis in bulbo teretiusculo brevi geminis cuneato oblongis acutis undulatis; pedunculo laterali basi bulboso tumido pauce vaginato apice racemoso; racemo laxiusculo; bracteis linearilanceis ovaria pedicellata subæquantibus; sepalis linearilanceis, lateralibus in mentum, teretiusculum ovarii dimidium æquans descendentibus; tepalis lanceis acuminatis, labello ab ungue brevi subito dilatato, trifido, laciniis lateralibus semifalcatis, lacinia mediana elliptica serrulata, carinis ternis per discum, carina mediana obsoleta, carinis lateralibus in labelli basi anguliferis. Borneo. *H. G. Rchb. f.*

† *Bollea pallens*, n. sp.—Sepalis oblongis obtuse acutis, lateralibus summa basi interna involutis; tepalis angustioribus, labelli callo magno carinis obscuris 17 antice valde obtusis seu evanescentibus in parte abrupta lamina subtriangula omnino marginibus involuta; columna augustiuscula utrinque obtusangula disco interno pilosula. Sepala et tepala aquose pallidissime purpureo-violacea. Sepala laterala ima basi involuta atropurpurea, dimidio inferiori externe pallidissima flavenla. Labellum flavidum callo aurantiaco. Columna basi flava maculis multis cinnamomeis, zona sulphurea angulata separata a partibus reliquis brunneo violaceoque lavatis. Col. cl. J. Day. *H. G. Rchb. f.*

‡ *Epidendrum* (*Osmophytum*) *Stangeanum*, n. sp.—Pseudo-

## Orchid Notes.

Dendrobium thyrsiflorum.—We are indebted to Captain Hincks, Breckenbrough, Thirsk, Yorkshire, for the photograph from which the illustration (fig. 87) of this fine Indian species was prepared. The plant has been grown on from one imported bulb bought at Stevens' Rooms in 1875, and when photographed last year bore sixteen spikes, or half-a-dozen more than the plant of Sir William Marriott's, figured in vol. vii., p. 653. D. thyrsiflorum is a native of Moulmein, whence it was first sent to this country in 1856, by the Rev. Mr. Parish, to Messrs. Hugh Low & Co. It flowered in May of the following year, in Mr Day's famous collection; and again, in March, 1867, with Wentworth Buller, Esq., at Strete-Raleigh, Devon, from whose plant the plate, t. 5780, in the *Botanical Magazine* was prepared. Here it is named D. densiflorum var. albo-luteum, but it is best known as D. thyrsiflorum in gardens. The flowers are transparent white, with yellow lip, and the habit like D. densiflorum.

bulbo tereti monophyllo; folio carnoso semitereti subulato canaliculato stricto; racemo paucifloro; bracteis linearilanceis ovaria pedicellata subæquantibus; ovariis sepalisque extus hispidulis; flore obliquo, sepalis triangulo lanceis; tepalis linearibus acutis, labello basi adnato cordiformi acuto basi ecalloso; androclinio simplici integerrimo antice utrinque angulato. Ex Panama inta. cl. Stange cui dicatum. *H. G. Rchb. f.*

Masdevallia Chimæra.

What a memorable moment in my Orchid life was it when I first saw this flower. Mr. Ortgies, the indefatigable helpmate of Mr. Roezl, sent me the flower. Could I trust my eyes? Did I dream? I felt the enjoyment of life as I had seldom done, thinking it was a great boon to see such a marvel, that had lurked for thousands and thousands of years unseen in solitude. I would scarcely have believed in such a thing from a mere description. Thus, I named it Chimæra. I had but one poor flower. When Mr. Gustav Wallis came home he brought something very like it,—of course, once more very poor materials—"travellers' materials." You might call such wretched collections of ill-conserved flowers dead plants, and they are often accompanied by fantastic sketches. A single, often incomplete flower, is usually all one gets. Am I then to be reproached for praising such collectors as my friend Lehmann, who sends real specimens?

Mr. B. Roezl, who had seen quantities of the plant, was a better judge than I could be. He objected to the combination, and I submitted to his views, which I now think quite correct. I called the Wallisian Chimæra Masdevallia Wallisii. Mr. Roezl had the glory of having collected the first member of the beautiful Chimæra group on March 15, 1870, in Western New Grenada, at the height of 7400 feet. Dom Benito was making meteorological observations, thinking of the fate of the drops of rain or dew—how they might be separated forever, running on one side to the grand ocean, on the other into the Caribbean Sea. This musing was interrupted by the sudden sight of an immense Masdevallia. Dom Benito sprang from his poor horse (no horse ever liked this rider, who is said to have been a hard rider of both horses and mules), took the plant on horseback, and, turning to his companion (I think Mr. Edward Klaboch), exclaimed, "What a pity that this Masdevallia does not flower!" "But it does flower," answered his companion. Dom Benito, who does not like being contradicted, got cross, till finally, he remarked that behind him hung a long, thin peduncle of 2 feet length, with a gorgeous flower, bearing sepals of 10 inches length, blackish, dotted, hairy. Mr. Edward Klaboch is said to have found the sepals 12 inches long. Both Mr. B. Roezl and Mr. Klaboch mention a great number of variations, which I do not perceive in my few (seven) wild herbarium specimens. Usually only one flower developes at once. Mr. Roezl saw two, Mr. Ed. Klaboch three expanded exceptionally at once. Five to ten flowers are produced on the same peduncle, and there are masses of the plant producing twenty to twenty-five peduncles at once.

All these remarks (excepting those about the horses

Fig. 87.—Dendrobium thyrsiflorum. Flowers white with yellow lip.

and mules) are due to the kind friendship of Mr. B. Roezl. It is well known that this plant is a far more shy traveller than M. Wallisii. I think a fresh flower at hand is the first expanded in Europe. It is easily distinguishable by the very acuminate tapering triangular long sepals, and by a quite peculiar lip, having no angle at its base.

A melancholy sight to me is this flower. It is most probably the last glorious farewell of the grand collection of my second eldest English correspondent, Mr. J. Day. May it be no chimæra to see him coming back from his long projected journey in fresh strength, and becoming once more one of the leading men among Orchidists. *H. G. Rchb. f.*

### Epidendrum bicornutum.

This species, which is one of the most handsome of the genus, is grown remarkably well at Kew. All that seems necessary for its successful cultivation is plenty of heat and moisture. The Kew plants make their growth suspended over a tank in a close propagating pit, and they grow splendidly and flower freely year after year. As a rule with the conditions under which the plant is generally found in collections, it flowers but once after being imported, and then gradually dies off, in consequence the species has acquired unjustly a bad reputation. The large, beautifully-scented blossoms are white, the base of the lip being a rich yellow and prettily spotted with purple. The long, thick pseudobulbs are somewhat remarkable; they are hollow, and a naturally-formed chink at the base of each gives admission to the ants, which, in Trinidad, and also sometimes in England, make them their homes.

### Orchids at Effingham House.

Readers are so accustomed to meet with glowing accounts of large collections of Orchids that perhaps they may appreciate, if only for a change, a little gossip on a small collection. Indeed there may be some readers who would like to grow a few Orchids, but are kept from doing so through not being quite satisfied that the many houses they have read of—such as cool, intermediate, Cattleya, Mexican, Phalænopsis, Dendrobium, &c.—are not really necessary. To such Mr. Hall's collection is instructive. Three small houses only are used, neither of which caused much waste of paper in plans and estimates. An ordinary span-roof sunken house about 40 feet long, 12 feet wide, and 9 feet high, is divided into greenhouse, cool-house, and East Indian house. A path runs down the middle, the plants being arranged on side stages well up to the glass, and a few also are suspended from the roof. Passing down three steps, and through the greenhouse, we enter the cool-house. Growing in a shallow pan, with peat, sphagnum, and sand to root in, is by far the strongest Disa grandiflora I have ever seen. The same plant was growing in a pot last year, and the flowers it produced were astounding both as regards size and brilliancy. No doubt this is a superior form, but as it has never been out of the cool-house for three years it stamps that house as an excellent home for Disa grandiflora. Nothing approaching dryness at the roots is ever allowed. Among the Odontoglossums, which comprise one or more plants of many species, I noticed a fine plant of O. Ruckerianum carrying two spikes from one bulb. A few years back I should have called this plant a fine form of O. Andersonianum, as its flowers are nearly as large as those of A. crispum, irregularly marked with a quantity of chestnut-coloured spots, but of late the best varieties of such hybrids are recognised under the name of Ruckerianum. In order to obtain such hybrids growers will often buy scores of imported O. crispum in the hope of one turning up, as it is generally thought that the two mentioned are wild hybrids between A. crispum and A. gloriosum, two Odontoglossums that certainly grow and flower together. Very few hybrids indeed ever appear, but a precious lot of O. gloriosum put in their appearance, which the collector vows ought to have been the best varieties of O. crispum. Buyers of such will be rather startled to hear that Mr. Hall bought his O. Ruckerianum under the good-for-nothing name of Oncidium sp., for which he paid four shillings. Also flowering in this house were Lycaste Skinneri, Ada aurantiaca, and Cattleya citrina. Lælia majalis, Sophronites grandiflora, Odontoglossum Cervantesii and O. Rossii were growing very satisfactorily suspended near to the roof-glass.

In the East Indian-house were some well-grown plants of Odontoglossum Roezlii, bulbs and leaves being of an excellent colour and smothered with flowers; one bulb, in fact, having four spikes (fourteen flowers). As regards quality these blooms are not nearly so good as Mr. Hall had from the same plants last year, when they were simply perfection. Worse than this, one plant, which for two years was an excellent Roezlii album, is now nothing but an ordinary Roezlii. It is just possible that the extraordinary amount of fire-heat which all growers had to use last January may have something to do with this. Well up to the glass, and doing first-rate, were Aerides Lobbii, Saccolabium Blumei, Oncidium Lanceanum, Dendrobium Ainsworthii, Phalænopsis of sorts, Cattleya Eldorado, C. superba, and several other desirable hot Orchids. There is also a massive plant of Cymbidium affine, and of that very handsome Dendrobium, D. Dalhousianum. Calanthes of the vestita section have been grown in this little house as well as they can be grown.

The Cattleya-house is a little lean-to, from the centre of which one might with an ordinary single-stick touch its every part. All the plants were, of course, small, but were doing very well. In a shady corner, growing on a Tree Fern stem, was a splendid plant of Zygopetalum maxillare, kept (as it always should be) quite moist. Dangling from a wire at the back hung a dozen plants of Odontoglossum vexillarium in 5-inch pots, which for health and finish could not be beaten. Considering what mites they were two years ago, they must be placed at the head of the achievements in Orchid growing of Mr. Hall and his energetic gardener, Mr. Wilson. Three years ago they knew but little, if anything, about Orchids, nor have they found them quite as easy to grow as some would have us believe. This little healthy collection is the result of three years' ceaseless vigilance and energy. Those who are short of these two qualities had best leave Orchids alone, for of all plants they are the most jealous and selfish as regards attention. *J. C. Spyers, Burford Lodge.*

### Mr. Leech's Orchids.

The collection of Orchids at Oakley, Fallowfield, continues to well maintain its reputation for the healthy condition of the plants in the cool section, as also in those that require more warmth. The Cattleyas and Lælias are especially noticeable for the more than ordinarily vigorous state they are in, leaves and bulbs alike bearing evidence that they enjoy the treatment they are subjected to. Amongst numbers of fine things there are some eight or ten specimens of Cattleya Warnerii that it would be difficult to surpass, and C. Mendelii is equally well done. C. Eldorado, and the old C. labiata, still one of the finest of all the family, and scarce in the shape of large specimens, are also very fine. Of the fine winter blooming C. Trianæ there are many beautiful examples, varying as this species ever does in the colour of its flowers. In Lælias of many kinds, the numerous plants of L. purpurata promise to bloom abundantly. Mr. Swan is very successful with Cypripediums, many of the best sorts are here in large specimens; the singularly handsome C. caudatum is represented by eight or ten examples in faultless condition; C. villosum, large and fine; C. Parishii, C. Boxallii, and C. Stonei: the last-named is 3 feet across. Vandas and Aerides look well, furnished with stout leaves, particularly the different forms of V. suavis and V. tricolor; amongst a fine lot of Aerides, two plants of A. crassifolium are showing flower, a number of A. Fieldingii, A. virens Dayanum, and A. nobile—the latter 2½ feet high—retaining their leaves down to the bottom. The Dendrobiums are in the best possible order, a specimen of D. crassinode, just out of bloom, has bulbs nearly 3 feet in length, the longest of which bore fifty flowers. In the cool-house, blooming for the first time, were several exceptionally fine forms of Odontoglossum triumphans; in addition to the flowers being large, both the yellow ground colour and the dark markings are very deep in colour. The numerous seedling Dendrobiums which Mr. Swan has raised, although in a juvenile state, are very interesting, and in addition to those that have already bloomed leave much to look forward to.

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Alyxia buxifolia. — An Australian evergreen shrub, with shortly stalked, thick and rigid Box-like leaves, and small sessile clusters of fragrant flowers, which are succeeded by pretty orange-coloured fruit. The wood is scented. A plant in fruit may be seen in the Temperate-house at Kew.

## THE DAFFODIL.

One of the pleasantest evidences of the revived taste for hardy flowers is shown in the popularity of the Daffodil and its allies. Poetry and botany alike have of late years been ransacked for material relating to this homely but exquisite flower. It has elicited an amount of honest admiration, and has brought to remembrance such a host of sweet songs from the poets, that the fear now is either that by too much publicity the flower may become vulgarised, or that by affected absurdity it may be made ridiculous, as other good things have been. Suffice it for us to say that our artist, in the coloured plate issued with the present number, has fitted his work to the poet's text in a manner that we may leave our readers to judge of. Mr. Fitch, it would seem, must have had Wordsworth's lines in his mind—

> "A host of golden Daffodils,
> Beside the lake, beneath the trees,"

when he drew his sketch, or if he had not, we have done him no injustice by affixing them ourselves. When fully exposed to the light the flowers turn to the sun, and move with it as faithfully as the Sun-flower. The single Daffodil is wild in many of the counties of England, but it was early brought under the gardener's care, and—let us only timidly whisper it—he has not improved it by fostering its tendency to become double.

The chief peculiarity of the Daffodil, and that which gives it its most striking appearance, is its large trumpet-shaped cup. The ground plan of the flower, if we may so call it, is of the ordinary 6-parted star-shaped kind, so common among its allies; but the "cup" is something special to the Narcissus. In the baby stage, when the foundations of the flower are laid, there is no trace of the cup; the flower might develope into almost any regular 6-parted flower but for that cup, which is only slowly and gradually put forth after the other organs are formed. The inference is that the cup is to become specially useful to the plant—that the interests of the plant will be furthered by this addition to its structure, and such no doubt is the case. The flower, as any one may see who watches the different times at which its stamens and stigma come to maturity, demands outside agency in the form of insects to secure the formation of its seed. What a tempting bait does this cup afford, and how well adapted it is to secure that the insect shall go the right way, and, all unconscious of the fact, do the work set him to do. We must refer to many former articles for the botanical history and poetic lore connected with the Daffodil, especially to Mr. Burbidge's book on the Narcissus, wherein the substance of Mr. Baker's articles on the subject is reproduced from our columns. Of the double forms, of which, thanks to Mr. Barr, we have three forms before us, the true English Daffodil is the smallest, neatest, and prettiest. It is comparatively rare, and has been figured by us on more than one occasion. In it the cup is unbroken, and includes a host of crumpled segments as dark yellow as itself. The French double Daffodil is a more ragged untidy flower, larger, and with the cup split into many segments, intermixed with many paler segments, half petal, half stamen, interesting to the botanist, but not pleasant to those who prefer symmetry of outline, though effective when seen in the border at a distance. The Italian double Daffodil is more like the English double Daffodil, but larger. It seems to be the double form of the larger variety of the single Daffodil (var. grandiplenus). We give these names as we find them—we might give many more—but we have avowed our preference for the wild single Daffodil, so dear to us in boyhood, so valued now-a-days. But that is a matter of sentimet. When it comes to a matter of study—when we seek to understand the how and why of these flowers, then give us the double ones—they are the veriest "blabbers," their very irregularities open up a veritable lexicon for the botanist, and supply the clue whereby he may unravel the way in which they are made, and have revealed to him the purpose and design there is even in the turn of a petal or the difference in the shade of a colour. Those who love Daffodils will love them with a deeper intensity, be sure, the more intelligently and the less merely sensuously they study them.

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Comparettia falcata. — This is a charming little epiphytal Orchid with drooping racemes of long-spurred, rosy-purple blossoms. It was first sent alive to Europe by Linden from the neighbourhood of Merida in Columbia. The genus is a small and very curious one, and was named by Poeppig and Endlicher after "Andreas Comparetti, a Professor at Padua, who first understood the real nature of spiral vessels, and who wrote with great skill on vegetable physiology." The species above-named is now flowering in the Orchid-house at Kew.

## THE AMARYLLIS.

Frequenters of the spring shows of the Royal Horticultural and Royal Botanic Societies cannot have failed to note the large and conspicuous groups of this showy spring flower exhibited by the Messrs. Veitch, of Chelsea. Nearly the whole of the plants are seedlings raised within the last few years by the firm, and they represent several different types intermingled together, conspicuous amongst them being those of pardinum and Leopoldi. The last-named species is naturally of a showy character. Its conspicuous crimson flowers tipped with white, and broad petals, are very attractive. Neither of these types, however, have more than two, or in very vigorous examples three, flowers together. The type represented by Duke of Connaught has in well-grown specimens six flowers together in an umbel. It would not be easy to say to which species we are indebted for those varieties which give us from four to six flowers in the umbel, and not infrequently three flowering stems from one bulb, but from the usually bright scarlet colour of the flowers I should be inclined to name the Brazilian A. aulica; whose flowers are scarlet, with green bands running down the centre of each segment of the flowers, and which has also a green base internally.

The culture of the Amaryllis is so easy that almost any gardener or amateur might grow them well. At present the plants are in full growth, and they should be kept in a warm house with a temperature of not less than 55° at night; from this to 60° suits them well during the growing period. We generally place our plants on a shelf near the glass in a vinery, placing them in the lightest part of the house. From the time they start into growth, early in the spring, they require abundant supplies of water until the growth is completed, when less water should be given, and it must be entirely withheld when the leaves become yellow. During the resting period no water is given, and the pots containing the bulbs may be placed anywhere beyond reach of frost. We find the vinery treatment suits the plants all through, for by the time the Grapes are ripe the Amaryllis bulbs have also reached the same stage, and a cool, dry, airy atmosphere is necessary for both.

The best time to repot the bulbs is just before they start into growth—say, early in January. The potting material is four parts good yellow loam, one part leaf-mould, and one part rotten manure, with a little sand. Very large pots are not desirable; 7-inch pots may be used for the largest flowering bulbs, 6-inch and 5-inch for those of smaller size. The offsets may be potted singly, or three may be potted round the sides of a 5-inch pot. In potting the flowering bulbs one-half of the bulb may be left out of the compost, and they should be pressed in rather firmly. The group of plants exhibited by Messrs. Veitch on March 30 at the Royal Botanic Gardens contained many fine varieties of all the types. The finest was a variety with four flowers on an umbel, named

*Storr's Beauty.*—The flowers are of a brilliant scarlet, with white bands down each of the flower segments, which are large, so that the flower is of a fine shape, and slightly recurved at the points. Next to it I would place

*Empress of India.*—This is truly a noble flower, trumpet-shaped, of large size, six in an umbel, the segments slightly recurved, orange-scarlet, with a greenish-white band down the centre of each.

*Madame Albani.*—Purplish-rose colour, with white flamed segments. There were three flower-stems from one bulb, with an aggregate of nine flowers on the three stems.

*Cecilia.*—Of the Leopoldi type, crimson, with the segments tipped with pure white; the flowers are of very good shape.

These four varieties were distinguished with First-class Certificates. Other very fine varieties were—

*Junius.*—A fine crimson-scarlet variety, with very broad segments and greenish centre.

*Baron Schröder.*—A fine crimson flower of large size; segments smooth and of good shape.

*Ophelia.*—Very distinct, with large medium segments, crimson edged with white.

*Sir Frederick Roberts.*—Five-flowered umbel; segments rosy-red with white band; a very desirable variety.

*Sultan.*—Large crimson flower with greenish-white centre.

*Princess Beatrice.*—A very fine flower; produced two six-flowered umbels from one bulb; light scarlet, white centre.

Other fine flowers shown at two previous meetings were:—

*Duke of Connaught.*—Bright scarlet flowers with white centres; six flowers on one stem.

*John Heal.*—A remarkable variety of the Leopoldi type; the segments of the flower are 3¼ inches across; crimson and white; the best-shaped flowers of any Amaryllis yet raised.

*Miss Alice Gair.*—A magnificent variety, of the finest vermilion-scarlet; flowers of large size and good shape.

*Mr. Henry Little.*—Distinct in colour from any other kind. The flowers are of very large size, purple, perceptibly tinted with rose; the segments are rather rough, but this may be but a temporary defect.

*Chelsoni.*—One of the older varieties; a fine crimson-shaded flower, with crimson stamens.

*Duchess of Connaught.*—A white variety, the centre of the segments slightly green; it bears four flowers on one stem, and these are a trifle rough, but it is desirable, as there are so few pure white varieties. I know of no other, except a variety named Virginalis, in the hands of Mr. B. S. Williams.

It was very pleasing to see the name of Mr. Baxter again as an exhibitor of the Amaryllis. Some ten years ago he made his mark as a raiser of new varieties from seed, and I do not think that he has been yet surpassed in the richness and brilliancy of the colours he obtained in the flowers. H. Little, Esq., of Hillingdon, has also some very good seedlings; the flowers are of large size and good shape, many of them being very brilliant in colour. Last, though not least, must be mentioned a variety exhibited some two years ago by Mr. Thos. Speed, of Chatsworth; the flowers are not of very good shape, but it would be a fine variety to breed from to give constitution to weakly varieties; it bears on one stem six flowers, of a bright scarlet colour. *J. Douglas, Loxford Hall, Ilford, E.*

## VIOLETS.

This is the time of year in which to commence their propagation and increase. The most ready way of effecting this is to scatter some rich light soil, such as leaf-mould, among any old plants that have done flowering, when, by keeping them somewhat warm and moist by closing the lights over them early, and syringing or watering them overhead, they will soon send out a quantity of offsets, or suckers, and these may then be taken off and pricked out under the protection of a cold frame to make further roots, after which they will be ready for planting out on a border, where they can be left to grow for the summer. The border or situation chosen for them should be under a wall or building partly shaded from the sun, and the ground made rich by a good coating of light rotten manure and leaf-soil, in which the Violets will revel.

To afford plenty of room for them to spread it is necessary to have the plants 9 inches apart and a foot between the rows; and when planted it is a good plan to mulch the land over between the plants with very short dung, such as may be obtained from old Mushroom beds, which not only keeps the soil cool and moist, but prevents any washing of the surface when watering, and stops the growth of weeds, besides encouraging rapid and healthy root-action. What militates against the successful cultivation of Violets is that troublesome insect, red-spider—a pest which, unless much watchfulness is exercised, is sure to get on to the leaves. These it extracts the sap from, and so disfigures as to cause them to turn quite rusty, and to have a starved look. Root and atmospheric dryness are the chief causes of red-spider; which being so, the remedy will suggest itself, and in addition to plenty of clear water, liquid manure is a great help in keeping the plants clean, especially if it has had some soot steeped in it, as to this those minute marauders have a great dislike, and I have often kept them at bay by sowing some in a dry state broadcast over the foliage. This should be done when the dew is on, as then it adheres, and breaks up the homes of the insects.

To get Violets to flower well during the winter, frames must be specially prepared for them, and the plants removed thereto early in October, that they may have plenty of time to get fresh hold of the soil. A pit in which they can receive a little artificial heat from a hot-water pipe is the best place; but, failing that, the next is one where they can have a slight hot-bed below, made up principally with fresh-fallen leaves, as these hold the heat more regular than dung, which ferments violently at first and then loses its warmth. In making up the bed it is a good plan to have a few faggots, or bushes, below for a foundation; which lying hollow, a lining can be added at any time, and fresh heat be driven under the plants. In putting these into the frame or pot they should be kept well up, that their heads may almost touch the glass, as it is important for them to get all the light the dull short days of winter afford; and to prevent damping it will be necessary to prick them over frequently, and to give air whenever the weather admits.

The best kinds of Violets to grow for frame work are the Neapolitan and Marie Louise, both of which are double, of large size, and deliciously fragrant. As a contrast to these in point of colour and its remarkably free-flowering habit, the old double Russian is worth having; and the best among the singles are Victoria Regina, Odoratissima, and The Czar, all three of which are very strong-growing and hardy. Plantations of these may, therefore, be made anywhere about the garden, among the Gooseberry bushes, or in rows by the sides of walks, or other sunny and shady spots, where some can be induced to come in early and the others late, and thus a long and continuous succession may be kept up. As the single sorts make their growth early, runners of them may be got without the aid of glass, and at once planted where they are to remain. This should be done during dull showery weather, when they soon get hold and form fine crowns. To aid in the full development of these, all runners ought to be removed during the summer whenever they show themselves; and the same with the double kinds, as then the strength is concentrated where it is wanted for the production of bloom. *J. S.*

## RHODODENDRONS.

(*Continued from p.* 363.)

What shall I say of R. Dalhousiæ, named after the unfortunate Lady Dalhousie, who died of sea-sickness on her voyage home from India? The large scented flowers, often compared with the white Lily, L. candidum, command universal admiration; but then the habit of the plant is frequently so bad, so leggy, and so shapeless, that people tire of growing it. The reason of the habit is well explained by the frontispiece to Sir J. Hooker's *Sikkim Rhododendrons*, where the plant is seen as an epiphyte on the branches of a tree, stretching out to reach the light. Alter the habitat, and you may perhaps modify the habit. As a fact I have seen many specimens of R. Dalhousiæ shapely and fairly compact, and in a few more generations of plants we may probably reap the fuller result of terrestrial cultivation. Several other Himalayan Rhododendrons, as distinguished from the Malayan species, often grow as epiphytes, although Focke seems ignorant of the fact. R. Edgworthii, pendulum, and Nuttallii are instances; whereas on R. campylocarpum an Orobanche in turn grows parasitically.

R. Dalhousiæ is comparatively familiar to the Anglo-Indian, for it is one of the four species which grow in the vicinity of Darjeeling. This is probably the species which Colonel Godwin Austen saw growing on trees in parts of Assam. In the *Himalayan Journals* we find the following description:—"On the branches of a Magnolia, and on those of Oaks and Laurels, R. Dalhousiæ grows epiphytically, a slender shrub bearing from 3 to 6 white lemon-scented bells, 4½ inches long, and as many broad, at the end of each branch. In the same woods R. arboreum is very scarce, and is outvied by the great R. argenteum, which grows as a tree 40 feet high, with magnificent leaves 12 to 15 inches long, deep green, wrinkled above and silvery below, while the flowers are as large as those of R. Dalhousiæ, and grow more in a cluster. I know nothing of the kind that exceeds in beauty the flowering branch of R. argenteum with its wide-spreading foliage and glorious mass of flowers."

It suffices to say, in passing, that R. Dalhousiæ, under cultivation, has improved upon this description, whereas R. argenteum has fallen short. But of this latter I shall have more to notice presently.

Here is another description of R. Dalhousiæ:—"Epiphytes were rarer" (at Pacheem, near Darjeeling, at an elevation of nearly 7300 feet), "still I found white and purple Cœlogynes, and other Orchids, and a most noble white Rhododendron, whose truly enor-

mous and delicious lemon-scented blossoms strewed the ground."

Seed of this Rhododendron reached England for the first time in the spring of 1850, and to the astonishment of everybody a plant bloomed in March, 1853. This circumstance marks the fact of the amenability of R. Dalhousiæ to forcing. Alternate hot and cold were applied to the seedling, and finally inarching on R. ponticum, and the blossoms produced were first-rate.

The German writer mentioned above accounts for the comparative neglect of hybrids among Indian Rhododendrons by pointing to the great variety of true species. He might have added the extreme beauty of many of these, although not of all (for some, to be presently mentioned, are singularly plain). It may almost seem, for instance, a profanation to think of refining the ineffable delicacy of R. Veitchii, or gilding the golden glory of R. javanicum, and yet I do not envy the cultivator who has no ambition to leave his own mark among his flowers, for the sake of science as well as for his own. But the truth is, that Rhododendrons do not, as a rule, easily submit to hybridising. Hundreds of experiments have utterly failed with me, and among others I have not yet persuaded R. Dalhousiæ to bear seed under the influence of foreign pollen, but the other way the cross has been often effected.

The first view I had of R. Dalhousiæ was many years ago, when a flowering branch arrived from the garden of a friend in Scotland, and it is in Scotland still that Sikkim Rhododendrons are chiefly worshipped. Miss Walker's Rhododendron Almanac was compiled in Scotland, and many private collections now-a-days compete with hers. The Messrs. Dickson, of Edinburgh, grew innumerable trusses of R. Dalhousiæ (see the Journals of bygone years). The *Gardeners' Chronicle* recorded the other day the triumph of Messrs. Downie & Laird, and my friend, Mr. Anderson-Henry, may be said to have made Edinburgh the Mecca of the Faithful, to which we all turn when we think of our favourite flower.

Mr. Henry earned the very rare distinction of having a hybird he raised between R. Dalhousiæ and R. formosum figured in the *Botanical Magazine*. If I remember rightly, Sir J. Hooker wrote to say that the hybrid (and such it undoubtedly was) reproduced the native type of flower better than the true-bred seedling of R. Dalhousiæ. I have plants and plates of both the flowers before me as I write, and the hybrid is undoubtedly an acquisition. Unlike many hybrids, R. Henryanum × (so named in the trade) is not barren. With the pollen of R. Nuttallii it has produced a very grand flower, and with that of R. Veitchii another grand flower of a very different type. Indeed the peculiarity of the hybrid progeny of R. Dalhousiæ would seem to be their fertility. R. Countess of Haddington is a hybrid between R. Dalhousiæ and R. ciliatum, and has proved fertile. I have raised seedlings from this hybrid, and have now bursting into bloom a seedling raised by Mr. Parker, of Tooting, named R. magniflorum, bred, I am assured, from Countess of Haddington fertilised with pollen of R. Edgworthii.

It should be observed that there are various types of R. Dalhousiæ in cultivation; in some the flowers are inferior, greenish, or dirty yellow, in others the bad habit is exaggerated. In *Gartenflora*, xiv. 21, a R. Lindleyi, raised by Stanwick, is mentioned, which seems to be a dwarf type of R. Dalhousiæ.

In two different places double flowers of R. Dalhousiæ have been produced. I have not seen them, but they are much praised, and indicate the tendency of the species towards variation. Mr. William Bull and Messrs. Henderson have some interesting seedlings. The best grown plant of the species known to me in the neighbourhood of London is now about to bloom in the nursery of the Messrs. Jackson, of Kingston; but I shall be very glad to hear of other fine specimens, and any peculiarities connected with them. *J. H. Mangles, Valewood, Haslemere.*

*(To be continued.)*

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Agapetes buxifolia.—In a state of Nature this beautiful Vaccinium-like evergreen shrub is an epiphyte, and in the damp forests of the Dupla Hills, on the eastern frontier of Bhotan, it adheres closely to the mossy trunks of trees by its numerous fibrous rootlets. Under cultivation it grows freely in peat, and treated as an ordinary greenhouse plant the spreading twiggy branches, with small bright green leathery leaves and bright red tubular wax-like corollas (about an inch in length), render it a very desirable decorative plant. Specimens are now flowering in the Temperate-house at Kew.

## AQUATICS.

It is not many of our gardeners, professional or amateur, who have the means of growing the larger aquatic plants, especially beautiful though they are, the Nymphæas alone vieing in beauty and interest with any class of plants that can be named. But whilst this is so, there is a large number of small water plants which may be grown by any one, even in drawing-room aquaria, and which demand little beyond an inch or two of water, a thin layer of soil at the bottom of the vase, and a very moderate temperature. Exposure to strong light is apt to favour unduly the growth of confervæ. Some of these "midgets" of the vegetable world, as beautiful in their way as their larger relatives, are illustrated in the accompanying woodcuts, the materials for which were supplied to us from the Royal Gardens, Kew, and from Mr. Burbidge, of the College Garden, Dublin. The larger egg-shaped leaves shown in fig. 88 belong to Trianæa bogotensis, a plant resembling a gigantic Duckweed, the floating disc-like leaves of which are, as it were, threaded upon long runners as in a Strawberry. The flowers, which are inconspicuous, are like those of the common Frog-bit (Hydrocharis morsus ranæ). The leaves are flat on the upper surface, rounded beneath, the substance of the leaf being channelled by air passages separated one from another by vertical partitions, as shown in section (fig. 89, A, B)—a section which might afford a hint to ship builders, as a more admirably designed device for insuring strength and lightness in a floating body can hardly be imagined. The plant, which is a native of pools in the north-western part of South America, is now producing its female flowers in the Dublin Garden, while the male flowers are not expanded till August: evidently the plant has not learnt to adjust itself to our artificial conditions.

At the lower part of fig. 88, to the left, is shown the curious cryptogamic plant, Salvinia natans. Of this Mr. Burbidge writes:—"It grows freely in a small pan of good loam surfaced with water in a warm greenhouse, and even when not in fruit is very interesting. I received it a year or two ago from Mr. Moore, of Glasnevin, and although generally considered rather difficult to preserve during the winter, it has survived with me and with an amateur to whom I gave a small piece last autumn. I recently received it from M. Decaisne, of the Jardin des Plantes, who grew it in an open-air tank in the Paris garden."

The plant, a native of South Europe, has flat leaves, studded with warts and bristles (fig. 89, D), and forms its pill-like fruits on the under-surface of its floating rhizome, or rather on the root-like leaves (fig. 89, C). These globular fruits are some male, others female, or spore-bearing. The specimens sent to us some months ago by Mr. Burbidge were all males, so that there is reason to believe that it is sometimes diœcious, instead of monœcious, as it is usually found to be. The spores are now (April 4), as we learn from Mr. Burbidge, germinating freely in the College Garden, Dublin. What appear to be roots in this plant are really root-like leaves, the plant producing no true roots. This difference between the broad, flat, floating leaves and the filamentous submerged leaves finds a parallel in the case of the common water Buttercup.

To the right of the larger figure (fig. 88), towards the bottom, are the lobed fronds of another cryptogam, Azolla pinnata, which seems to grow as freely out-of-doors in summer as under glass; the fronds are elegantly lobed, and, outdoors, assume a reddish tint. Of this plant, which may be described as resembling a Duckweed (Lemma), but more elegant in outline, we have not as yet seen fruit. The more common species, A. microphylla, looks like a floating Selaginella or Jungermannia (see fig. 89, F), though in the structure of its fruits it is more nearly allied to Salvinia. The little caps on the ends of the roots are very conspicuous.

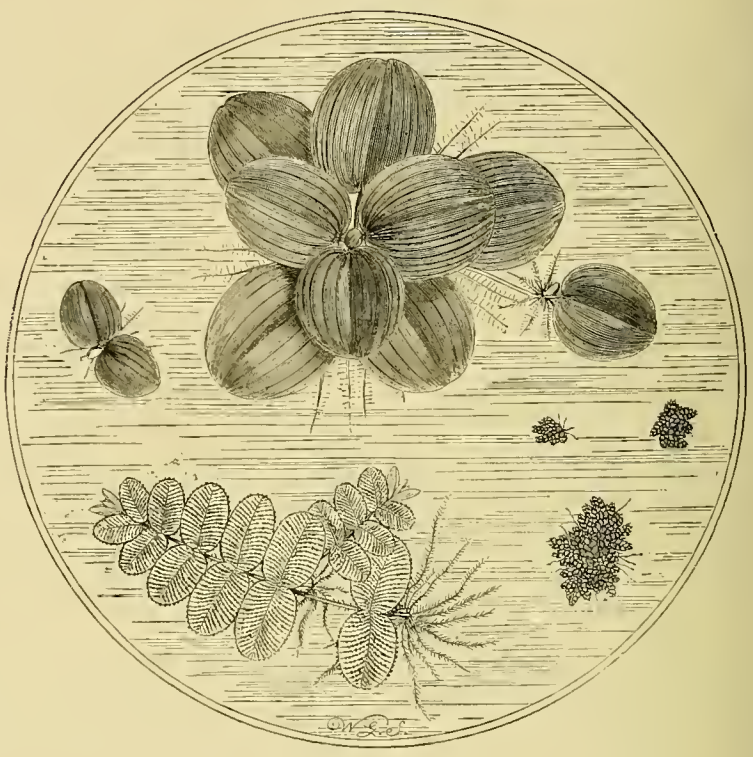

Fig. 88.—A few aquatics in a tumbler.

Mr. Burbidge tells us that all these aquatics are greatly assisted in their growth by shaking a piece of loamy soil in the water in which they grow, morning and evening. These are only a few examples out of many that may be grown in this way.

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Valeriana Phu aurea.—In the herbaceous department at Kew a large tuft of this is at the present time very conspicuous by reason of the bright golden-yellow of its young leaves. The variety is well worth growing in the mixed border for the sake of the very definite coloration of the leaves and young shoots during early spring—the late frosts not having in the slightest degree injured the golden foliage. The green-leaved typical plant has for centuries been grown in English gardens and under the name of the Great Valerian, V. maior, it is found in the *Catalogus* of Gerard which was published in 1596. It is said that ratcatchers employ the roots of this and allied species in order to attract rats.

## THE FORMATION OF PONDS AND RESERVOIRS.

In making ponds and reservoirs for the catching and storing of rainfall, with a view to the conservation of water and the prevention of floods, suited to the geological formation of different districts and the wants of the neighbouring inhabitants, as suggested at p. 439, two objects must be kept in view. First, the prevention of floods; and, secondly, the preserving of the water in such places as will cause it to be useful to the inhabitants of the country, especially during periods of drought. Now the most economical way to preserve water is to put it into the earth, for when once there it is no more trouble, costs nothing to keep, and it takes up no space available for any other purpose, and is given out so gradually through the medium of springs to brooks and rivers that these, though they may receive no more during wet weather than they can fairly carry off, may also receive a bounteous supply from well replenished springs during long-continued droughts.

The rain that falls over light land districts (except those parts of it covered with buildings and roads), when the surface is once wetted, can usually sink freely to the springs, but on heavier lands, with more or less impervious subsoils, especially where they lie on a slope, a good deal of water runs off the surface, which, when these lands are well drained, quickly finds its way to the nearest stream. In light land districts, therefore, only the surplus rainfall which falls on buildings, roads, streets, or other hard surfaces, requires to be intercepted before it reaches the streams; but where the land is heavy and impervious to water, not only has that which falls on buildings, streets, and roads to be dealt with, but also a good deal of what falls on the cultivated land as well. In light land districts, or such as have a porous subsoil, and where the underlying strata consist of sand, gravel, chalk, limestone, or other rocks with cracks, fissures, and rents in them, the passing of surplus water into the earth is a simple matter, the reservoir needs only to be made of sufficient size to hold what would be likely to run into it during a day or two's rain, and would require occasionally to have the mud which would settle in it cleared out, so as to preserve its porosity, and then the water would quickly sink down into the "bowels of the earth," filtering gradually from thence through thereby well-replenished springs to the natural streams.

In heavy land districts the making of the ponds and reservoirs would be in most cases a more elaborate affair, because the strata underlying such are usually of an impervious nature, and are in some cases of great thickness. Ponds in such districts become very quickly perfectly water-tight, and all the water put into them remains there till evaporated or removed by other means; it cannot sink away of its own accord, as in cases where the underlying stratum is of a porous nature. In such districts, therefore, at the bottom of the pond a well, or, in the case of large reservoirs, wells would have to be sunk, piercing the impervious stratum to a pervious one for the water to sink away through, and these wells would require the brick lining to be built up as a guard somewhat above the level of the bottom, to prevent mud and silt sinking into them and filling them up.

There are some places, however, where ponds or reservoirs are needed, but where from various reasons it would either not be advisable or possible for water to sink down into the ground, and to form them in such cases suited to the necessities of the situation means must be provided for a gradual discharge of the waters which they would collect. This can be done in two ways; if there is a fall a movable and self-acting mouth can be made which will rise and fall with the height of water, only permitting of a certain limited outflow till the pond or reservoir is quite full, after which it must, of course, run out as fast as it runs in, or the mouth can be made not only to rise and fall with the height of water, but, if necessary, to enlarge as it rises and contract again as it falls. Where there is no fall, and the water in the reservoir would not be higher, and in some cases perhaps lower than the adjoining streams, wind or steam power would be requisite for the purpose of pumping out the water. There are probably no two cases in which all the circumstances and necessities of the surroundings would be exactly alike.

Besides the preventing of floods, and the proper replenishing of springs, another thing to be considered is the collection of clean soft water from the roofs of buildings for domestic use during periods when rainfall is absent. The advantages of rain-water for many domestic uses are universally admitted. In most private establishments means are taken for the collection and storage of soft water in cisterns or tanks of larger or smaller dimensions, or in tubs, but in villages or towns as a rule the water from the roofs of public buildings usually runs to waste. This certainly should not be, and I contend it would well repay the cost of collection and storage; and as the receptacles for its storage could in most instances be made underground, or even under the floor of the building itself, no room available for other purposes need be occupied.

During the last few years God has sent us a blessing in the shape of a very abundant rainfall, but through our ignorance—or may I not say stupidity?—the blessing has in many instances turned out a curse. Probably a series of dry seasons will soon occur, and another blessing in the shape of an abundance of glorious sunshine will be vouchsafed; but through our misuse or wasteful abuse of the rain, this same sunshine will probably in very many cases turn out a curse also. This I believe is usually the case when blessings such as these have been neglected, abused, or treated with culpable ignorance. *J. E. Ewing, Eaton, Norwich.*

*(To be continued.)*

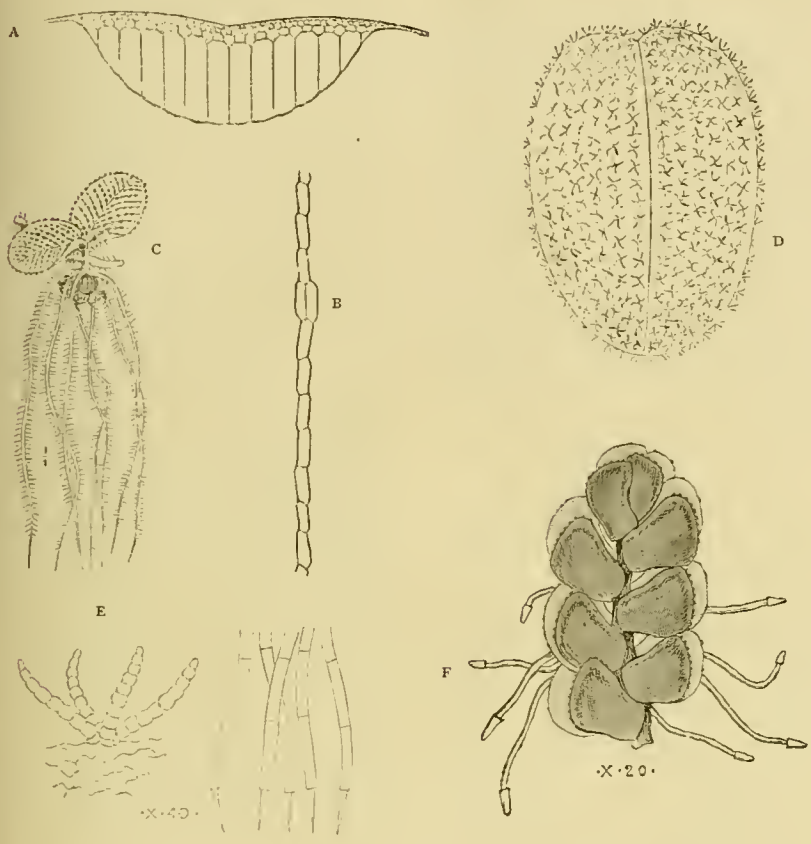


Fig. 89.

A, Trianæa bogotensis: Section across leaf, showing air-chambers and boat-like section. B, Trianæa: Walls of air-chambers, consisting of a single row of cells only, end to end, × 40 diam. C, Salvinia: Fruiting specimen (natural size). D, Salvinia leaf enlarged 3 diameters, showing the forked hairs. E, Upper skin, and portion of submerged root-like leaves (enlarged 40 diameters). F, Azolla: Fronds enlarged 20 diameters, showing rootlets and root-sheaths.

## COLONIAL NOTES.

Tea Cultivation in Ceylon.—The genus Thea seems to derive its importance entirely from a single species, the dried leaves of which form Tea, one of the most important articles of commerce in the world, and yielding the most esteemed and extensively used of all non-alcoholic beverages. This species—the Tea shrub, or Chinese Tea, T. sinensis—is 10 to 20 feet high, but in a state of cultivation only 5 to 6 feet high, with numerous branches and lanceolate leaves, which are 2 to 6 inches long. The flowers grow singly or two or three together in the axils of the leaves; they are rather large, white, and fragrant, with 5-parted calyx, six to nine petals, and many stamens. By cultivation numerous varieties have been produced in China, some of which are considered distinct. The Assam Tea, which has been called T. assamensis, appears also to be a mere variety of the same species. The plant is to be accounted subtropical, but bears a tropical climate well, and also accommodates itself to cold winters.

The use of Tea is said to have been introduced into China itself from Corea about the fourth century of the Christian era, and to have extended to Japan about the ninth century. The first reference to it by a native of Britain is in a letter dated June 27, 1615, written by a Mr. Wickham, which is in the records of the East Indian Company. From this time it became gradually known to the wealthy inhabitants of London, in the form of occasional small presents from China, but always exorbitantly dear, fetching as much as £10 per pound. A rather large consignment was, however, received in 1657; this fell into the hands of a thriving London merchant, Mr. Thomas Garway, who established a house for selling the prepared beverage. For many years the duties were very high, levied by both Customs and Excise. From that time to the present several reductions have taken place, so that the duty is now only 6*d.* per pound.

A full description of the Tea and its varieties is given by the late eminent botanical traveller, Mr. Robert Fortune, in his work *Tea Countries of China.* For the purpose of giving special scents to different varieties of Tea, numerous odoriferous plants are employed in different parts of China; the blossoms of the sweet-scented Olive (Olea fragrans) communicate an especially fragrant scent to Tea.

The Tea plant was first introduced into Ceylon about 1841, by Mr. Maurice Worms, of Pussellawa, from China, and another planter is said to have brought Assam plants to Dolosbage about the same

time. The plants throve exceedingly well, when seed was taken away by a few planters, and grown more as a curiosity near their bungalows. In 1865, when the Ceylon Company (Limited) took over the Messrs. Worms' properties, they found a small extent of Tea on Kondegala, on the Ramboda Pass, to which they soon paid attention. A planter of experience in Assam became their manager, and they soon opened up a large acreage, the produce of which was sold for local consumption. Equally successful at the same time were the proprietors of Loolkandura, whose Tea, under the careful management of Mr. James Taylor, has acquired the highest reputation among Ceylon Teas. "The report from the Tea syndicate of the Melbourne Exhibition on Ceylon Teas, and more especially Mr. Taylor's, leaves nothing to be desired for Ceylon, as ranking high and equal to India as a Tea producing colony."

In 1865 Mr. Taylor commenced planting along the road sides and collecting seed from Peradeniya, where his first clearing of 20 acres was planted in 1867. He imported Assam seed and began planting the hybrid in 1869. In 1867 Dr. Thwaites reported that a sample of Ceylon Tea, prepared from the China plants, had been favourably reported on in London, and for several years he continued pressing the advantage of cultivating this hardy plant on the attention of Government and the public. In 1868 there was a great demand for seed from the Assam plants that were doing so well at Hakgalla Gardens, the opinion being that the Assam kind would succeed best at an altitude above the limit of Coffee. In 1875 the fact was fully recognised that the cultivation of Tea in Ceylon was an established commercial success. The following reference to the prospect of extending Tea cultivation in Ceylon is from one of Dr. Thwaites' reports :—"Nearly all the forest land available for Coffee cultivation in the districts of Dimbulla and Dickoya has now become private property, and although it has not all yet been planted, it is probable that after a very few years, when about 10,000 additional acres of forest will have been felled, the Coffee estates will have reached their limit. But there will still remain extensive tracts of land suitable for plantations of Tea, and to this purpose they will undoubtedly be sooner or later devoted, and the field for European enterprise is thus open for many years to come." Maskeliya district has been planted with Coffee, but since found more suited for Tea cultivation. The Assam hybrid has been found the best to cultivate in Ceylon, and is to be found from 7000 feet to within a few miles of the sea coast, and thriving equally well wherever it is planted. The most successful Tea plantations are in Hewaheta, Dolosbage, Ambagaurua, Yakdessa and Maburata. Tea is planted in almost every district in the island, but in the low districts it is likely to be the most successful, and the western slope of the Adam's Peak range, with its abundance of rain, will soon become an extensive Tea district.

The Tea plant is very hardy, easily raised from seed, generally in nurseries or often planted at stake; in steep land it can be planted in rows 3 feet by 3 feet, and on the flats 4 feet by 4 feet. The cost of opening a Tea estate, with price of land, planting, &c., will not exceed £10 per acre. There are so many useful cheap books now printed on the cultivation and manipulation of Tea that I need not enter into details here.

We have about 7000 acres now under Tea cultivation, and this year a large extent to be added. Still there are many thousand acres of fine forest left to young men with capital who care to try their luck at Tea planting in this sunny isle. The suitability of the climate and soil to produce good crops of leaf has already been proved. There is a great future before this island and its chief industries now that the Government, after a hard and prolonged struggle through the Press and the planters, appear to realise the encouragement offered to a liberal and bold policy of railway extension to Uva. *J. Alexander, March* 10.

### Jamaica.

The supplement to the *Jamaica Gazette* of February 24 contains Mr. Morris' Annual Report on the Public Gardens and Plantations of Jamaica for 1880. It is a valuable document, and testifies to the importance of colonial gardens when properly managed. The report does not admit of brief abstract; suffice it to say that those concerned in the culture of sugar, Coffee—ordinary and Liberian, Cacao, spices, jalap, fruit trees, Tobacco, fibre-yielding plants, Pineapples, Cocoa-nuts, or other economic as well as ornamental plants, will find much that is interesting to them. The history of the Cinchona plantations is unusually interesting and encouraging, as is also that of Tobacco culture. Nearly 100,000 plants of economic value, it appears, were distributed last year. The success of the Jamaica-grown Cinchona (which yielded over £5000) in the London market, has been already alluded to in our columns. The Castleton Gardens are under the direction of Mr. Syme. Mr. Nock superintends the Cinchona plantations, in which 50,000 plants were set out in their permanent places last year, the majority being C. officinalis. Mr. Hart has charge of the King's House garden and grounds. The injurious effects of a hurricane in August are dwelt on at some length. Official reports of this kind are apt to be dry reading, but it is impossible to glance over this record of work in progress without being struck with the variety and magnitude of the task, and the vast importance of the results.

### Rust in Wheat.

It is satisfactory to find South Australian farmers awakening to the necessity of making themselves acquainted with the life-history of the fungus pests which deteriorate their crops so seriously. In *The Garden and the Field*, a monthly journal published at Adelaide, we find a good popular article on fungus and insect blight, by Mr. George Francis, and a letter from Mr. Bolvig relating to the connection between the Berberry blight and the rust. The writer is rather severe on the South Australian farmers, and says it is no wonder "that they are unable to compete with the rest of the world when discoveries of such a special interest for their business are unknown among them fifteen years after the news has been discussed and accepted by everybody at home." The farmers might in this case retort with justice that the relation between the two forms was asserted by agriculturists years before scientific authorities actually demonstrated it, and when the suggestion was scouted as ridiculous by scientific men. The moral to be drawn is—co-operation.

## Notices of Books.

**Familiar Indian Flowers. By Lena Lowis. Lovell Reeve & Co.**

A series of pretty and faithful representations of common Indian plants, so well done that it is a matter for regret that the artist has not exercised her pencil upon less familiar subjects, and consulted some botanist or gardener as to what to illustrate, and thus produced a book which would have been of some use. As it is, except as memoranda for the author's own personal purposes, these drawings are of little or no value. While we are bound to commend the execution of the drawings, which are correct so far as they go, we cannot speak in equally favourable terms of the letterpress, which has been derived from the works of Firminger, Drury, Roxburgh, &c., and not improved in the transfer. One erratum only is acknowledged, and in endeavouring to correct that the author has fallen into another. In truth, the text stands in need of very considerable revision.

## Apiary.

Bee-hunting. — The honey-bee, which now abounds on the wrong side of the Atlantic, was not native to the United States, to which it was introduced by the Pilgrim Fathers, very much to the advantage of the bears of America as well as of the people. The first hollow tree full of honeycomb found in the woods, by a bear or Indian after the arrival of the bees of England, must have proved a great surprise. According to tradition a young Indian chief gifted with a knowledge of black arts and passing as a wizard, visited the home of one of the settlers, whose wife, being a Puritan by name only, fell in love with the handsome chief and feasted him on honey and white bread, with "fire-water" sweetened from the bee-hives. And the red man's inner man being warmed with the spirits he went out in the evening when the bees were at home, and told them such tales of the flowers of the forest that he lured them away with him—some say that he assumed the semblance of a queen bee, and thus led out the first swarm that the red man had ever seen in his own country. But by whatever means they were introduced they now abound in the forest, flying wild and storing the hollows of trees with their well filled combs. It is here among the wild bees, descended from our own hives, that the bee-hunter plies his trade. His harvest months are August and July, his tools consist of a bee box about 6 inches square, an axe, and a jack knife; and he carries, in addition, sometimes a compass, and invariably a dinner. The box has a hinged lid in which is set a small square of glass; midway between this and the bottom is a slide dividing the box into two compartments, the lower one containing a bit of honeycomb filled with syrup of honey and water for a bait. His further proceedings for boxing the bee which is to become his guide and the betrayer of the hive, are interesting. Having met with a bee searching over the blossoms of wild Asters, Balsams, or Golden Rods, he slips the open box under her and shuts her in, securely trapped by closing the lid. He then darkens her place of confinement with his hand till she has recovered from the buzzing and the wrath that follow her capture. Afterwards he takes a peep and finds her sucking the sweets provided for her. When she ("it" would be more proper) is full, he sets the box on a fence or more prominent point, opens the lid, and awaits at a little distance the coming forth of the bee. In about five minutes she appears, rises into the air, a few feet only at first, circles round, and having taken her bearings, flies home. The hunter then replenishes the comb with syrup, lights his pipe, and waits for the return of his late captive.

The time passed in waiting will vary with the distance of the hive and its strength; rich bees prove less active in their movements than those which are less wealthy. At length, guided by that wonderful compass which bees and pigeons carry in their heads, the bee returns humming through the air as she approaches, and after beating about the box a little she settles on it, fills herself, rises, circles as before, and then flies straight away. And now the hunter's turn has come, when he must exert himself following the track of the brown speck in the air above him as well as he can. He gains at any rate an inkling of its course, and then returns to his box, which is soon visited by a number of companion bees from the same hives. He keeps up the supply of syrup until by repeated hunts, hurrying after the bees on their homeward journey, he learns the position of the tree in which their store is placed. The chase of the bee hunter, rushing through brake and brier and over every obstacle, depending on sharp eyes and active feet, with all his wits engaged, is a most exciting one. On reaching the desired tree at last, he marks it for his own by cutting his initials on the bark.

The tree is chopped down at the earliest convenient time. An eighty-four pound bee tree is regarded as a good find. One hundred pounds of honey are sometimes taken from a single tree.

The use of the divisions in the box is when more than one "setting up" is required owing to the distance of the hive. The bees in that case are driven into the upper division by rapping the box. This is necessary to prevent them from besmearing themselves while the hunter is moving up on the line. As soon as he has moved up on the course previously marked he allows the bees to feed and again sets up the box, so as to commence his next observational chase at a point several hundred yards nearer than before. *H. E.*

Bauera rubioides.—As a graceful and handsome cool-house decorative shrub this deserves a word of praise. In common with many other Australian plants—whose merits years ago were fully acknowledged, but which by degrees have at length become almost rare—it is not nearly so often seen as it should be. No great skill is required for its successful cultivation, and its neat habit and free-flowering properties are additional recommendations. In a wild state it affects swampy places and marshy woods. The species varies much in colour; the Kew plant is a charming rosy-pink. The genus was named in honour of the two Bauers, who are spoken of by Loudon as "German botanical draughtsmen of the highest celebrity. Nothing comparable to their works has ever appeared from any other hand."

## INSECTICIDES.

[As in the case of the artificial manures, of which we have lately published analyses, so we intend, from time to time, to lay before our readers the analyses of some of the many blight-destroying compositions offered for sale. Of some of these it may be said that they are useful, others injurious to the plants, and others merely useless. In the present case a mixture of water, soft-soap, and turpentine, in certain proportions, would closely resemble this composition, which, no doubt, will prove good for its purpose. It is sold retail at 6*d.* a gallon—a moderate price. Eds.]

"Composition of a Sample of Keel's Blight Destroying Fluid.

| | |
|---|---|
| Water and a little turpentine .. .. .. | 89.93 |
| Fatty matter .. .. .. .. .. .. | 8.23 |
| Potash (caustic) .. .. .. .. .. | 1.70 |
| Silica, soda, &c. .. .. .. .. .. | .14 |
| | 100.00 |

BERNARD DYER, F.C.S., F.I.C."

# Garden Operations.

### *PLANT HOUSES.*

Ventilation, &c.—The long continuance of cold easterly winds, such as we have experienced for the last fortnight, will necessitate extreme caution in the ventilation of plant-houses. Avoid as much as possible the admission of large currents of cold air by using a few ventilators only, but rather open all, if only to a trifling extent, and thereby cause an equal distribution, which will be more congenial to the inmates. When the sun is shining brightly it will be better to shade the stove more than is usually practised, than to allow the temperature to rise rapidly and then to admit a quantity of cold air.

Insects will increase rapidly at such times as this, especially thrips and green-fly, so that close watch should be kept for the former if the plants are near the hot-water pipes. A liberal use of the syringe and fumigating with tobacco-paper will keep them in check. Slacken the fires early on bright days so that the heat of the pipes may be at a minimum as the sun gains power. This is a point that is often overlooked by those in charge of the fires. It will be better to keep the night temperature of all houses somewhat below the standard on windy and frosty nights than to maintain the usual degree of heat by extra firing.

Stoves.—Under the ordinary treatment in this structure Gardenias will now be flowering freely, and if the blossoms are required to be cut, it is best to do this when they first expand, before showing the eye; by attention to this they will last much longer. A good plant to succeed the Gardenia is Tabernæmontana coronaria flore-pleno, which will now be showing flower. It will succeed well under the same treatment as that accorded to Gardenias. Another good plant with white blossoms is Psychotria jasminiflora; this, when better known, will be extensively grown for choice cut flowers. It requires a drier course of treatment than the general collection of stove plants. Attention should now be given to the propagation of the stock of winter-blooming plants, such as Begonia insignis, Euphorbia jacquiniæflora, Thyrsacanthus rutilans and Plumbago rosea, should receive the first attention, in order to obtain plants well established with ripened wood by the autumn. Ipomœa Horsfalliæ, one of the finest winter-flowering stove climbers, will now be growing freely; if requiring to be potted, this should be done at once. See also that the young growth does not entwine itself where it will be difficult to disentangle it afterwards. Stephanotis floribunda will now be advancing into bloom. If a good autumn growth has been secured the use of the syringe need not be discontinued, the flowers evidently enjoying it rather than otherwise.

Greenhouse.—The main stock of Pelargoniums will now require more attention. Keep them liberally supplied with water, and when they commence to knot for bloom liquid manure-water should be applied frequently. Stake and tie them out to prevent the shoots becoming drawn, and watch closely for greenfly. Fuchsias will be growing freely, if not wanted for early bloom keep them constantly pinched. Pay attention to annuals in pots; those recommended in a previous Calendar should have a position near the glass, removing them to a cold frame a little later on. Cinerarias may with safety be removed to a cold pit or frame to retard the bloom for decorative purposes. Herbaceous Calceolarias will also do well under the same treatment, being less liable to attacks of fly. Late-potted bulbs should also be kept cool. Chrysanthemums should be potted as they require it, keeping them just protected from the frost, and airing them well in the daytime.

Conservatory.—This structure ought now to be at the gayest, do not, therefore, let a shabby plant remain to spoil the effect. Late Camellias will still be doing good service. With attention to watering and shading they will last some time longer yet. Those Camellias which have done flowering should be encouraged to commence growth as soon as possible; keep them syringed as the weather permits, and shade them from the direct rays of the sun. It often happens at this season of the year, when plants such as Azaleas and the general run of forcing stuff are removed from the conservatory after blooming, that they are stood out of the way and neglected. If success for another season is desired this should be avoided as much as the crowded state of the houses will admit, most places being at this season short of room. Azaleas should be immediately relieved of their stale flowers and seed-pods, and by frequent syringing and a moist growing atmosphere be encouraged into growth. Deutzias may (if they have become ragged and shabby) be cut down hard to the rots—a good crop of young growth will soon result therefrom. Spiræas, Lily of the Valley and suchlike plants should be protected from the frost till sufficiently hardened to be stood out in a sheltered position. *James Hudson, Gunnersbury House Gardens, Acton, W., April* 5.

### *FRUIT HOUSES.*

Vines.—The earliest Vines should now be looked over, and any berries likely to become crowded should be removed before they make the last swelling. Madresfield Court and Foster's Seedling do better if the foliage is allowed to grow as they commence colouring, as it takes away the extra sap and prevents them from cracking. They will also, if well watered when on the point of colouring, not require any more until they are ripe. Up to the time they begin to colour keep a moist warm atmosphere, afterwards reduce the moisture gradually. As the fruit colours keep a circulation of warm air, and be careful to avoid cold draughts; also let the evaporating pans go dry, and leave a little air on back and front ventilators night and day. Succession-houses ready for thinning must be attended to at once, taking out all the inside or cross berries, leaving those that point directly outwards, and which make the most compact and handsome bunches. If large bunches are required a few may be tied-out or shouldered instead of being much thinned, but they never make such handsome bunches as those not tied-out. After the thinning is finished give a thorough watering with tepid manure or guano-water, and keep the evaporating pans filled with liquid manure-water; damp the house several times daily with tepid water, and close early to make the most of the sun-heat. Muscats in bloom should be kept as recommended in last Calendar. Those started on March 1 can be kept a few degrees lower at night if the severe weather continues, as at this stage they will take no harm in a temperature of 65° at night, rising to 70° with milder weather, and as they approach the blooming period stop them at three or four joints beyond the bunch according to the room on the trellis. It is better to do the stopping just before they come into bloom, as then they will go until they are set. Late Alicante, Lady Downe's and Gros Colmar, keep at 65° on mild nights, but during these cold, frosty east winds a few degrees lower will be better than excessive fire-heat, raising the temperature early in the day. Give air gradually as the temperature rises, but during cold winds a very little air will be sufficient. Late houses of Black Hamburgh that are breaking will be safer with a little fire-heat while the frosty nights last, but where they have not broken they may still be kept cool. Pot Vines colouring may now be kept with a drier atmosphere, but they will still require plenty of water at the roots, and a good supply of warm air. It is a good plan to have a few sliding boards built in the walls opposite the pipes to admit air which gets warm before touching the Vines. Vine-eyes in pots or turfs must be potted on as required, keeping them in strong moist heat, and after the pots are filled with roots they will take liberal supplies of water, using weak manure-water every other day. Vineries newly planted must be kept in a moist, growing state, allowing the foliage to run over the trellis without stopping. Any late Grapes hanging in the fruit-room should be kept as dry as possible, and no fire-heat used if the temperature does not fall below 45°. *Joshua Atkins, Lockinge Gardens, Wantage.*

Pines.

Watering should now have assiduous attention. It requires some discrimination to find out the proper time to apply it, so that every observation should be taken before this is done. For instance, plants plunged in fermenting materials require less water, and the soil becomes dry towards the surface. Plants plunged over hot-water pipes require more water, and the soil of these becomes drier towards the base—conditions which are diametrically opposite, but to bear them in mind with other such details will materially help to keep the soil in a proper state of moisture. Instead of frequently looking over the plants make a thorough examination of all once a week; this is sufficient for all practical purposes. In ascertaining the true state of the soil it should be examined some distance down the pot, as the surface soil becomes wet by constant syringing; there are also fewer roots towards the surface to absorb the moisture. It is a good way to knock out a plant or two when the true state of the ball can be accurately tested; but this is not necessary every time watering is done. Some prefer pots standing without any plunging materials round them, under the erroneous impression that the pots are under better control as to watering; but this practice is reprehensible. Plants in all stages should be plunged; they take less water, and the roots are not exposed to those sudden transitions which are inevitable, if the pots are affected by currents of air, and the rays of the sun. With the exception of a few bones, no other manure is mixed with the soil, therefore liquid manure should be used frequently. It is better to apply it often in a weak state than to apply it less frequently in stronger doses. When using it always be on the safe side, for although Pines can stand it stronger than almost any other plants, yet if given in too strong doses, although not perceptible at the time, its bad effects will be seen afterwards. Large unsightly crowns are often the result of injudicious applications of liquid manure. Good reliable guano may be used, but some of these contain ingredients that are injurious. Deer and sheep droppings are always to be depended upon; these should be gathered in a fresh state, and soaked for forty-eight hours before using; in this time they are dissolved sufficiently to pass through the spout of a can or a tube, then the whole may be diluted according to the strength required. An 8 or 9-inch potful of fresh droppings so dissolved will water 100 fruiting plants, and for successions the manure may be a little weaker. It has been our practice for the last ten years to water succession plants with liquid manure as soon as the roots get established round the sides of the pots; this is repeated (at intervals) until the fruit begins to colour. When watering, any plants, if the soil is noticed to bubble, should have a copious supply, as this is a sure indication that they are very dry. *D. Wilson, Castle Hill, Devon.*

### *HARDY FRUIT GARDEN.*

If any work amongst hardy fruits is suffered to be in arrear at this season, when every department demands so much attention, it is very probable that such work will remain undone; but where it has been brought forward, as recommended in previous Calenders, there will not be much to do in this department just at this time. The advancing season will shortly demand increased activity, but at present the most important proceeding will be the protection of the unfolding blossoms from the inclemency of the continued cold nights succeeding to unusually bright days, which tempt forward the opening buds. See that the fastenings of nets or other materials used on walls are thoroughly secure, as the alternation of wetting and drying which they undergo stretches the material and allows it to be so slack as to beat against the bloom, or even to get loose from its fastenings, and to produce almost as much mischief as the frost itself. Grafts that were put in last month may require the clay damping by the spray from the rose of a watering-pot, should the drying east winds continue; especially will this be the case where the precaution has not been taken to cover the clay with moss; but even where this has been done the damping will be of advantage when not naturally afforded by rain. Owing to the backwardness of the season, grafts may yet be put on with every prospect of success if they have been previously prepared so that their growth has been retarded. Complete the pruning of Figs as previously recommended; also the planting of Strawberries from beds of autumn runners. The hardy fruit garden ought at this time to present a thoroughly tidy appearance; and in order to have it so a certain amount of pains must be bestowed upon the general keeping of the fruit quarters and borders. Let the gravel walks be freshened up with a little new gravel on the surface where necessary; and all mulchings of newly-planted or other trees may have some fine earth thrown over them. Keep the hoes moving as soon as the weeds show the slightest evidence of vegetation; and generally in this department see that there is that regard for the cleanliness and order which has so much to do with the appearance of all portions of the garden, by attending to the clipping of edgings and sweeping and rolling of walks. *R. Crossling, St. Fagan's, Cardiff.*

Wood Management for Amateurs.—M. Broillard, of the Forest School of Nancy, has just published a treatise on the management of woods adapted for the use of landed proprietors desirous of making the most of their woodlands, and for their agents. All departments of woodcraft—coppicing, sales of wood and bark, and the like—are treated of, as well as avenue planting and the planting of barren sand-plains and hill-sides, which latter operation, it is pointed out, has yielded an interest of 8 to 10 per cent. on the capital employed.

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | April 11 | Sale of Lilies and Imported Orchids, at Stevens' Rooms. |
| | | Sale of Established and Imported Orchids, Tree Ferns, &c., at the Auction Mart, by Protheroe & Morris. |
| Tuesday, | April 12 | Royal Horticultural Society: Meetings of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. |
| | | Sale of Second Portion of Mr. Day's Collection of Orchids, at Stevens' Rooms. |
| | | Sale of Carnations and Picotees, Roses, &c., at the City Auction Rooms, by Protheroe & Morris. |
| Wednesday, | April 13 | Continuation of the Sale of Mr. Day's Orchids. |
| Thursday, | April 14 | Sale of Imported Orchids, at Stevens' Rooms. |

THE mention in our columns last week of the proposal to establish a SCHOOL OF HORTICULTURE and LANDSCAPE GARDENING at the Crystal Palace brings the subject of horticultural education once more to the fore. In season and out of season we have been the consistent advocates for the promotion of systematic education in the science and art of cultivation. Practical gardening, practical forestry, practical agriculture are, it must be admitted, at a high standard in this country, but no one will deny that, in order to keep pace with the growing necessities of the times, they all stand in need of further development, and more especially of wider diffusion. Head gardeners, foresters and bailiffs may, and do furnish a large contingent of shrewd and highly competent officials, men endowed by Nature with perseverance, industry and intelligence, who have steadily taught themseves how to profit by their experience. But how about the rank and file?—how about the agricultural labourer, the woodman, the journeyman gardener?—has their daily experience taught them any more than their forefathers in like position with themselves attained by similar daily labour? We doubt it. Assuming that this is so in the main, and disregarding exceptional cases, what is the remedy for this state of things? We believe it is comprised in the word education.

Education is a wide and a vague term—it means much or little according to circumstances. It is, therefore, necessary to be more explicit as to our meaning. Having regard to the progress of the cultural art and its relations to the welfare of mankind, it would seem to us that special education is needed at both ends of the social scale. The village schoolboy, once in possession of the three R's, should be taught in the rural districts the principles of the art of cultivation. He should have an elementary knowledge—thorough, as far as it goes—of the earth, the air, the water around him; he should know and understand the principal phenomena of heat, should be able to appreciate the importance of light, should be acquainted with the ordinary cultivated plants, and the way in which they grow—what helps them and what checks them. He should know enough of the construction of his own body, and of its mode of working, to be able to utilise it to the best advantage and to his greatest welfare; and this knowledge will also enable him the better to understand the life of the animals which may hereafter be entrusted to his care. School instruction should be made the necessary preliminary to the better understanding of the practical work of the garden and of the farm. There should be no divorce between the two; the garden lesson or the farm lesson should teach the "how"—the school lesson should explain the "why." There need be no fear of overweighting the school-teaching; a large amount of profitless information is now conveyed with irksome toil, which might far more advantageously be substituted by instruction of the character we have just indicated. It is to the rural clergy and school authorities that we must look for this urgently needed reform. Trained teachers will, no doubt, be required; but there are already provisions for supplying this requisite, and supply would inevitably follow demand.

So far, we have had in view the school training of the labourer. Education is as urgently needed at the other end of the scale—by those who are to employ and direct labour. In this case we may assume that the general education is advanced, a high University degree, even, may have been taken, but, till lately at least, such a degree afforded no assurance that its possessor had the kind of knowledge which was requisite for him to direct the labours of others with intelligence and profit. To be sure, a well-educated man has the advantage of being better able to adapt himself to, and to make the best of circumstances than one less favoured, but in the process much time is lost, and the acquirement of experience is as slow a matter as it is with the so-called practical man. To remedy this state of things special training is as much required as in the case of the labourer. With the ever increasing foreign competition, with the depressed state of agriculture, the ever pressing necessity for developing our food supplies, conserving our forests, promoting the culture of plants valuable for economic purposes of all kinds at home, in India, and our colonies, special training is becoming daily more and more a necessity, and in that special training we, as a nation, are wofully behind our Continental neighbours and our American cousins. We have just two agricultural colleges for the higher education in cultural principles and practice, and in not a single school throughout the land—or in any case in only an infinitesimal fraction—is any instruction whatever given of the character we have advocated.

It will be seen that throughout we have not spoken of horticulture as apart from agriculture or forestry. In truth, whatever differences there may be in the practice of these arts, the general principles of them all are the same, and a man well grounded in these principles might afterwards take up the practice of either as might best suit his requirements. This being so, the instruction in our special colleges should be so arranged as to give the requisite grounding in the first principles common to all branches of cultivation alike, while the practical training might be specialised according to the particular branch the pupil intends hereafter to take up. Such institutions as we have in view might serve therefore for the education of the higher grades of cultivators and administrators either in English estates, woods, nurseries, and gardens, in the forests of India, the Cinchona plantations in our colonies, and the hosts of cognate employments which the expansion of civilisation is developing.

So far as India is concerned, we may in relation to this subject allude to the recently issued report to Government as to the measures to be taken for the prevention of famine in that country. In this report a vast amount of information is brought together relating to the population of India, the area of cultivated land, the crops and their method of cultivation, the physical character of the country as to climate, rainfall, soil, drainage, and the like. After the discussion of these points various improvements are suggested, such as the introduction of new staples, the better cultivation of old ones, the necessity for the establishment of experimental farms, the improvements in implements, the development of cattle breeding, &c. In addition to these it is proposed that an agricultural department should be organised, such as is so much wanted at home also, in order that improvements should be introduced and popularised. To this end it is suggested that a body of experts should be organised under the direction of a trained civilian, so that technical agricultural knowledge should be brought to bear in a way to enable the productive powers of the soil to be applied in the most effective manner. It is proposed that more weight should be given in the competitive examinations for admission into the Indian Civil Service to competent knowledge of physical and natural science, and especially to agricultural and organic chemistry, and to botany. It is proposed that candidates who have passed the most creditably in the examinations in these subjects should spend one year at an agricultural college or similar establishment, so as to make them familiar with such branches of agriculture and such modes of cultivation as are likely to be of practical utility in India.

Without entering into details which it is not necessary to reproduce here, but in order to give a general idea of the proposed qualifications and course of study, we may add that the plan of instruction proposed extends over two years. "In the first year a knowledge of practical physics and of chemistry should be obtained in the laboratory. The physics should be taught from the experimental and not from the mathematical side, the object being, not to make physicists of the students, but to give them a clear understanding of ordinary physical processes. The instruction in chemistry should have as its chief end the accurate performance of quantitative analysis of soils and vegetable products and the acquisition of a knowledge of the chemistry of plant action. In the second year organic chemistry with special reference to vegetable products should be studied, and also the structure and physiology of plants, to include a practical knowledge of the chief food plants, and the principles of agriculture, and a knowledge of the basis of a natural classification of plants, but excluding the details of what is ordinarily known as systematic botany." We may remark incidentally that this limitation seems to us unwise, for if the object among other things is to develope old industries and introduce new ones a fuller and more practical knowledge of systematic botany than is implied in the foregoing recommendation appears to us an essential. The systematic botanist is the one most competent to give an opinion as to the cultural value of newly discovered plants; he is the one who is, or should be, the most proper person to give advice as to the climatal conditions most suitable for the growth of particular plants, and the most probable conditions of success. The experience gained in the case of Cinchona, Tea, Cotton, Sugar-cane, Eucalyptus and many other plants of prime consequence to agriculture assuredly points to the necessity of educating the students in the careful discrimination of varieties which forms an essential part of the work of a systematic botanist. Years have been wasted, and an immense financial loss incurred precisely for want of this very information; while in the case of newly discovered plants, or plants not as yet utilised for economic purposes, it is the systematic botanist to whom, in the first instance, we must look for information and advice, and none other is competent in such cases to give it. For these reasons, we take it, the instruction in botany should be as thorough and comprehensive as is consistent with the practical aims to which it is intended to be applied, and that systematic botany should be as completely taught as the other subjects—physics, chemistry, and physiology—always, of course, with regard to the practical requirements of the case. A general knowledge of natural history, and especially of the habits and mode of life of noxious insects, is also a matter of no slight importance. But these are details which can be adjusted hereafter. The main thing to do now is to make clear the urgent necessity that exists for the systematic training, as well of the rank and file as of the officers, in all that pertains to the science and art of cultivation in its widest sense.

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MOST people have a special interest in THE WEATHER AND THE FRUIT CROPS at this season, as on the condition or state of the weather now and for the next month or so depends our supply of outdoor fruit for the year. While writing this the prospects are anything but favourable, as now, and for

some time past, we have had a savage north-east wind, which in its force and fury seems as if it would almost tear everything up by the roots. Fortunately for vegetation the earth and atmosphere are very dry, or the effect of it would be much worse than it is; but what we are all most concerned about just now are the tender Apricot and Peach blossoms, which are full out, and it is to be feared that in many places they will again be cut off and destroyed. It will perhaps be remembered that many persons, such as Mr. Sheppard, of Woolverstone, advocate the wiring of Peach walls for the purpose of training the trees, and these trellises have, we believe, served well this spring, as the trimmings or small branches of Laurels have been stuck in behind the wires and have formed an excellent protection to the flowers by breaking the force of the terrific winds and warding off frost. With a trellis like this, the ends of branches of evergreens may be passed behind at a great rate and taken down as quickly, as there is no tying or fixing required in the manner necessary when the training is carried out in the old-fashioned way. Where there are glass or board copings fish-net may be used in three thicknesses, and these form a capital protection in connection with such covers, and may be strongly recommended, as by the meshes crossing and intercrossing the trees are greatly favoured in respect of shelter, and the blooms are kept dry by the net breaking up and catching the rain before it can dash on the trees. Fish-net has another advantage over most other coverings, inasmuch as it can be left on to a late period, as from its open nature it does not obstruct the light in a way to injure the foliage or fruit; indeed, it is found to be a great help in preserving the leaves from blister—a malady that is always brought about by the sudden transition of heat and cold acting on the tissues. Pears are in general not forward enough to take any harm, although the 12° to 20° of frost experienced a week ago has browned and deadened the scales covering the flowers, but as these latter are showing so numerously they will allow for a thinning. Cherries, too, are full of bud, and Apples are crowded; and as both are late there is great reason to hope that they may escape. If so, the present year will be one of great plenty for these fruits, but as yet unfortunately it is all speculation, so fickle is this climate of ours.

Fig. 90.—Part of the Rockery at Lystock. (see p. 474.)

—— Gardeners and the Census.—Gardeners who have had, as heads of families, to fill up the Census papers, have no doubt demurred to find themselves classed as domestic servants. There are occasional instances where a gardener holding a single-handed place may reside in the house, and so far he would not be improperly described, although his occupation is not essentially more domestic than is that of the painter who paints the house, or the sweep who cleans the chimneys. In all large places there is found a certain number of young men resident in the gardens, but not in the house, and with which, as a rule, they are permitted to have no connection. These, though resident in the garden, have no domestic associations with their employer's family, and, indeed, are as independent of it as the labourer on the farm. To class these as domestic servants is very absurd. It should suffice to state they were gardeners simply; although if some specific designation could be given to show whether in a private, market, or public garden, much useful information might be obtained. Of course if every employer of labour, in whatever position of life he may be, were to return the exact number of persons in his employ, and their avocations, some reliable information might be obtained, and it might be ascertained how many persons were engaged in private gardens, and how many in growing vegetables for public sale; also how many were employed in parks, public gardens, botanic gardens, cemeteries, institutions, &c. It is very probable that such a return, if carefully made, would show a far larger number of persons engaged in horticultural pursuits than is commonly imagined. That there has been great expansion of horticulture during the past decade there can be no doubt. We may well hope that that expansion will show no decadence during the next ten years.

—— International Potato Exhibition.—The promoters of this exhibition have made arrangements similar to those of last year. The Lord Mayor will be the President, and the Exhibition will be held in the Crystal Palace, Sydenham, on September 20 and 21. The schedule is shaped in

accordance with precedents, but a few interesting deviations have been made in some of the classes. The Secretary is Mr. J. McKenzie, Tower Chambers, Moorgate Street, London, E.C.

—— Hunting and Seeds. — The proverbial bull in a china shop can hardly be in a more incongruous position than a lot of harum-scarum hunters in a seed-bed. In both cases a tremendous lot of mischief may be done, although the amount of responsibility to be placed on the offenders may greatly vary. Some 3 or 4 acres of Onion seed sown thickly for picklers at the rate of 18 to 20 lb. per acre, and the ground heavily manured and prepared after much labour has been expended, present rather a costly item in field work and cropping, and certainly is just where the grower would not like to see hounds and hunters madly careering. Yet only last week this happened in West Middlesex. The hounds in hot pursuit of a hare could not be expected to discriminate nicely, and the huntsmen were perhaps too reckless of consequences, as hunters usually are. The spectacle presented after the charge had swept madly by was very trying, and if there was for the moment a disposition to emulate the deeds of our army in Flanders in Uncle Toby's day who could wonder or deprecate? A claim for full compensation has been made, and no doubt will be enforced, but incidents of this kind should teach thoughtless people to whom sport is every consideration that hunting is somewhat out of place in market garden localities.

—— Green Primrose.—Mr. Sim, of Footscray, sends us a Chinese Primrose, looking at first sight more like a Cauliflower than a Primrose. What under ordinary circumstances is a truss of flowers is here replaced by a mass of green balls, which when examined are seen to consist of so many compact tufts of green laciniate scales, like the bracts of an ordinary flower. There is no definite indication of sepal, petal, or stamen, but in the interior are a number of scales bearing ovules on their margins, and suggestive of the idea that the ordinary central placenta of these plants is a derivative from some earlier state when the placenta was marginal—a subject discussed by the writer of this note in the *Transactions of the Linnean Society*.

—— Cyathea medullaris.—The grand specimen of this noble Tree Fern, which is now one of the principal ornaments of the Temperate-house at Kew, is throwing up a crown of young fronds, and the striking appearance presented by these and the graceful curves of the old ones can only be properly appreciated and duly admired from the gallery above. The plant in question was presented to the Royal Gardens by the late Prince Consort in 1856, and has occupied for many years its present position in the bed. As the dimensions of such a plant can hardly fail to be of interest, we herewith give them :—Total height, 28 feet 6 inches; height of stem, 20 feet 6 inches; length of frond, 14 feet; girth of stem at 3 feet from ground, 2 feet 4 inches; the fronds form a circular canopy which measures 25 feet in diameter. In New Zealand this species is the Korau or Mamaku of the Maori tribes, who, after baking in their ovens the sago-like pith of the stem, find it very good and nourishing eating. It is stated in the *Flora of New Zealand* that C. medullaris yields the best food of the kind afforded by the forests of New Zealand.

—— Indelible Garden Pencil. — Messrs. Wolf & Sons, 55, Great Queen Street, W.C., have sent us a sample of their indelible garden pencil, fitted with a new swivel attachment, which they have just introduced, and for which they claim the advantage that it admits of a spring or tape being tied to the pencil to prevent its being mislaid, and to insure its being always at hand. It is just the sort of thing likely to be wanted by any one who has a hole in his waistcoat pocket.

—— Camellia Sport.—At the recent spring flower show at Ealing Mr. J. Hudson, of Gunnersbury House Gardens, exhibited an interesting Camellia sport. The variety was the Countess of Orkney, and one bloom was true, the colour white, flushed with carmine; the flower was also somewhat cupped. Exactly behind it and from the same joint was a bright pink flower, the petals much reflexed. Probably the Countess of Orkney is a sport from the kind of which the self flower is the natural product.

—— Allium neapolitanum.—The flower shops lately have been full of the white flowers of Allium neapolitanum, sent over in prodigious quantities from Nice. From its chaste purity of colour and neat truss it is an admirable subject for decorative purposes at this season, and it has the great advantage over its fellow Onions that its perfume is by no means repulsive.

—— Tradescant's Tomb.—Mr. A. J. Butt, Putney Hill, S.W., writes :—"In your article of January 15, in which you state it would be interesting to know what has become of the original Tradescant tombstone, I beg to inform you that I had the honour of purchasing it for Colonel North, M.P., and the Baroness North, who presented it to the Ashmolean Museum at Oxford, on March 19, where it is now fixed. It bears the following inscription :—

"Know, stranger! ere thou pass, beneath this stone
Lie John Tradescant, grandson, father, son.
The last died in his spring, the other two
Lived till they'd travelled Art and Nature through,
As by their choice collection doth appear,
Of what is rare in earth, and sea, and air.
While they, as Homer's *Iliad* in a nut,
A world of wonders in one closet shut.
These famous antiquarians, that had been
Both gardeners to the Rose and Lily Queen,
Transplanted now themselves, sleep here; and when
The angels with their trumpets shall awaken men,
And fire shall purge the earth, these hence shall rise,
And change their garden for a paradise.

Tombstone of the Tradescant Family.
Erected, 1662.
Repaired by Subscription, 1773."

Those interested in this matter should refer to our volume for 1852, p. 163, where will be found a brief statement of what the gardening world owes to the Tradescants, and the means which were taken in that year to restore and conserve, as we suppose, the very monument which has now found a place in the Ashmolean Museum. Its removal from ungrateful Lambeth may have been inevitable, in which case no fitter place could have found than the Ashmolean Museum. We are restrained only by the demands on our space from reprinting the article to which we have above referred, and the interesting letter it elicited from the late Mr. Masters, of Canterbury, at p. 295 of the same volume.

—— The Electric Light and the Growth of Plants.—At a late meeting of the Society of Arts, Dr. Siemens stated, with regard to his own experiments, that he had carried them on since last year for the purpose of promoting the growth of plants by the electric arc, with the object, not so much of ripening Strawberries and Cucumbers sooner than his neighbours, but of ascertaining to what extent it was possible to produce rays capable of acting in substitution for solar rays, and also to what extent plants could be accustomed to bear this agency without intermission. He hoped to be able to lay further results before the scientific societies before long. One point of interest was the fact that the steam-engine he employed to produce the electric light at night afterwards yielded, through condensation of the waste steam, the heat for the greenhouses, so that the electric light did not add materially to his coal consumption. Having to keep a fire under the boiler day and night, he thought it a good opportunity for utilising the steam-power during the daytime, and he had done so by means of leading wires from the dynamo-machine to another similar machine at the farmstead working a chaff-cutter; to another for working a pumping-engine nearly half a mile distant, and to a saw-bench in another direction; so that while doing its work near the greenhouses, the engine was also cutting chaff and wood in one direction, and pumping water in another; and he hoped yet to make it available for ploughing the land also. Those facts showed that this mode of energy was extremely pliable, and could with great ease be made available at a distance. It is also important to remark that no other electrician was employed to keep the apparatus in order than the head gardener—without certainly any special training for this work.

—— The Sale of Mr. Day's Orchids.—The first two-day's sale of the plants comprised in Mr. John Day's collection, which for years has been the wonder of the Orchidic world, the envy of Orchid growers, was brought to a successful conclusion by Mr. J. C. Stevens as we were going to press last week. The total amount realised during the two days was £1847 7*s*.; and the highest price given for one lot was 140 guineas, the bid of Sir Trevor Lawrence, Bart., M.P., for lot 288, Cypripedium Stonei var. platytænium, a very strong plant, with one old growth showing flower and two strong young leads of five leaves each! Other prices realised were :—Calanthe Textori, very rare, 210*s*.; Vanda suavis, Veitch's variety, plant with five breaks, 100*s*.; Oncidium macranthum, 120*s*.; Cattleya labiata, fine dark variety, 150*s*.; Cattleya Mendelii, one of the finest varieties, 231*s*.; Cattleya exoniensis, strong plant, two leads, 462*s*.; Lælia elegans, one of the best varieties, 150*s*.; L. elegans, var. amabilis of Rollisson, 130*s*.; Cymbidium eburneum, 120*s*., 130*s*.; Odontoglossum citrosmum, a grand variety, 150*s*.; Masdevallia tovarensis, bull's-blood variety, 100*s*.; Dendrobium Veitchianum, 100*s*.; Cattleya labiata, autumn-flowering variety, 260*s*.; Lælia elegans var. euspatha, 325*s*. 6*d*.; L. elegans var. alba, 462*s*.; L. elegans var. Dayana, 160*s*.; Aerides affine majus, fine variety, from Mr. Rucker's collection, 210*s*.; Aerides Fieldingii, 147*s*.; Aerides Schröderi, plant with twenty-one leaves, 630*s*.; Odontoglossum pulchellum majus, 178*s*. 6*d*.; Odontoglossum Andersonianum, 526*s*.; Angræcum Ellisii, plant with five leaves, 220*s*. 6*d*.; Angræcum sesquipedale, 105*s*.; Dendrobium superbiens, 150*s*.; Masdevallia Dayana, rare, 180*s*.; Cœlogyne cristata Lemoniana, plant 3 feet across, 693*s*.; Lælia purpurata, plant with seven or eight leads, 147*s*.; Cypripedium purpuratum, 140*s*.; Cypripedium vexillarium, 130*s*.; Cypripedium barbatum grandiflorum nanum, 140*s*.; Odontoglossum nævium majus, 136*s*. 6*d*.; Phalænopsis amabilis var. Dayii, 110*s*.; Phalænopsis amabilis, 160*s*.; Masdevallia Trochilus, 160*s*. *Second day's sale:* April 1 :—Vanda tricolor insignis, tall plant, with seven young breaks, 100*s*.; Cypripedium Spicerianum, 525*s*.; Dendrochilum filiforme, 147*s*.; Phalænopsis amabilis, with six leaves, 115*s*. 6*d*.; Arpophyllum giganteum, 115*s*.; Vanda Lowii, 110*s*.; Angræcum citratum, 110*s*.; Aerides Fieldingii, three strong growths, 231*s*.; Angræcum Ellisii, plant with eight leaves, 210*s*.; Angræcum sesquipedale, with twenty-three leaves, 110*s*.; Masdevallia velifera, a curious species with large brown flowers, believed to exist in no other collection, 170*s*., 168*s*., 189*s*.; Odontoglossum Ruckerianum, 105*s*.; Odontoglossum vexillarium, plant with four strong leads, 147*s*.; Lælia anceps var. Dawsoni, six bulbs, 168*s*.; Cattleya Skinneri, 115*s*. 6*d*.; Aerides Fieldingii, plant with four growths, 126*s*.; Lælia anceps var. rosea, two leads, 190*s*.; Cypripedium Stonei, nine young growths, 126*s*.; Odontoglossum Pescatorei, plant with twelve branches, 120*s*.; Cattleya labiata, true autumn-flowering variety, with three leads, 462*s*.; Lælia autumnalis var. atrorubens, three leads, 120*s*.; Aerides Lobbii, grand plant, with thirty leaves, 399*s*.; Cymbidium Mastersii, 110*s*.; Lælia anceps var. alba, 420*s*.; Cattleya Bluntii, a pure white variety of C. Mendelii, with five bulbs, 882*s*.; another plant of the same, with three bulbs, 357*s*.; Odontoglossum Phalænopsis, 105*s*.; Odontoglossum vexillarium, very dark variety, two strong leads, 126*s*.; Odontoglossum nævium, fourteen leads, 431*s*.; Cymbidium Lowianum, two leads, 105*s*.; Lælia Jonghiana, 168*s*. The second portion will be sold on Tuesday and Wednesday next.

—— The Use of Maize in Brewing.—Mr. Gladstone, in his Budget speech, gave a singular illustration of the value of scientific knowledge and of the manner in which it may be made available. Adverting to the use of Maize, he said :—"But I wish to give a little detail about the case of Maize, because it is an interesting illustration of the mode in which, where freedom is given to industry, private enterprise discovers methods of making that freedom gainful. Maize was considered somewhat hard for brewing, and it was also found when the experiment was seriously made that it contained too much oil, which was a very grave objection. But this further discovery was made, that this excess of oil was not diffused through the general body of the grain, but lay entirely in that which is called the germ. Consequently the wit of man, thus provoked and stimulated, extracted the germ from the grain and turned it to its proper account, viz., that of making oil, which we can burn in our lamps. The Maize, relieved of the excess of oil and now made suitable for brewing, was applied

for that purpose, and I understand that the result is not only satisfactory as regards the beer which proceeds from it, but likewise it is satisfactory in this point, that the residue is found to be even more available and decidedly more profitable for feeding cattle than the residue formerly obtained from Barley."

—— Clianthus Dampierii. — Messrs. James Carter & Co. inform us that a specimen of this magnificent New Zealand Glory Pea is finely in bloom at their Forest Hill Nursery—the plant carrying a dozen or more clusters of flowers.

—— Scottish Horticultural Association. The Association has agreed to offer prizes during the present session of £3, £2, and £1, for the first, second, and third best essays on "The History of Hardy Fruit Culture in Britain." The competition is open to all members of the Association. The Association has also agreed to offer prizes of £3, £2, and £1, for competition by under gardeners, members of the Association, for the first, second, and third best "Collections of Insects Destructive to Plant Life, with Short Descriptive Notes." Attention is required to be given to the arrangement and collection of the specimens, as well as to the different stages of insect development. The insects are all to be collected between April, 1881, and February, 1882. Essays and collections of insects to be sent to the Secretary, Mr. Alex. Milne, Leith Walk Nursery, Edinburgh, carriage paid, on or before February 1, 1882, under motto, and accompanied with a sealed envelope, containing sender's name, address, and motto, with a written declaration to the effect that each competitor has, as the case may be, written the essay or collected the insects within the stated period. The subjects to be treated upon at the monthly meetings of the present session are :—May 3, "Kitchen Gardening," Mr. Geo. Robertson ; "Orchids," Dr. Paterson." June 7, "Present-Day Flower Gardening," Mr. R. P. Brotherston ; "Gardening Chemistry," Mr. Alex. Shearer. July 5, "Notes on the Flora of Socotra," Mr. Alex. Scott ; "The Pansy," Mr. James Grieve. August 2, "Interesting British Plants," Mr. John Wilson ; "Poinsettia," Mr. W. H. Gorrie. September 6, "The Minutes of Haddingtonshire Ancient Fraternity of Free Gardeners,' Mr. Jas. Spiers ; "Remarks on the Colouring of Grapes," Mr. Wm. Priest. October 4, "The Chemistry of Plants," Mr. W. I. Macadam, F.C.S. November 1, "On the Advancement of Horticulture," Mr. D. W. Thomson ; "Ceylon Coffee Estates," Mr. D. P. Laird. December 6, "Chinese Azaleas, with Special Reference to Early Forcing," Mr. A. Mackenzie ; "Melon Culture," Mr. L. Dow. January 3, 1882, "Amaryllis," Mr. Hugh Fraser ; "Conifers," Mr. W. W. Johnstone. February 7, "Plant Physiology," Mr. John Sadler.

—— The Weather.—General remarks on the weather during the week ending April 4, issued by the Meteorological Office, London :—The weather has been very cold and dry, but exceedingly bright in all parts of the kingdom, except the extreme north of Scotland. The temperature has again been much below the mean in all districts, the deficit ranging from 6° in the south and south-west, to 7° to 9° elsewhere. The night's were very cold, the thermometer falling to 19° or 20° over central Ireland, and to 21°, 22°, or 23° over the greater part of England and Scotland. The maxima were nowhere high, ranging from 55° or 56° in the south and south-west, to 50° at the northern stations. The rainfall was much less than the mean in all districts, and at the great majority of stations none whatever was collected. Bright sunshine has been very prevalent, and in some places was almost continuous during the whole of the time the sun was above the horizon. The percentages varied from 75 in "Ireland, S." and 70 in "England, S.," to 44 in "England, N.E." Depressions observed :—Pressure has been comparatively high over our islands, while depressions have existed both over Scandinavia and over the Bay of Biscay. Easterly winds have thus prevailed at all except our most northern stations, and have been fresh or strong in force on all our coasts, and over the Channel and south of England blew a fresh or strong gale on Saturday and Sunday.

—— Gardening Appointments.—Mr. J. Hatherly, who for nineteen years was Gardener to the late J. Marshall, Esq., Heslerton Hall, near York, has been apponted Gardener to H. W. Cholmley, Esq., Howsham Hall, Kirkham, York.—Mr. Wm. Spinks, late Gardener to W. Wright, Esq., Oaklands, Preston Brook, Cheshire, has succeeded his late father as Bailiff to Lord Berwick, at Attingham Hall, near Shrewsbury.—Mr. W. Seward, late Foreman to Mr. Wilson, at Castle Hill, Devon, has been appointed Gardener to Sir H. R. S. Davie, Bart., Creedy Park, Crediton, Devon.—Mr. Mark Hartwell, Foreman to Mr. Shaw at Muncaster Castle Gardens, Cumberland, has been appointed Gardener to Lord Newborough, at Glynliffon Park, Carnarvonshire.—Mr. Wm. Williamson, for the last three years Foreman to Mr. Browning, at Dupplin Castle, Perth, has been appointed Gardener to W. W. P. Consett, Esq., Château du Champs de Bataille, Newbourg, France.—Mr. W. S. Campbell, Gardener to Wm. Garnett, Esq., Lucan House, Ripon, is appointed Gardener to R. S. Donkin, Esq., Camp Ville, North Shields.—Mr. C. H. Clissold has left Perry Hall Gardens, near Birmingham, and has taken the Priory Nursery, Warwick, lately in the occupation of Mr. George Poole.

## DR. AINSWORTH'S ORCHIDS.

Those who have, or ever have had, the misfortune to grow plants either out-of-doors or under glass in a smoky, soot-laden atmosphere, need not be told the difficulties that attend their cultivation, yet there are some plants which even under these adverse conditions can with skilful management be induced to thrive and maintain a healthy existence for possibly an indefinite time. Of this Orchids, as they are to be seen at Cliff Point, Manchester, afford conclusive evidence. And what is still more remarkable, the collection is unusually strong in the section which most growers find the greatest difficulty in getting to thrive, even where no adverse atmospheric conditions exists, that is, the non-bulb-forming species, such as Vandas, Aerides, and Saccolabiums, which it is not too much to say often so far refuse to grow in a satisfactory way that their cultivation is by many growers all but discontioued. Beyond the disadvantages of near proximity to the town, the houses in which the plants are grown are not such as any one for choice would select. To counteract so far as possible the deficiency of light which the heavy roofs, combined with obscured sun rays cause, Mr. Mitchell raises his plants well up to the glass, which so far helps the leaves to attain the solidity during their formation without which all that it is possible to do for the plants in other ways would be futile ; for it requires no great amount of study of the nature of the bulbless division of Orchids to learn that naturally their leaves endure for a length of time, that any premature loss of foliage means so much reduction of strength and health, and that upon the conditions, especially of enough light whilst growth is being formed, in a great measure depends the length of time the leaves will last. Those who during the last twelve or fifteen years have seen the Manchester shows cannot fail to have noticed the successful position which Dr. Ainsworth's plants have held. To the initiated in such matters some of the plants competing year after year are quite familiar. Amongst Vandas many will remember the splendid example of V. suavis, bearing fourteen spikes, which Mr. Mitchell exhibited at the Old Trafford Whitweek show in 1878. It has grown much since then, and now consists of eight large growths, promising to be very fine this spring. Another specimen is little behind it in size, and V. tricolor Ainsworthii is nearly as large. Of Aerides Fieldingii the largest plant is 2 feet high ; the two growths of which it is composed are immensely strong, bearing together some sixty leaves. The well-known example of Aerides Schröderi has two side breaks, one of which has twenty-eight, the other twenty-nine leaves, and the leading growth has thirty-three leaves, some of which are ten years old. The plant was purchased seventeen years ago, then consisting of a single growth with some eight leaves. Saccolabiums are in a similar condition, single growths of S. retusum carrying sixteen large leaves, and S. præmorsum thirteen. One specimen of Dendrobium crassinode has eight leading growths, the largest bulb being 2½ feet in length and proportionately strong. A plant of Odontoglossum citrosmum made a dozen new leading bulbs last year. The largest Cypripedium villosum is near upon 3 feet in diameter. These are a few of the most remarkable plants amongst the numbers of fine examples which the collection is composed of, and which, as we have already said, show that with skilful management Orchids may be grown successfully in an atmosphere where many plants could barely exist.

## THE CARBON OF PLANTS.

The well-known French *savant*, M. Dehérain, has recently treated this interesting subject in a series of three lectures delivered at the Paris Museum of Natural History, and reported in the *Revue Scientifique* for November, 1880. It is my intention to give here briefly the substance of these lectures, together with some observations on the most important points dealt with, especially with respect to some of their bearings on the experiments at Rothamsted.

It will no doubt be known to most of the readers of this journal that the beautiful green colour, so characteristic of healthy vegetation, is produced only under the influence of light. Plants grown in the dark, no matter how favourable to their development other conditions may be, are always yellow and unhealthy, with drawn-up stems and small leaves, about which there is but little trace of green. If now we expose such a plant to bright daylight the colourless stems and leaves will gradually acquire their usual green tint, and the whole plant will recover its health and vigour of growth.

The green colour is due to the existence of chlorophyll in the leaves and other parts so tinted. This substance is of the greatest importance to the health and nutrition of vegetables. It is soluble in alcohol, the solution so formed possessing the property of dichroism, that is to say, it varies in colour according as we look at it or through it. It has been carefully examined by M. Frémy, and found by him to contain three distinct substances, all differing in colour. Its elementary chemical composition is given in the following table :—

| | |
|---|---|
| Carbon .. .. .. .. .. .. | 73 97 |
| Hydrogen .. .. .. .. .. .. | 9 80 |
| Oxygen .. .. .. .. .. .. | 4.15 |
| Nitrogen .. .. .. .. .. .. | 10.33 |
| Ash .. .. .. .. .. .. .. | 1.75 |
| | 100.00 |

This analysis shows that chlorophyll is a nitrogenous body, which will serve to explain the well known fact that the green colour of many plants is very much deepened by the application of manures rich in that element, such, for example as salts of ammonia, nitrate of soda, or farmyard manure. It has been shown by Lawes and Gilbert ("Results of Experiments on the Mixed Herbage of Permanent Meadow," *Phil. Trans.*, pt. i., 1880, p. 323) that this effect is most striking where the soil is deficient in mineral plant-food, so that too little carbon is assimilated in proportion to the nitrogen taken up. Tobacco is a plant very susceptible to the influence of manure in this respect.

The presence of light is not the only condition necessary for the development of chlorophyll ; temperature is also of importance, and M. Böhm found that blanched plants would not turn green unless the Centigrade thermometer indicated from 7° to 11°.7. Moreover, all kinds of light are not equally effective, for although chlorophyll will be more or less produced in light of all colours, yet the yellow rays are much the most active in bringing about this result. If the illumination is too brilliant it has a deleterious effect, and if long continued destroys the chlorophyll.

The importance of chlorophyll to plant life will be duly appreciated when it is considered that it is by means of it that the plant obtains by far the greater proportion of the carbon which enters into the composition of its tissues. This carbon is obtained from the small quantity of carbonic acid—about 4 parts in 10,000—existing in the atmosphere. When the enormous quantity of carbon taken up annually by growing vegetation is considered it is somewhat difficult to realise that it is almost, if not quite, all derived from a source apparently so insignificant ; that this is the case there is, however, little room for doubt.

It will be worth while briefly to trace the steps by which the knowledge of this function of chlorophyll was arrived at.

It was first of all ascertained by M. de Saussure that plants grown in a soil composed of variously sized flint pebbles, and watered with distilled water, assimilated during their growth 1.49 grams of carbon, which could only have been obtained from the air. Subsequent experiments, in which plants were grown in water only, gave still more striking results.

In 1749 it had been observed by the Genevese naturalist, Bonnet, that when green Vine branches were placed under water they gave off numerous

bubbles of gas. Joseph Priestley, in 1774, proved that the gas so given off was the then newly discovered element oxygen. This he proved by showing that it restored to air, in which a candle had been burnt out, the property of supporting combustion. Subsequently Ingenhouz demonstrated that the evolution of oxygen took place only under the influence of light; and finally, Sennebier showed that this emission of oxygen only took place when the water in which the plant was immersed contained carbonic acid in solution. Carbonic acid is a compound of carbon and oxygen, and in its decomposition by chlorophyll the oxygen is given off, whilst the carbon is retained and made use of by the plant.

If the plant is to obtain its whole supply of carbon from the atmosphere, it will be conjectured that the action of the leaves on the carbonic acid must be very energetic. That this is actually the case, M. Dehérain shows by means of a well known and very pretty experiment. Two long glass tubes are taken, one filled with fresh green leaves, the other empty. These are placed side by side, and a current of air caused to pass through each of them; after traversing the tubes the air is forced to bubble through baryta water, a substance which forms an insoluble compound with carbonic acid. It is seen that while the air from the empty tube immediately troubles the liquid with a white precipitate, that from the tube filled with leaves produces no effect, the carbonic acid having been all removed in the tube.

The presence of carbonic acid in the air surrounding a plant is absolutely necessary to its existence; if it be removed, the chlorophyll gradually disappears and the plant dies; the same effect is also produced if the quantity of carbonic acid be excessive. Desiccation also destroys chlorophyll, and Van Troostwyck and Lauenburgh noticed that mercury produces a deleterious effect on it, which is counteracted by flowers of sulphur.

As chlorophyll can only exercise its functions in the presence of light it is of great interest to inquire what influence its colour may have upon the action that takes place. Great attention has been directed to this important question, with, however, up to the present time, no definite conclusion.

The reader will no doubt know that the colour of most substances is due to a power which they possess of selecting rays of a certain colour out of the mixture which composes white light, retaining these, and allowing the remainder to pass on. It is these latter unabsorbed rays which reach our eyes, and produce the impression of colour which we ascribe to the body so acting.

The green colour of chlorophyll is produced in this manner out of the seven colours into which daylight may be divided. That body absorbs a considerable portion of the red and orange, some of the yellow, and all the blue, indigo, and violet rays, allowing the green and a portion of the yellow to pass unaffected. The question here presenting itself for investigation is, whether the action of chlorophyll in decomposing carbonic acid is due to the light so absorbed?

M. Dehérain states that this is so, and says further, that the active rays are those absorbed in the orange and red. This opinion has been put forward by M. Lommel, whom Dehérain quotes; but his conclusion is pronounced to be incorrect by Sachs, who rests his opinion on certain experiments made by Pfeffer and himself, which certainly appear to be pretty conlusive. He points out that the greatest effect is produced by the bright yellow rays, which are only slightly absorbed by chlorophyll, and proves, moreover, that a beam of light which has passed through a thick layer of a solution of that substance in alcohol, and has so been sifted, as it were, from all rays which it is capable of retaining, was still able to excite the decomposition of carbonic acid by green leaves. It seems, then, unlikely that the absorbed rays are the active agents, especially as the green solution of chlorophyll is incapable of decomposing carbonic acid, although it absorbs light in the same way as when *in situ* in the leaf. The view has lately been advanced, that the colouring matter acts as a screen to protect the active matter from injurious rays of light. It must, however, be remembered that it is evident that light exercises some direct agency, as the process will not go on in the dark.

The action of chlorophyll on carbonic acid being thus briefly considered, we may next ask how it is that this gas penetrates the leaves, so as to come in contact with the chlorophyll cells which are to decompose it.

Gases are capable of passing through thin plates of porous matter, such as graphite or plaster of Paris, in which case they penetrate by means of the minute tubes formed by the pores, and also through certain apparently homogeneous solid substances, such as indiarubber; but the rate at which they move in each case is very different. The velocity with which gases flow through porous bodies into a vacuum is governed by a definite law, discovered by Thomas Graham, and which is thus expressed:—Gases pass through porous septa with a velocity which varies inversely as the square root of their density.

The following table—in which column 1 gives the time in which equal volumes of the gases would flow through a plate of graphite at atmospheric pressure, and column 2 the square root of the density of the gas—will help to make this clear:—

| | 1. | 2. |
|---|---|---|
| Oxygen .. .. .. .. .. | 1.0000 | 1.0000 |
| Atmospheric air .. .. .. .. | 0.9501 | 0.9507 |
| Carbonic acid .. .. .. .. | 1.1860 | 1.1760 |
| Hydrogen .. .. .. .. .. | 0.2505 | 0 2505 |

On the other hand, the passage of gases through membranes such as indiarubber is apparently governed by no definite law, and a glance at the following table will show that the order taken by the gases is very different from that shown in the last; carbonic acid, which was there the slowest, is here the most rapid of all. The velocity of diffusion of nitrogen is here taken as 1:—

| | |
|---|---|
| Nitrogen .. .. .. .. .. .. | 1.000 |
| Atmospheric air.. .. .. .. .. | 1.149 |
| Oxygen .. .. .. .. .. .. | 2.556 |
| Hydrogen .. .. .. .. .. | 5.500 |
| Carbonic acid .. .. .. .. .. | 13.558 |

Let us see how these facts will apply to the question before us. The two faces of the leaves of plants generally differ considerably in their structure. Those of land plants have scattered over their under surfaces a large number of minute openings, known to botanists as stomata, whilst the upper surface is comparatively destitute of them. Does the gas enter by these openings?—or does it diffuse through the unbroken upper surface? When we consider the extremely small proportion in which carbonic acid exists in the atmosphere, coupled with the facts that its velocity of diffusion through membranes is much higher than that of air, while the rate at which it passes through small tubes is much slower, it seems probable that the latter would be the case, and that this is so is proved by some experiments of Boussingault's, wherein he showed that the upper surface of leaves was capable of decomposing more carbonic acid than the lower, in the proportion, in some cases, of four to one.

It may next be asked, What is the immediate destination of the carbon obtained by the plant in these processes? It has been found by means of careful quantitative experiments that plants give off an amount of oxygen practically equal in volume to the carbonic acid which they decompose, and as that body contains its own volume of oxygen it would appear at first sight that this was all set free. The view is, however, now generally adopted that such is not the case; it is thought that the carbonic acid retains half its oxygen, and that the other half of that emitted proceeds from the decomposition of water. M. Dehérain endeavours to trace the progress in the plant of the carbon, hydrogen and oxygen thus brought together, through several reactions, which are by no means certain, to glucose, or grape sugar, which in its turn may be converted into starch. All that we know with certainty about the matter is that according to Sachs starch is the first product formed in the plant from the carbon so obtained, and that, moreover, it is always produced in the chlorophyll cells primarily, although much of it is afterwards transferred to other parts of the plant.

It has been previously stated that the presence of carbonic acid in the atmosphere is necessary to the life of plants, but certain experiments of M. Corenwinder's, quoted by M. Dehérain at the end of his second lecture appear to show that portions of large trees may be deprived of this gas without suffering material injury. The following experiments are quoted:—A Rose tree placed in an atmosphere deprived of carbonic acid died. A Fig tree branch, under the same conditions, developed itself feebly. A branch of a large Chestnut developed itself completely. M. Corenwinder supposes that carbonic acid was conveyed to the isolated portions of the large trees by means of the sap. This conclusion is, however, inconsistent with certain experiments of Mohl's, which there will be occasion to refer to more fully in a subsequent paper. *P., Rothamsted.*

## BYSTOCK.

The figures we give in our present issue (see pp. 471, 475) illustrate a rockery lately made at Bystock, near Exmouth, Devon, on the estate of J. P. Bryce, Esq. Two years ago more than five acres of ground were added to the pleasure-grounds. A field and a small clay-pit have been transformed into a rockery, comprising waterfalls, ornamental lakes, precipices, and masses of rugged rocks, pierced with caverns and deep chasms, and flowery valleys. The rockery is nearly 200 yards in length, and of proportionate width. Thousands of alpines, Rhododendrons, Azaleas, Ferns, &c., protrude from every available chink or fissure, while a variety of handsome creepers depend from the precipices or are entwined along railings. Masses of trees and shrubs form the background, and also effect the blending so essential where scenes of a different character are to be combined. The background is broken at intervals, and distant glimpses of the sea, Haldon Hills, and the River Exe, give a striking effect to the whole. The work has been entrusted to Mr. R. T. Veitch, whose landscape gardener is Mr. F. W. Meyer, a German artist from the Royal Horticultural College at Proskau, Silesia.

The approach to the rockery is marked by low rock masses protruding from the surface at intervals only; gradually these become more frequent, the plantations more dense, and the rocks more prominent and varied. Rustic steps leads to a boathouse in the shape of a Swiss châlet, and to a grotto apparently hewn out of the rock. An abundance of alpine plants, Ferns, and wild flowers are mingled with the Rhododendrons. A torrent emerges from a thicket, and traverses a deep fissure in the rocks; after crossing it we ascend more rough steps, and find ourselves at the entrance of the great cavern, 70 feet in length. A rough, jagged opening at the base of the cliffs, shaded by an ancient Oak, leads to this spacious chamber studded with stalactites.

Emerging from the cavern by another winding path in the rocks, we find ourselves in immediate proximity to a cascade some 12 feet high rushing over a steep rock, and scattering sprays over the numerous Ferns and other plants protruding from the rocks around. Close at hand are divers pieces of rock, half overgrown by moss, Veronica repens, Saxifraga furcata, Sedum japonicum, &c., which, though rude and irregular, form a series of convenient and natural steps to the higher parts, and conduct us to a précipice towering above the cascade, and affording an opportunity for watching the disappearance of the foaming waters below under a rustic bridge, and the ornamental lake. In looking behind us we observe another piece of water of considerable size, and also the densely planted background, formed of Cedrus Libani, Abies Pinsapo, Pinus austriaca, P. excelsa, P. Pinea, P. Laricio, Picea Menziesii, A. Douglasii, Larix europæa, and others, intermixed with dispersed fragments of rock, and an abundance of wild Ferns and Primroses. Descending on the other side of the cascade by a flight of rude wooden steps with a rustic railing the rockery seems to be interrupted, a few scattered blocks projecting from the turf being the only indication of its course; soon, however, we have another picture before us, for at the extremity of the lake begins the "Lower Rockery."

We ascend a prominent bluff overgrown by Linaria Cymbalaria and Ampelopsis Veitchii, and observe a deeply formed chasm with Ferns and alpines growing on either side; having crossed a large stone which forms the bridge over a streamlet which emerges from a miniature cavern more rough steps and rustic railings, entwined with Clematis montana and other climbers, conduct us to the "Root Grotto," where a rustic seat invites to rest. The fall near by, though varied and animated, is not so turbulent as the cascade before described; but, owing to a more gentle declivity of the rocks, consists rather of a succession of smaller falls purling over mossy stones and collecting in a rocky basin. Wild flowers and other plants in great variety surround the latter, which is occupied by aquatics, such as Aponogeton distachyon, Jussiæa grandiflora, Nymphæa alba, Nuphar lutea, Menyanthes trifoliata, and many other species. The superfluous water from this little pond passes over a small cave abounding with stalagmites and various Ferns, and, under a boldly overhanging precipice, forms another fall. The effect of this arrangement can be best observed from another grotto. The

water, descending immediately before the little cavern, resembles a transparent sheet of glass, through which the interior of the cave is clearly visible. An interesting fact may here be stated, viz., the natural formation of real stalactites, in addition to those so successfully imitated. The foundation of this little cave is a carefully hidden brick arch, and the constant action of the water on the mortar still further improves the artist's work by a coating of natural deposits. A bird's nest, exposed to the dripping of this water about six months' ago, is already encrusted with the precipitated calcic carbonate.

The following is a list of those herbaceous and alpine plants which have, as we are informed, given the most satisfactory results at Bystock:—Acæna microphylla, Achillea Ptarmica, Alyssum saxatile, Anemone japonica, Aquilegia chrysantha, Arabis albida, Aubrietia purpurea, A. Hendersoni, Campanula turbinata, Catananche bicolor, C. cœrulea, Coronilla varia, Coreopsis lanceolata, Delphinium formosum, Draba incana, Dryas octopetala, Epilobium angustatum, Epimedium versicolor, Erinus alpinus, Erodium Reichardi, Hemerocallis fulva, H. flava, Gentiana acaulis, Iberis of sorts, Lysimachia Nummularia, Œnothera speciosa, Papaver nudicaule, Phlox Nelsoni, P. setacea, P. nivalis, P. verna, Geranium pratense, G. sanguineum, Potentilla of sorts, Geum coccineum, Harpalium rigidum, Primula japonica, Salvia patens, Santolina incana, Saxifraga longifolia, S. furcata, S. oppositifolia, and others; Sedum acre elegantissimum, S. japonicum, and other species; Thalictrum minus, Thrift, Verbena venosa, Veronica alpina, V. repens, V. candida, and numerous other varieties. (*From a Correspondent.*)

Fig. 91.—Entrance to the Cavern at Bystock. (see p. 474.)

## Home Correspondence.

**Hardy Plants and the Past Winter.**—The frosts of January were as severe here as in any part of England. In this parish, on January 16 and 17, 33° and 36° of frost were registered, and the mean minimum of the twenty successive days from the 7th to the 26th was 9°. Snow covered the ground during part of this time, but was all blown into drifts by the gale of the 18th, and the ground left bare. This garden is cold, damp, and exposed, on a clay soil. Laurustinus and all other tender shrubs had been killed by the two preceding winters. Veronica Traversi and Polygonum vaccinifolium, which had survived them, are now all killed, in the same raised peat beds in which Skimmia japonica, S. oblata, Andromeda floribunda, and Azalea mollis are unhurt. Laurels, both common and Portugal, are killed to the ground in exposed situations; but Aucubas, green and variegated, have suffered very little. Berberis Darwinii is much crippled; Berberis japonica and B. dulcis have not lost a leaf. Hardly any herbaceous plants have suffered at all. Meconopsis nepalensis has proved quite hardy; six plants, last year's seedlings, planted out in autumn, on rockery and flat bed, look stronger and healthier than those wintered in frames, and have never lost their leaves; but Senecio pulcher loses its leaves and the crown dies. I find it a difficult subject to grow out in winter. Onosma taurica, Boykinia major, the Japanese variety of Dracocephalum Ruyschianum, all new to my garden, are growing well. Arnebia echioides, planted out on a rockery as soon as I got it in December, is making strong shoots. Cyananthus lobatus and Linaria pallida, which I got last summer and thought had disappeared forever in autumn, have both appeared again. Primula rosea, raised by hundreds from last year's seed, is in flower everywhere, being one of the few flowers which have resisted these bitter east winds and 13° of frost, the flowers of P. denticulata being dried up. Seedlings of that new pretty biennial, Sempervivum Umbilicus, though planted out quite late in autumn, are all thriving: and I see Delphinium nudicaule alive. Alpine Campanulas look well; they include C. Barrelieri, C. isophylla, C. muralis, C. Allioni, and C. alpina; the latter, sent for from Switzerland as the true species, is hardly ever to be obtained in England, a large variety of C. rotundifolia being substituted for it. On a limestone rockery I am surprised to see Mazus Pumilio and Mimulus Harrisoni alive: and in a store bed the seedlings of hybrid Lobelias (between L. syphilitica and L. cardinalis) are all well, though L. cardinalis never survives a winter here in the open ground. The plants with which I have most difficulty are the evergreen or shrubby alpines. Androsaces I never expect to keep; but such plants as Lychnis Lagascæ, Calandrinia umbellata, Linaria alpina, though they do not mind cold, cannot endure the repeated slop of melting snow when not growing, and I find them very difficult to keep through winter out-of-doors. *C. Wolley Dod, Edge Hall, Malpas, April* 3.

**Peach Trees at Ardgowan.**—Splendid examples of the above are to be seen in the gardens here, as well as showing the very great advantage of training on the extension system compared with the old plan of annually cutting back young trees to obtain the desired specimen. Planted two years ago, with five or six shoots of perhaps 12 or 18 inches in length, they now individually cover on an average 150 square feet of trellis, and the one is an exact counterpart of the other. The wood is of the kind desired and bristling with flower-buds; this, too, in the dripping West, where the sun seldom shines, and where the rainfall averages 7 feet per annum. These trees—to say nothing of the many fine things to be

seen here, are worth a journey to see, and should any of your Southern readers think of crossing the border next autumn for the annual outing, I am sure they will be pleased with a visit to Ardgowan, and will say, with your humble scribe, that yonder there is food for reflection, and last, but not least, that a master of his profession is in charge of this princely garden establishment on the banks of the Clyde. *Visitor.*

**Protecting Roses.**—Anent Roses and Rose protection a good deal has been said at one time or another, and it is somewhat curious that remedies that succeed in one locality fail in another. I planted a new rosery here last autumn over three-quarters of an acre in size, and the method of protection adopted has turned out so satisfactory that I venture to think it may be useful to record it. I may state that from unavoidable reasons the ground was on the wet side when the Roses were planted, which caused some apprehension of danger when the storm set in. After planting the beds were surface mulched with rotten manure, and upon the advent of the great frost I despatched men to the woods to collect dry bracken, which was pressed on the surface of the beds several inches in depth, after which a second covering was laid loosely over and among the branches. I left one bed as an example without any protection, and the result is such that I do not think a dozen plants out of the whole bed will survive. The Teas I had not the courage to plant out, but had them potted up and plunged in coal-ashes behind a north hedge, working in a couple of inches in depth of dry leaves all over the surface of the pots. In addition to this they were protected overhead with mats, and are now breaking away without a single blank. I shall not plant out before the wind changes from the north-east—that is, if it is going to change this year. Established Roses, both standards and dwarfs, have been badly cut up, many killed outright, and my opinion is that there is little need of any difference between the Rose reformers as to whether Roses should be worked upon the Brier or Manetti or upon their own roots. I believe the mortality among Roses generally has been great, and I predict a ready market for the next couple of years for Roses grown upon any stock as well as upon their own roots. *W. Hinds, Canford, Dorset.*

**Azara Gilliesii.**—This Azara stood out uninjured here during the past four winters. It does best as a climber against a wall with a south aspect, so that it may get as much of the sun as possible to get the wood fully matured; otherwise the unripe growths will be injured if not killed by the first severe frost. It is a strong grower, and will cover a given space as soon again as the pretty A. microphylla will do. *T. Ryan, Castlewellan, Co. Down.*

**The Deodar.**—My experience of Cedrus Deodara quite coincides with that of "H. K.," as in few places have I seen a plant of it that has looked at all happy unless it happened to be in an exceptionally favoured situation, and I am of opinion that its merits as an ornamental tree have been greatly over-rated, and that it is only fit for planting where it can get thorough shelter from wind, which in spring injures the young tender growth as to render the branches quite shabby. This is always more or less the condition of it in exposed positions, as the sered and shabby foliage clings to it all the season; but where it escapes this disfigurement its silver-grey colour, and the gracefully pendulous branches, give it a value that few others possess, as it shows up in pleasing contrast in pleasure grounds with those of stiff habit and more sombre hue. *J. S.*

**Calanthes at Ardgowan.**—These fine winter-blooming Orchids are extensively grown here, a whole span-roofed house being annually devoted to their culture. A few plants of the double and single Poinsettias are stuck irregularly amongst them, and the roof festooned with that charming winter-flowering plant, Euphorbia jacquiniæflora, which makes a most interesting spectacle during the dull months of the year. *Visitor.*

**Abutilon Sellowianum marmoratum.**—I am surprised that your correspondent, "J. S." (p. 440), places so little reliance on the hardiness of this Abutilon. He asserts that it only does well under glass, which is quite the opposite to what I have experienced of its behaviour planted out in the open garden. Ever since its introduction in 1874 I have grown it in quantity in preference to A. Thompsoni, finding it much superior to that variety in its bolder foliage and richer variegation. Altogether I consider A. Sellowianum marmoratum the very best of the ornamental foliaged Abutilons, standing well planted out, and upholding a brilliant and lasting effect till late in autumn, not even succumbing to a few degrees of frost. As "J. S." has most fittingly remarked, the Abutilon associates very effectively with Cannas. Strong plants planted with the dark-leaved varieties, such as C. nigricans, C. Adrian Rolenii, which is an upright-growing narrow-leaved variety, attain to large proportions in rich soil, and are surpassed in effectiveness by but few plants which can be brought in combination. For brilliancy throughout the season I find Abutilon Darwinii tessellatum a richly marked variety, which is also effective when planted out, and it is much dwarfer than A. marmoratum, and so floriferous that as a winter-blooming plant it is very serviceable, and worthy of attention on that account. *G. Westland, Witley Court.*

**Hardy Primulas.**—It is not pleasant to find a genial chat about Primroses, such as "Dietes" has indulged in at p. 429, marred by a slap at the florists, those unfortunate beings who, whilst doing so much for flowers—more than any other horticultural section has done—are yet constantly finding themselves exposed to the sneers of a certain class of writers. I know something about seedlings and varieties of the Primula Sieboldii, and especially of its "torn-edged" progeny, and have raised, perhaps, as many of them as any one else, but I must say that it is absolutely ridiculous to charge upon florists the fault—if fault it be—of producing the laciniated-edged kinds. I have found these and smooth-edged kinds have come from unfertilised flowers indiscriminately; and if Primula Sieboldii (amœna), the well known red kind, is the true original species, it must be obvious that the first of its products were smooth and rough-edged flowers alike. After many trials I found that this Japan Primrose will not cross with other kinds. All attempts in that direction failed. What seed came from time to time was solely the product of Nature, and the florist had no more to do with it than the insects, probably not half as much. Special efforts on the part of these restless hybridising florists might be supposed likely to lead to different results. That, however, has not been the case. I have had seedlings almost exactly duplicates of those obtained by Mr. Allen, of Shepton Mallet. I have found laciniated white and smooth-edged white, and the same of coloured kinds, come from uncrossed flowers indiscriminately; so that whatever blame may be due for the production of these horrid white and "torn-edged" flowers must be given to Nature and not to those yearning souls, the florists. But if it is shocking to find torn edges in the Japan Primrose why not also in the Chinese Primrose? With these latter the fimbriated edge is like modesty in a maiden—it is at once beauty and glory. And yet we believe that the original sinensis was a very inferior smooth-edged flower, and that the torn edge—heaven save the mark!—is but the product of higher culture and natural development. Who finds fault with the Chinese Primrose because it has not only these elegantly laciniated edges, but also white flowers? Yet the florists in this case also have washed out the colour of the original species—what a colour it was, too!—and have got a fimbriata alba—ay, and many other colours; and further, if they have got a white kind or several white kinds, they have gone in the other direction as far as possible, and have produced some rich reds, madders, purples, and almost crimsons that are indeed glorious. Perhaps "Dietes" has not seen some of the more recent seedlings raised from Primula Sieboldii, and is therefore unaware that in laciniata we have even more depth of colour than is found in the original kind, and in purpurea and Ophelia deep shades of purple that are both distinctive and beautiful. It is not all washing out that has been done, although three-fourths of seedlings in all cases will be found to revert to what seems to be the primitive sin of this Primula—the having a pale face and a reddish hue behind. The illustration of the Forget-me-not does not apply to Primroses. The pretty pale blue tint of the flowers is sentimentally associated with the Myosotis, and any white form seems to violate that sentiment. Pretty as the pale "washy" wild Primrose blooms are, however, there is no sentiment violated when we create kinds that have blooms of the purest white or the deepest crimson—the greater the variety of hue the better. The same holds good of Primula Sieboldii; and very thankful should we be that in this fine Japan species we have found a Primrose that will give us something more than that eternal sameness which comes from most other species. *Alex. Dean.*

**Effect of the Past Winter on Trees and Shrubs.**—If the intense severity of the past winter has demonstrated anything in respect to the title of so-called hardy plants it is that the Camellia should take a higher place than it does as an ornamental shrub out-of-doors in the South of England if not further north. After three such winters as we have passed through the hardiness of the Camellia should be established to the satisfaction of every one having opportunities of judging from the condition of plants that have survived such exceptionally severe weather. That the Camellia is hardier than the Sweet Bay there can hardly be a doubt. After the winters of 1877-78 and 1878-79 a great many Bays were more or less severely injured here, while a group of Camellias sustained comparatively little injury. The sunless summer of 1879 and the excessive rainfall as well contributed in no small degree to the mortality among tender shrubs the winter following. And yet notwithstanding that the summer of last year was all that could be desired and the wood of all kinds of trees was thoroughly ripened, we have actually more deaths to record than took place during the two previous winters taken together. Of course the chief loss is the Sweet Bays, of which there are few living plants left, and this without exception of plants either large or small and irrespective of soil or situation—of plants that have been transplanted within a recent date or of those that have not been moved for years. Apart from this our losses are comparatively insignificant considering the duration of the storm, which can hardly be said to have yet passed away with a keen north-east wind blowing and the temperature several degrees below freezing-point nearly every morning. But to return to the Camellias which have defied the weather. Why should we not plant them more largely out-of-doors in sheltered situations? I believe if we only had the courage to test the hardiness of a good collection out-of-doors a rich display would be obtained in mild seasons, while at the worst the greatest loss that need be dreaded would be the blooms. The Camellia is so well adapted for grouping in beds in well-drained, sheltered situations, and being hardier than many things that we grow out-of-doors under the name of hardy plants, that it is a wonder its superior claim as a decorative shrub should not have been substantially asserted before now. The fine Magnolias (Magnolia grandiflora) upon the Magnolia wall here have suffered less than in the two previous winters, as also the Hydrangeas at the base of the wall which are breaking away with sufficient vigour to give hope of their soon being restored to their normal condition. Laurustinus have suffered a good deal in all situations, and Berberis Darwinii has been crippled also, but in a less degree than the Laurustinus. A plant that has stood better than I expected is Leycesteria formosa, which is a very useful decorative autumn shrub, and which has not suffered anything like permanent injury. Among Conifers nothing has suffered any appreciable injury except Abies lasiocarpa; and even this rather tender variety I am glad to say sustained nothing more than passing injury. Of dwarf shrubs, such as have only recently been recommended for winter bedding, it would be profitable to know how the Silver Euonymus and such-like have weathered the storm. Here Euonymus elegantissimus variegatus has melted away, and I doubt not that many other varieties have shared the same fate. Of course, Euonymus radicans variegatus is hardy and weather-proof everywhere. *W. Hinds, Canford, Dorset.*

**Hardiness of Chamæpeuce diacantha.**—Without ocular demonstration of the fact, many of your readers will, I presume, be somewhat reluctant to believe that this so-called subtropical plant is quite hardy. They need not, however, have any misgivings on the point, but may at once relieve their minds of all doubts in the matter. We have at the present time in an open border three plants in a healthy growing state which have passed through the late severe winter without any protection whatever, and lest the reader should think that the winter here was comparatively mild, I may as well say that on one occasion we registered zero. The plants in question would, I believe, have escaped my notice entirely had it not been for one of the men who was digging over the border calling my attention to them by saying, "Measter, be yo goin' to save these ums?" I need hardly say that they certainly will be saved, and that we shall look forward to their flowering in the summer with much interest, to see if they will ripen their seed. *J. Horsefield, Heytesbury, Wilts.*

**Celery.**—If Celery possesses half the virtues that have been ascribed to it it ought to be more largely grown and used, as it has been said that it will not only cure rheumatism but nearly all the ills that flesh is heir to. This, however, is very doubtful, but certain it is that it is a most wholesome vegetable, especially in a cooked state, and is almost indispensable in the kitchen for flavouring soups, &c., as also in the salad-bowl when Lettuce are scarce. For using in the last-named way, the smaller-growing sorts, such as Incomparable or Sandringham, are the best, they being tender and crisp; while for cooking the larger kinds are the most desirable, and among these Major Clarke's Solid Red, Manchester Red, Cole's Crystal White, and Grove's Giant White may be mentioned as being as good as any; as they are not only large but solid, which is a great thing in Celery, as some sorts are hollow and pipy, and such do not cook or eat well. To have Celery really fine, seed must be sown early in April, and the plants nursed on without check from the time they are up till they are turned out in the trenches, as a stint is almost sure to cause them to "bolt." In cases where many are grown the best way is to make up a dung-bed on which to place a frame, when the seed may either be

sown broadcast or in drills in rich light soil, and as soon as the plants are large enough to handle they should be pricked out on a gentle hotbed and kept close for a few days to give them a start, after which air will be necessary to keep them from drawing. Another important point is to sprinkle or water the plants daily with tepid water, as a want of this causes more failures than anything else, especially during the early stages, when it is the most felt. Celery being a shade-loving plant, it is a good plan to have the trenches between rows of Peas, which is not only beneficial to the Celery, but also to the Peas by giving them more room, whereby the yield is considerably greater, as the rows get plenty of light and air on both sides. When tall Peas are grown 10 feet is the proper distance apart to allow space for the Celery, and for shorter kinds 7 to 8 feet is sufficient. In digging the trenches it should be borne in mind that there is nothing gained by having them ditch-like in depth as some do, nor more than 1 foot wide, which is quite enough, but what they should have is plenty of manure, which should be short and thoroughly rotten, and well mixed up with the soil at the bottom. This done the plants may then be put out at 9 or 10 inches apart, in doing which great care should be taken to lift them with good balls that they may be transferred without feeling the move. As soon as planted the next thing is to give a good soaking of water to wash and settle the soil about the roots, and if the weather should happen to be very sunny and dry it will be advisable to stick a few Laurel branches along the side of the row to afford a little shade till the plants get a fresh hold, after which frequent soakings of liquid manure will be of great benefit up till the autumn, and on no account must they suffer at any time from want of plenty of moisture. To facilitate the earthing-up I always like to run a strand of matting round each plant during the summer, as it keeps the leaves up close together, and the earthing can then be done quickly without the soil getting into the hearts, as is often the case when the plants are not tied. Celery required to stand the winter must be banked up high, or frost will spoil it, to prevent which in severe weather it is necessary to cover the tops of the rows with straw or other material, or the leaves get so injured as to cause them to rot. *J. S.*

**Herbaceous Plants.**—If the present state of the weather continues much longer I fear there will be some disappointment felt among the ranks of herbaceous plant growers, at least among that section of them who expect fine flowers cheap. Here is the sum total that we can mention out of a whole garden which is in the best possible condition and the plants without exception being in the most robust health :—Lilac Primulas (very pretty, I admit), several varieties of Narcissus, of which the Emperor, N. cernuus pulcher (straw) and N. Telamonius (deep yellow) are the best. The most attractive plant in the garden is Anemone stellata fulgens, next to this a very handsome Primula, which would make an excellent plant for grouping in small beds. Tulmonaria virginica has been in flower for over three weeks, but I fear a bouquet of its flowers would not startle a lady in the drawing-room. Aubrietia purpurea grandiflora, Arabis albida, and Muscari racemosum pallens are all neat little border plants (the two former would do for a rockery), or they may be massed in beds with good effect : but such things are out of the question for cut flowers. Dielytra spectabilis, covered with hand-lights at night, are the most promising things that we have, but at the most favourable calculation it will be another six weeks before we can expect any relief from the herbaceous garden in the way of cut flowers. Will any one be good enough to mention a few really good things that are now in flower, and a few others that would succeed them for cutting during the spring months? Or is it true, after all, that there are very few herbaceous plants worth much for supplying cut flowers? My experience of them is that they are mighty dear at the price. *H. C.* [Some of the Hellebores are showy, and produce flowers very freely. Eds.]

**Fumigating.**—If "J. S.," who finds fumigating so disagreeable, will take one ounce of saltpetre and thoroughly dissolve it in half-a-pint of boiling water, and in this steep a pound of tobacco, and then dry the tobacco, he will find that he can put it in a bottom-pan, and by simply lighting with a fusee or a red-hot cinder he may stand outside his house and watch it burn, which it will do effectually and without any fear of blazing, or any ill-effects from the use of the saltpetre. *Thos. Woodford, Quex Park, Margate.*

**New Inventions.**—The repeated failure of fruit crops on open walls has been the means of bringing into use various protecting substances, with greater or less success according to the skill displayed in their application and the nature of the material employed. These contrivances usally entail a considerable amount of labour in their proper application, and that at a time when the demands upon the gardeners' time are pressing ; consequently coverings are left on when they would be better dispensed with, or left off when a sudden recurrence of bad weather for one night only renders abortive all previous care. In order to remove these and other objections that gardeners have advanced against permanent wall coverings, Messrs. Johnson Brothers & Co., of 6, Waterloo Place, S.W., have introduced an improvement in the shape of a "swing" cover for walls, which they exhibit at the Building Exhibition, Isliogton. These covers are made of iron glazed with Hartley's rolled plate glass on their imperishable system ; they swing upon brackets permanently attached to the wall, and are fitted with lever apparatus, by which means a long length may be opened or closed in a moment. The advantage of this arrangement will be obvious to the practical gardener, who knows the value of warm showers and balmy breezes reaching the foliage in spring ; whilst in case of a sudden change of weather he can render all secure by the simple movement of a lever. The sashes swing upon pivots, and can be securely fixed in any desired position. Along the front are fixed wires, upon which net curtains are hung, thus making the protection perfect. In the accompanytng engraving (fig. 91) A represents the cover in section ; B the elevation when open and netting withdrawn ; C the cover down and netting withdrawn ; D both cover and netting closed.

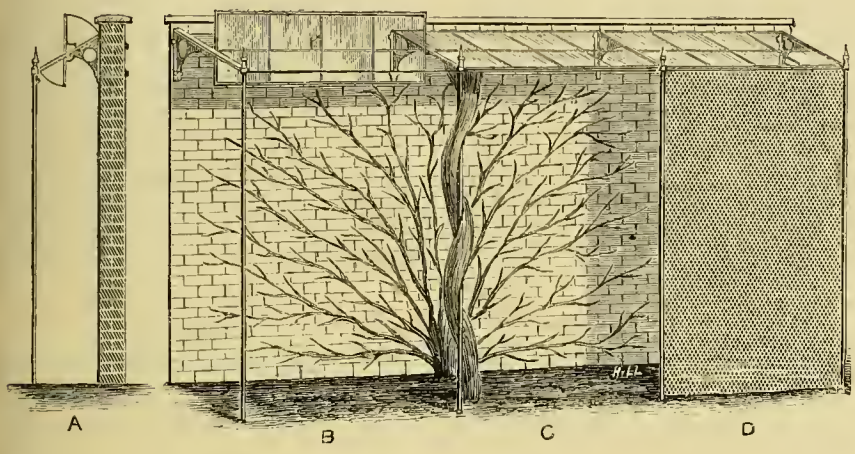



Fig. 92.—Fruit Tree Protection.

**Shading Plant-houses.**—The time of year has now come when the shading of plant-houses is necessary, as already the sun has such a power as to be distressing to flowers and plants, and especially to such as happen to be growing under inferior glass. Of this latter there are various qualities, some of the cheap Belgian being so bad that scarcely anything can live beneath it during the summer, the blisters and wavy surface being such as to scorch and dry up the foliage that comes under its effects. Any one who may be so unfortunate as to have glass of this description will find that the best thing to do is to get rid of it, and to put in some good 20 oz. British, for with all the care that may be exercised in air giving, &c., injury to a serious extent is almost sure to be done. It is just possible, however, that the best make of glass may have blisters or small lenses which have escaped the eye of the builder or glazier, and till such squares can be removed they may be rendered harmless by dabbing over the defective part with a little white lead or painters' knotting, which will dry on hard, and remain for the season. In regard to shading material, I have met with nothing better for houses where choice plants are grown than a soft kind of cotton netting manufactured or sold by Eddy & Co., of Porthleven, Cornwall, which is sufficiently open to break the rays of the sun, and yet lets in plenty of light. Haythorn's hexagon netting is also excellent for the same reason, and is very strong and durable ; and the next best to those mentioned is an article known in the drapery trade as "Strainer," which, if taken care of, and kept as dry as possible, will last for years. The readiest way of using any or all of the above-named shadings is to tack them to rollers, and so run them up and down that they may be only over the glass when absolutely needed, which they will be only, in the generality of cases, from somewhere about 9 in the morning to 3 in the afternoon. It may be stated as a general fact that the more they can be done without the better. The worst of temporary shades is, that they are often up when they should be down, and *vice versâ*, as in the spring, especially at this part of it, the sun plays hide-and-seek, first out full glare, then behind a cloud, taxing the patience of those in charge to the uttermost. It is on this account that some prefer a thin permanent summer shading, and for many things nothing answers better than common fishing-net, which for Melons, Pines and Vines is always sufficient. I am quite aware that most cultivators of these fruits do not shade at all, neither is it necessary in the majority of cases ; but where houses are of iron or lightly timbered, and only a limited amount of air can be given, shade of some kind becomes indispensable or all the moisture is licked out of the atmosphere, and leaves, instead of being healthy and green, soon assume a starved appearance, and become a prey to red-spider. For keeping Grapes plump in hot weather after being ripe I have found ordinary fishing-net a great help, for as the sun traverses the sky, or more correctly, as the earth moves, the meshes are continually shading fresh parts, which prevents the leaves from becoming distressed. For houses containing plants in bloom double thicknesses of the net may be used when the meshes are large and the string fine, but what suits flowers perhaps better than anything else is a thin shading of limewash, through which the light comes soft and mellow, helping them to retain their colour and freshness. We have used this annually for the last twenty years on our conservatory, during which time the saving, as against canvas or any other perishable article of that kind, has been something considerable. Ferns, too, Caladiums, Achimenes, Gloxinias, and plants of that class revel under it, as do also Camellias ; and for these latter it may be put on somewhat thicker. The thing is to get fresh lime in lumps, and to slake it just before using, as then it adheres well, and does not lose its hold till the end of the season. To have it perfectly smooth and free from lumps it should be strained through a sieve and made to the consistency of thin paint or whitewash, when any handy expert man can put it on with a brush ; but this must be done thinly and evenly, and immediately after, before it has time to dry, an ordinary handbrush should be dabbed lightly and regularly over, which will give it the appearance, when seen from the inside of the house, of frosted glass. The best of a lime shade is that it costs little or nothing beyond the labour, and once on it is no further trouble, as when the autumn rains set in and it is no longer needed it leaves piecemeal, or may be quickly washed off when wet by giving it a rub with a hair broom. Summer Cloud is highly spoken of as a shade for plant-houses, but as yet I have had no experience of it ; but a mixture of milk and common whitening answers well, as the greasy nature of the milk causes the whitening to stick. *J. S.*

**Hybrid Rhododendron.** — [Some time since Mr. Sheppard sent us flowers of a beautiful and fragrant hybrid Rhododendron, raised between A. Gibsoni and A. Edgworthii. Anxious to get the opinion of a specialist famed for his knowledge and interest in these plants, we submitted them to Mr. Mangles, who obliges us with the following note concerning them. Eds.]—"The hybrid is, as described, a cross between Gibsoni and Edgworthii. The first of this cross was raised by Ruiz & Co., of Frankfurt, and many years ago described in *Gartenflora*, xiii., p. 86, but I believe described wrongly, under the name R. Sesterianum. The mistake in the description is making R. Edgworthii the female parent. The cross was, I believe, the other way. Since then many similar hybrids have been raised and sent out under

various names, although almost precisely the same thing. I have now about a hundred seedlings of the same cross 3 or 4 inches high, but I doubt if I shall improve upon R. Sesterianum."

## Obituary.

Abbate Montelivo, chief keeper of the library of Nice, died at Nice on February 18, after an attack of apoplexy, having passed his seventieth anniversary. He was the worthy successor of Ignatio Molineri in the knowledge of the Alpes Maritimes, which he knew far better than any one of his countrymen. He was a great friend of the lamented Thuret and of Dr. Bornet. He had also been much connected with Mr. Matthew Moggridge when engaged in the most adventurous trips undertaken with a view of assisting his excellent son, Traherne Moggridge, in his botanical works, by furnishing materials. Abbate Montelivo was said to be the most popular man in the department. I remember a walk with him at the great day of the feast of Catherina de Segurana, when I had the opportunity of seeing what an object of enthusiastic attachment he was. As much respected for his wonderful knowledge as for his unusual urbanity, he will live in the memory of his very numerous friends. *H. G. Rchb. f.*

## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, April 6, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mar. | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 31 | 29.78 | +0.02 | 49.5 | 34 0 | 15.5 | 40.2 | — 3.8 | 29.7 | 65 | E.N.E. | 0.00 |
| April 1 | 29.57 | —0.18 | 53.0 | 33.0 | 20.0 | 42.2 | — 2.0 | 33.6 | 72 | E.N.E. | 0.00 |
| 2 | 29 69 | —0.05 | 51.5 | 36.5 | 15.0 | 41.7 | — 2.7 | 29.8 | 63 | E.N.E. | 0.00 |
| 3 | 29.82 | + 0.08 | 46.0 | 34.0 | 12.0 | 38.6 | — 6.0 | 30.2 | 71 | N.E. | 0.00 |
| 4 | 29.80 | +0.06 | 49.8 | 30.4 | 19.4 | 39.0 | — 5.8 | 29.9 | 70 | N.E. | 0.00 |
| 5 | 29.61 | —0.12 | 50.8 | 32.3 | 18.5 | 40.2 | — 4.7 | 30.4 | 67 | N.E. | 0.00 |
| 6 | 29.62 | —0.12 | 52.2 | 34.0 | 18 2 | 40.9 | — 4.1 | 30.7 | 67 | E.N.E | 0.00 |
| Mean | 29.70 | —0.04 | 50.4 | 33.5 | 16.9 | 40.4 | — 4.1 | 30.6 | 68 | N.E. | 0.00 |

March 31.—Fine bright day. Strong wind. A fine night.
April 1.—Fine day and night.
— 2.—Fine day. Air very dry. A very strong wind all day. A gale at night.
— 3.—A gale of wind early in the morning. A fine but cold day and night.
— 4.—Fine and bright. Upper clouds moving from S.W. Very cold.
— 5.—Fine and bright, with strong cold wind. Air dry.
— 6.—Fine bright day and night. Air very dry.

London: *Atmospheric Pressure.*—During the week ending Saturday, April 2, in the neighbourhood of London, the reading of the barometer at the level of the sea increased from 29.93 inches at the beginning of the week to 29.97 inches by the morning of the 27th; decreased to 29.77 inches by the morning of the 29th; increased to 30.08 inches (the highest in the week) by midnight on the 30th; decreased to 29.72 inches (the lowest in the week) by the afternoon of the 1st; at the end of the week the reading was 29.98 inches. The mean reading at the level of the sea was 29.89 inches, being 0.20 inch higher than last week, and 0.04 inch below the average for the week.

*Temperature.*—The highest reading of the week was 53°, on the 1st, the next highest being 52°.7, on the 29th. The lowest of the seven high day temperatures was 47°.5, on the 30th. The mean of the seven high day temperatures was 50°.7. The lowest reading in the week was 28°, on the 27th, the next lowest was 29°, on the 28th. The highest of the seven low night temperatures was 36°.5, on the 2d. The mean of the seven low night temperatures was 31°.5.

The greatest range of temperature in one day was 24° on the 27th, the next greatest being 21°.4, on the 29th; and the least 15° on the 2d. The mean of the seven daily ranges was 19°.2.

The mean daily temperatures were 37°.6 on the 27th, 39°.5 on the 28th, 38°.8 on the 29th, 37°.6 on the 30th, 40°.2 on the 31st, 42°.2 on the 1st, and 41°.7 on the 2d. These were respectively 5°.1, 3°.5, 4°.5, 6°.1, 3°.8, 2°, and 2°.7 below their averages.

The mean temperature for the week was 39°.7, being only 0°.1 warmer than last week, and 4° below the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo placed in the full rays of the sun were 135° on the 28th, 129° on the 22d, and 128° on the 1st. The least reading was 115° on the 30th. The mean of the seven daily readings was 126°.1.

*Rain.*—No rain fell during the week. The weather was bright with sunshine, but very chilly in consequence of the strong N.E. wind.

England: *Temperature.*—During the week ending Saturday, April 2, the highest temperatures were 58° at Truro, 57°.2 at Birmingham, 56°.9 at Cambridge, 56° at Sunderland, and 55°.2° at Bristol. The least of the high temperatures were 45° at Sheffield, 47°.8 at Bradford, and 48° at Liverpool, Hull, and Leeds. The mean from all stations was 51°.7.

The lowest temperatures were 21° at Cambridge, 22°.4 at Wrottesley, 23°.3 at Nottingham, and 23°.5 at Leicester. The highest of the low temperatures were 32° at Plymouth, 30° at Truro, 29°.4 at Brighton, 28°.2 at Liverpool, and 28° at Blackheath and Sunderland. The mean from all stations was 26°.1.

The range of temperature during the week was greatest at Cambridge, 35°.9, the next in order being Birmingham, 31°.9, Bristol, 30°.4, Truro and Sunderland, 28°, and Wrottesley, 27°.5. The least ranges were Liverpool, 19°.8, Sheffield, 20°, and Brighton, 20°.6. The mean from all stations was 25°.6.

The mean of the seven high day temperatures was highest at Birmingham, 52°.7, the next in order being Truro, 52°.1, Blackheath, 50°.7, Bristol, 50°.3, and Plymouth, 49°.6. The means were lowest at Sheffield, 41.7, Bradford, 42°.2, Hull, 42°.9, and Liverpool, 43°.5. The mean from all stations was 46°.9.

The mean of the seven low night temperatures was lowest at Cambridge, 25°.7, the next in order being Wrottesley, 26°,3, Hull, 26°.9, and Bristol, 27°.9. The means were highest at Truro, 35°.6, Plymouth, 35°.2, and Brighton, 32°.7. The mean from all stations was 29°.9.

The mean daily range was greatest at Cambridge, 26°.2; the next in order being Birmingham, 23°.3, Bristol, 22°.4, and Leicester, 21°.4. The least mean daily ranges were Sheffield, 12°.4, Liverpool, 12°.5, Brighton 13°.1, Bradford 13°.2, and Norwich and Leeds, 13°.6. The mean from all stations was 17°.

The mean temperature for the week was highest at Truro, 42°.6; the next in order being Plymouth, 41°.1, Blackheath and Birmingham, 39°.7, and Brighton, 38°. The mean was least at Hull 33°.6, Sheffield 34°.2, Bradford 34°.3, and Wrottesley 34°.4. The mean from all stations was 37°.2.

*Rain* fell at a few stations; the largest fall was 0.11 inch at Sunderland, and the next largest was 0.06 inch at Sheffield. *Snow* fell on the 29th and 30th at Sunderland, on the 29th at Leeds and Hull, and on the 30th at Cambridge. All these falls were very slight.

Scotland: *Temperature.*—During the week ending Saturday, April 2, the highest temperatures were 50°.9, at Aberdeen, and 50° at Dundee. The lowest of the high temperatures was 43°, at Glasgow. The general mean was 47°.6.

The lowest temperature was 22° at Glasgow and Paisley; the highest of the low temperatures were 25°.5, at Leith, and 25° at Dundee and Aberdeen. The general mean was 23°.9.

The mean temperature was greatest at Dundee, 37°, the next in order being Paisley and Leith, 36°.6, and Edinburgh, 36°. The mean was least at Glasgow, 31°.5. The general mean was 35°.6.

*Rain.*—The largest quantities were 0.15 inch at Aberdeen, and 0.10 inch at Greenock; at Glasgow no rain fell. The general mean was 0°.07 inch.

JAMES GLAISHER, F.R.S.

## Reports of Societies.

**Ealing, Acton, and Hanwell Horticultural:** *March* 30.—Outside the Royal metropolitan societies it would seem as if the Ealing Society is the only one which now keeps alive in the neighbourhood of London a taste for spring flowers. It is true the early spring is not a time of the year when big show plants of the old stock type can be found in good form, but there are plenty of pretty bright coloured flowers to be had, and these—if not grown with all that high-class cultivation which seems so needful to create a show specimen—will yet produce in bulk very charming combinations. The spring show of the Society was held in the spacious Drill Hall at Ealing on the 30th ult., and but for the sharp frost and keen cold wind was favoured by weather of an unusually pleasant kind. Groups of plants are at Ealing a useful feature, and of these there were eight of 72 square feet in extent, and being arranged in equal numbers on either side of the hall produced some very charming banks of colour and foliage. One of the best of local contributors of plant groups, Mr. James Hudson, of Gunnersbury House Gardens, was placed 1st easily. He avoided the ordinary sloping arrangement, and made an informal floral base, out of which sprang tall Palms, Crotons, and Ferns, a quantity of Lachenalias interspersed with Maidenhair Ferns, presenting a neat and pleasing margin. The 2d place was taken by Mr. Joseph Moore, Queen's Walk, Ealing, with a group of good plants, in which foliage unduly predominated; and Mr. Thomas Nye, Ealing, was 3d. Extra prizes were awarded to several other groups. Of trade collections a very nice lot of plants came from Messrs. Fromow & Sons, of Turnham Green; Mr. H. B. Smith sent a grand group of his unrivalled Cyclamens; and Mr. R. Dean Primroses, various hardy Primulas, and Myosotis dissitiflora. The finest six foliage plants were staged by Mr. Hudson, who had Croton undulatus, Kentia australis, Dracæna australis, a very fine plant; Enterpe edulis, Pandanus Veitchii, &c. Mr. Bunn, gr. to E. M. Nelson, Esq., Hanger Hill, was 2d, with Ferns and Palms; and Mr. Nye was 3d with small but admirably grown and coloured Crotons, Dracænas, Dieffenbachias, &c.

Azaleas were prominent features, the best large well flowered pryamidal plants coming from Mr. J. Moore, whilst Mr. C. Brown, of Gunnersbury, had large bushy plants. Cinerarias, Chinese Primroses, Dielytras, and Hoteias, had special classes, and were well represented in them as well as in the groups. Hyacinths were very prominent, the spikes shown in three classes and in an extra collection by Mr. Baker Hays, of Ealing, being all good and put up in excellent style. The 1st prize in the class for six kinds was taken by that exhibitor with General Pellissier, King of the Blues, La Grandesse, De Candolle, Lord Derby, and Macaulay. Captain Tyrrell, Mr. G. Weeden, and others had good kinds. Mr. Hays was also 1st with three pots of Tulips, having Vermilion Brillant, Joost van Vondel, pure white; and Van der Meer, purple-lake. Mr. Jas. Berry, of Goodrest, Ealing, had fine flowers of Keiser Kroon, La Pluie d'Or, and double Tournesol. Some very fine pots of Narcissi were shown, the best coming from Mr. Baker Hays and Mr. Weeden. Several boxes of cut flowers were staged, Mr. Hudson coming 1st with a very handsome lot of blooms, amongst which were Erioste-mon linearifolius, Habrothamnus elegans, Chorozema elegans, Cypripedium villosum, several Camellias, Abutilons, &c. Mr. Hudson also exhibited three good bunches of Lady Downe's Grapes finely coloured and well preserved. To these an extra prize was awarded, as also to some standard Tropæolums and Mignonette exhibited by Mr. Nye. These are the chief features of what proved to be a very charming show, which owing to the fine weather was visited by crowds of people during the day and evening, all of whom seemed delighted to see once more, after a long and hard winter, such pleasing evidences of the return of spring as the flowers within exhibited.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

Ivy on Walls: *C. C.* asks if any one can inform her if there is any way of getting Ivy to stick to a house which is covered with Portland cement, and into which nails cannot be put?

Night-flowering Stock.—Can any of your readers inform me where I can procure seeds of the Night-flowering Stock? I cannot get it from our local seedsmen, who do not seem to know it. *J. King.*

## Answers to Correspondents.

Cucumbers: *One in Trouble.* Yours is the Cucumber disease, for which there appears to be no remedy but that of "stamping out," and starting afresh with clean healthy soil and a purified house.

Dendrobium nobile, etc.: *E. S., Forcett Park.* The growth of the Dendrobium is unusual. The Euphorbia appears to be E. splendens, which always produces flowers like those sent.

Dictionary: *J. McDonald.* A new and improved edition of Johnson's is in the press. You had better wait for that.

Garden Produce Account: *J. C.* We do not know of any book on sale of the description you require. Most of our friends who use such books either get one foolscap size, and ruled to order, or buy one plain and rule it themselves. All you want are columns for the day of the month, the name of the article, the weight, or the measure, the value per pound, or per peck, or otherwise, and the total value of the quantity recorded. For the prices of the different things you must consult the weekly market reports. The most complete garden produce account-book that we have seen is the one in use in the Royal Gardens at Windsor, and that is made specially to order.

Insects: *M. C.* The very numerous and very minute scale insects on the Mango tree appear to be an undescribed species of Aspidiotus. The only Mango coccus mentioned by Signoret is the Vinsomia pulchella, S., described and figured in the *Gardeners' Chronicle*, 1871, under the name of Coccus stellifer. *I. O. W.—J. Ullman.* The weevils you send are those of a common pest in gardens (Otiorhynchus sulcatus). They are most mischievous in plant-houses, and seem to be especially fond of Vines. As they feed at night, and have the singular habit of shamming death when disturbed, they are easily caught by spreading a sheet under the Vines, and

giving the canes a few sharp taps with the hand. Hold plants in pots over a sheet, and treat them in the same way. With a little perseverance you will soon be rid of them.

NAMES OF PLANTS: *W. B.* 1, Anemone nemorosa; 2, Mercurialis perennis, the male flowers. — *P. T. R.* Cupressus Lawsoniana of English gardens = Chamæcyparis Boursieri of foreign catalogues.—*Abies.* Please send larger specimens, packed with a little damp moss. It is impossible to identify Conifers by mere scraps.—*J. McDonald.* Celsia cretica, a very old-fashioned greenhouse plant. — *A.* 1, Lamium purpureum variegatum; 2, Omphalodes verna; 3, Scilla sibirica; 4, Anemone blanda; 5, Daphne Mezereum; 6, a Phlox which we cannot name without flowers.—*W. F.* 1, Petasites fragrans alba; 2, Mercurialis perennis; 3, Polygonum Bistorta; 4, Celsia cretica.—*H. Woodmansey.* Alonsoa incisifolia, Dendrobium cucullatum, and a Begonia in the way of manicata, but very much crushed.—*A. Grant.* 1, 2, varieties of Sparaxis tricolor; 3, Phlebodium sporadocarpum.—*M. H.* Hakea saligna.

PRIMROSES: *J. T. B., Cornwall.* Undoubtedly the argest wild Primroses we ever saw. One flower measured 2 inches across!

SOCIETY OF ARTS: *J. C.* Mr. Truman Wood, Secretary, John Street, Adelphi, W.C.

COMMUNICATIONS RECEIVED: — E. im T. — C. W. D. (best thanks).—R. D. B.—One Who Knows.—B. D.—E. R. C.—F. v. M., Melbourne.—W. R.—J. R. J.—G. M.—J. T. B.—W. W. B.—J. P. J. & Co.—T. L.—F. E.—F. A. W.—J. A.—D. T. F.—W. H. & Sons.—K. & S.—W. M. G. — E. J.—J. B. (we hardly understand your question. Market gardens are not exempt from any local rates, or imperial taxes).

# Markets.

*COVENT GARDEN, April 7.*

A few good samples of new Grapes have reached us this week, barely in time to take the place of old ones, which are now quite finished. Strawberries have sold well at slightly better prices, but as the holidays come on we must expect a quiet demand. There is no improvement in trade generally. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 2 0– 3 0 |
| Grapes, per lb. | 12 0–20 0 | Strawberries, per lb. | 6 0–12 0 |
| Lemons, per 100 | 4 0– 6 0 | | |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Garlic, per lb. | 1 0– .. |
| Asparag., Fr., bndl. | 3 0–25 0 | Herbs, per bunch | 0 2– 0 4 |
| — English, bund. | 8 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Beans, French, p. lb. | 2 0– .. | — Cos, each | 0 4– 1 0 |
| — Broad, per lb. | 1 0– .. | Mint, green, bunch | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 6 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 2 6– .. | Parsley, per bunch | 0 4– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Radishes, per bun. | 0 2– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Rhubarb, per bund. | 1 0– .. |
| Chilis, per 100 | 3 0– .. | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 1 0– 2 0 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| | | Tomatos, per lb. | 0 9– 1 0 |

POTATOS:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 4*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 sprays | 1 0– 3 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Azalea, 12 sprays | 0 6– 1 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Bouvardias, per bun. | 1 0– 3 0 | Narcissus, in variety, 12 sprays | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Pelargoniums, 12 spr. | 1 0– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | — zonal, 12 sprays | 0 6– 1 0 |
| Cyclamen, 12 blms. | 0 3– 0 6 | Primula, double, per bunch | 0 9– 1 6 |
| Daffodils, single, 12 bunches | 2 0– 4 0 | Roses (indoor), doz. | 2 0– 9 0 |
| — double, 12 bun. | 3 0– 6 0 | — red French, per dozen | 3 0– 4 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Stephanotis, 12 spr. | 8 0–12 0 |
| Eucharis, per doz. | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Euphorbia, 12 sprays | 1 0– 3 0 | Tulips, 12 bunches | 10 0–12 0 |
| Gardenias, 12 blms. | 3 0– 9 0 | Violets, 12 bunches | 9 0–12 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | — Neapolitan, Fr., per bunch | 3 0– 5 0 |
| Hyacinth, Roman, 12 sprays | 0 9– 1 0 | — Czar, Fr., bunch | 0 8– 1 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | | |
| — red, 12 blooms | 1 0– 3 0 | | |
| Lilac, Fr., per bunch | 6 0– 8 0 | | |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Ficus elasticus, each | 1 6– 7 6 |
| Azalea, per doz. | 30 0–42 0 | Foliage Plants, various, each | 2 0–10 6 |
| Begonias, per doz. | 6 0–12 0 | Genista, per doz. | 9 0–18 0 |
| Cineraria, per doz. | 8 0–12 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cyclamen, per doz. | 12 0–24 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Cyperus, per dozen | 6 0–12 0 | Myrtles, per doz. | 6 0–12 0 |
| Dielytra, per dozen | 9 0–12 0 | Palms in var., each | 2 6–21 0 |
| Dracæna terminalis | 30 0–60 0 | Pelargoniums, doz. | 18 0–30 0 |
| — viridis, per doz. | 12 0–24 0 | Primula, single, per dozen | 5 0– 6 0 |
| Erica, in variety, doz. | 18 0–30 0 | Roses, various, doz. | 12 0–30 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Scillas, 12 pots | 9 0–12 0 |
| Evergreens, in var., per dozen | 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |


Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

GREEN'S

PATENT "SILENS MESSOR"

AND

"MONARCH" LAWN MOWERS

Over those of all other Makers is universally acknowledged.

They will Cut

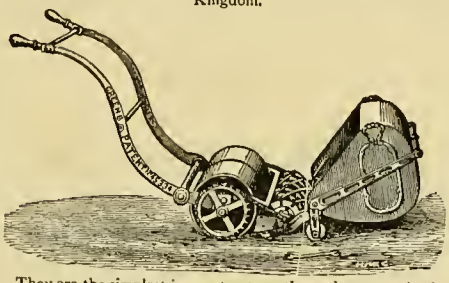
Either Short or Long Grass, Bents, &c., Wet or Dry.

These advantages no other Lawn Mowers possess.

They are the only Mowers which have been in CONSTANT use from 15 to 20 years in the Royal Gardens, Windsor,

| | |
|---|---|
| Buckingham Palace Gardens | The Hyde Park Gardens |
| Marlborough House Gardens | Hampton Court Gardens |
| Royal Horticultural Society's Gardens, South Kensington | The Zoological Gardens, Regent's Park |
| The Royal Botanic Gardens, Regent's Park | The Dublin Botanic Gardens, |
| The Crystal Palace Company's Gardens, Sydenham | The Liverpool Botanic Gardens |
| The Winter Palace Gardens, Dublin | The Botanic Gardens, Brussels |
| | The Hull Botanic Gardens |
| | The Leeds Horticultural Gardens |

And in most of the Principal Parks and Squares in the United Kingdom.



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| | | | £ s. d. |
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| To cut 6 inches. | Can be worked by a lady | .. | 1 15 0 |
| ,, 8 ,, | ,, ,, | .. | 2 10 0 |
| ,, 10 ,, | Can be worked by one person | .. | 3 10 0 |
| ,, 12 ,, | ,, ,, | .. | 4 10 0 |
| ,, 14 ,, | ,, ,, | .. | 5 10 0 |
| ,, 16 ,, | This can be worked by one man on an even lawn | .. | 6 10 0 |
| ,, 18 ,, | By man and boy | .. | 7 10 0 |
| ,, 20 ,, | ,, ,, | .. | 8 0 0 |
| *,, 22 ,, | Two men | .. | 8 10 0 |
| ,, 24 ,, | ,, ,, | .. | 9 0 0 |

* If made stronger, suitable for donkeys, 30*s.* extra.

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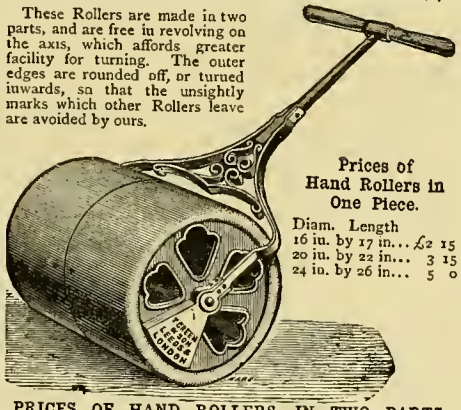

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| 16 in. by 17 in. | £2 15 |
| 20 in. by 22 in. | 3 15 |
| 24 in. by 26 in. | 5 0 |

PRICES OF HAND ROLLERS IN TWO PARTS.

| Diam. Length. | £ s. d. | Diam. Length. | £ s. d. |
|---|---|---|---|
| 16 in. by 17 in. | 2 15 0 | 24 in. by 26 in. | 5 0 0 |
| 20 in. by 22 in. | 4 0 0 | 30 in. by 32 in. | 9 0 0 |

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Price LISTS free on application.
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100 choice Zonal, 24s.
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The above are in small pots, strong stuff, and true to name.
1000 CUTTINGS of assorted Zonal, Bronze, Tricolor, Silver, Fancy, Flowering, all true to name, for £5; packing free, or 100 for 12s. Terms cash.
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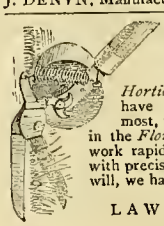

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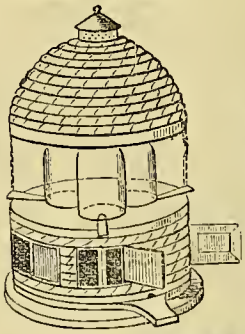

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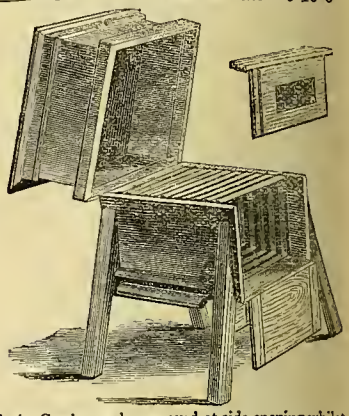

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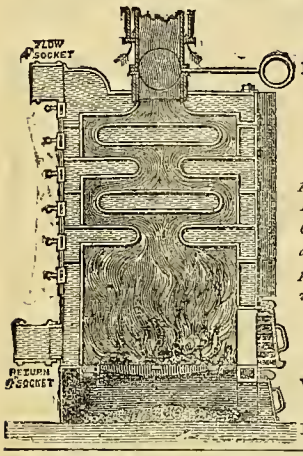


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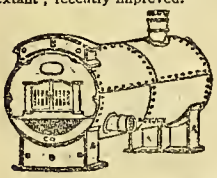

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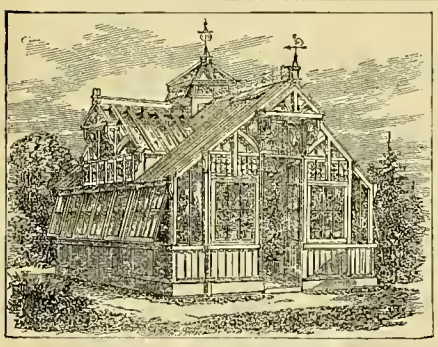

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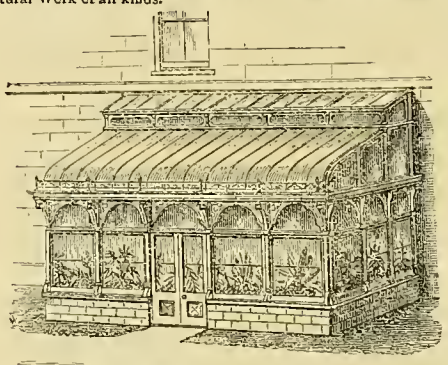

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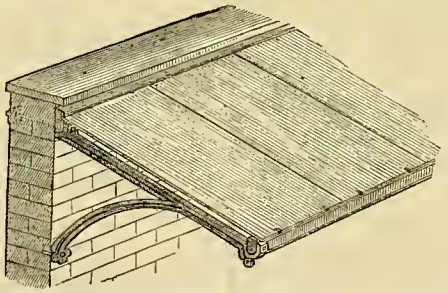

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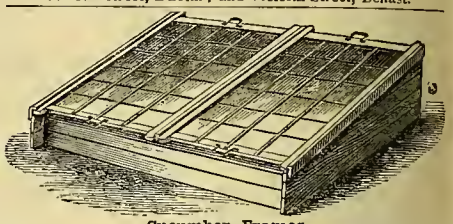

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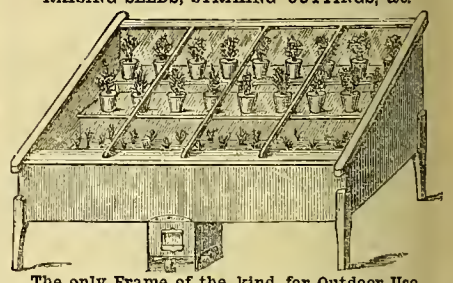

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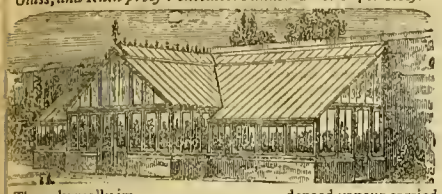

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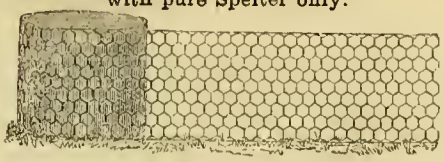

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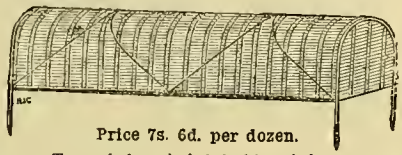

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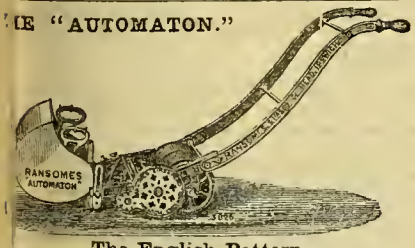

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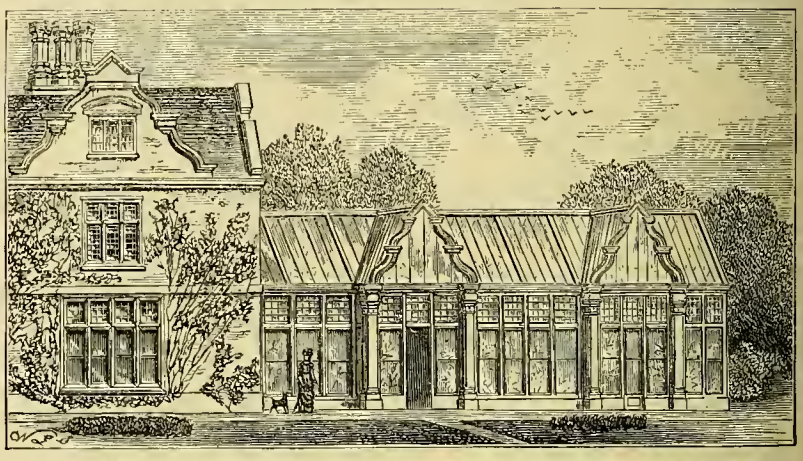

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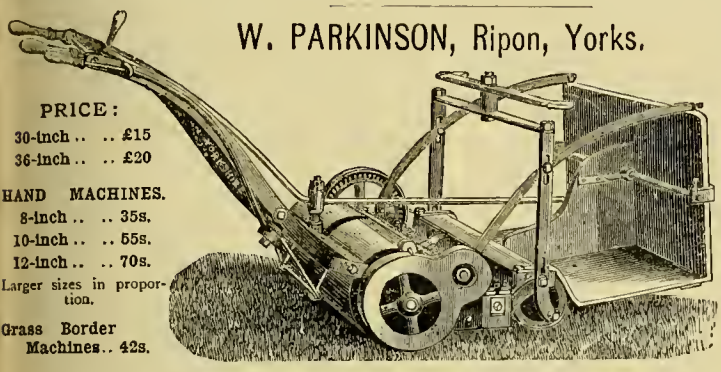

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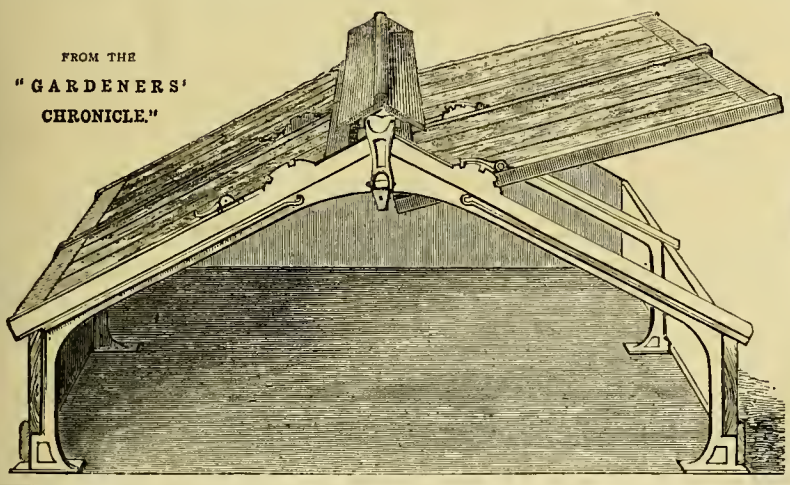

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H. UNDERHILL, Town Clerk.
Town Hall, Wolverhampton, March 31, 1881.

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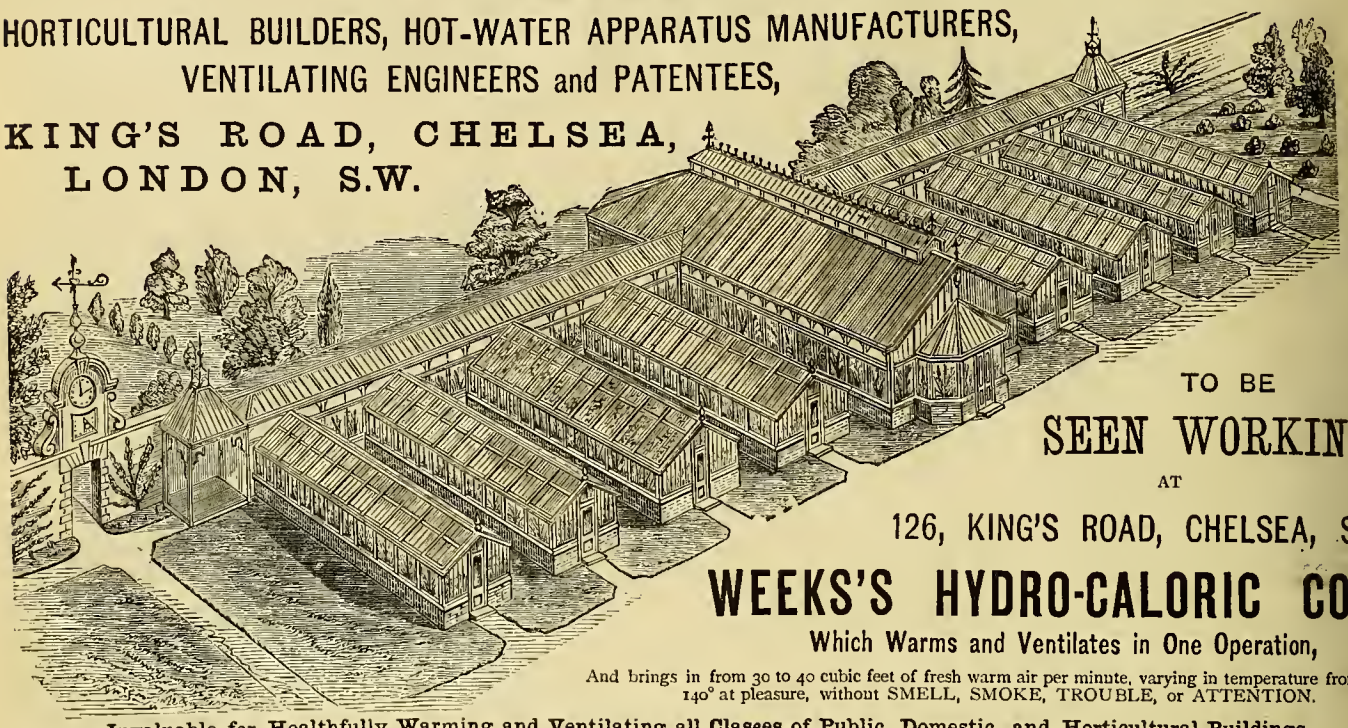

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Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 381.—Vol. XV. { New Series. } SATURDAY, APRIL 16, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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*IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not forwarded, but are sent at once to the Returned Letter Office.*

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
The NATIONAL AURICULA SOCIETY will hold its Annual EXHIBITION of AURICULAS in the Conservatory of the Royal Horticultural Society at South Kensington, on TUESDAY, April 19. Band of the Royal Horse Guards (Blue) from half-past 3 o'Clock P.M. Doors open at 1 o'Clock. Admission, 1s.
N.B.—The Rev. Francis D. Horner will deliver a Lecture on the Auricula in the Conservatory, commencing at 3 o'Clock P.M.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
EXHIBITION of SPRING FLOWERS, WEDNESDAY, April 27, at 2 o'Clock.
SUMMER EXHIBITIONS, WEDNESDAYS, May 25 and July 6.
EVENING FÊTE, WEDNESDAY, June 22.
Tickets to be obtained at the Gardens only by Vouchers from Fellows of the Society, price during April, Spring Exhibition, 2s. 6d.; Summer Exhibitions, 4s.; Evening Fête, 5s. each.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1881, will Open, as usual, the Friday before Whit Sunday (June 3). INTERNATIONAL HORTICULTURAL EXHIBITION of 1881 will Open on August 24. THREE THOUSAND POUNDS in PRIZES at the above Exhibitions.
For Schedule, &c., apply to the undersigned.
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PLATYCERIUM GRANDE.
The undersigned have some fine specimens to offer. Price on application to
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WANTED, a large quantity of strong HOLLIES. State height and lowest cash price delivered at Withington Station, G. W. R., near Hereford. Address
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## SALES BY AUCTION.

**Preliminary.—Ryde's Hill, near Guildford.**
CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by W. Whitley, Esq., who is leaving the neighbourhood, to SELL by AUCTION, on the Premises, on TUESDAY, May 10, the whole of the valuable collection of STOVE and GREENHOUSE PLANTS, 7000 Bedding Plants, 4 Half-bred Alderney COWS, capital LANDAU, well-made WAGGONETTE, CARTS, 100 Head of POULTRY, and numerous effects.
Catalogues (when ready) at 8, New Broad Street, E.C.

**Hardy Plants and Bulbs, Camellias, &c., from Ghent.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, April 20, at half-past 12 o'Clock precisely, a consignment of choice named CAMELLIAS, nice healthy plants well set with bloom-buds, and PALMS from Ghent; Standard, Pyramid, and Dwarf-trained FRUIT TREES, GOOSEBERRY and CURRANT BUSHES, RASPBERRY CANES, Ornamental Flowering TREES and SHRUBS, CARNATIONS, PICOTEES, PINKS, PÆONIES, PHLOXES, and other Hardy Herbaceous Plants; Choice GLADIOLI, LILIUMS, TIGRIDIAS, and other Bulbs, &c.
On view morning of Sale, and Catalogues had.

**Valuable Importations of New and Rare Orchids.**

MR. J. C. STEVENS has received instructions from Mr. F. SANDER, St. Alban's, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, April 20, at half-past 12 o'Clock precisely, new and rare ORCHIDS, consisting of Ponthieria maculata, Epidendrum tovarense, Epidendrum palpigerum, Cyrtopodium punctatissimum, a very extensive lot of the beautiful Lælia furfuracea, in finest condition; Cattleya Mendelii, splendid masses of Lælia anceps, a very large lot of Odontoglossum Pescatorei, and a specially fine consignment of Oncidium prætextum in grand varieties (this Orchid is in reality finer than curtum); together with a large lot of Odontoglossum luteo-purpureum. Also a splendid consignment of Odontoglossum vexillarium in very finest varieties, and other importations, &c.
On view morning of Sale, and Catalogues had.

**Flowering Orchids.**

MR. J. C. STEVENS begs to announce that he has fixed the following days for SALES of ORCHIDS in flower or bud:—

| | |
|---|---|
| TUESDAY, April 26 | WEDNESDAY, July 13 |
| TUESDAY, May 10 | FRIDAY, August 5 |
| FRIDAY, May 20 | WEDNESDAY, August 24 |
| WEDNESDAY, June 1 | FRIDAY, September 16 |
| WEDNESDAY, June 15 | |
| WEDNESDAY, June 29 | FRIDAY, October 14 |

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

**Notice.**

MR. STEVENS' NEXT SALE of FLOWERING ORCHIDS will take place on TUESDAY, April 26, and he will be glad to know of ENTRIES as soon as possible, and not later than Tuesday, April 19. The plants will be *on view* on the afternoon of the day before, in the New Auction Room, and should be sent in, if possible, on the morning of Monday, before 12 o'Clock.
Auction Rooms and Offices, 38, King Street, Covent Garden, London, W.C.

**Masdevallia Wagnerlana.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander, of St. Alban's, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, April 28, at half-past 12 o'Clock precisely, a splendid consignment of
MASDEVALLIA WAGNERIANA.
Professor Dr. Reichenbach writes:—"This fine little gem has just been introduced by Mr. F. Sander; no one may be so satisfied by the fact as I am, since I had the honour of being very often asked whether my new Masdevallia xanthina was not old Masdevallia Wagneriana." The plants were imported some time since, and may be considered established.
CYPRIPEDIUM VITTATUM BREVE,
—a splendid new Cypripedium: see drawing.
ODONTOGLOSSUM CONSTRICTUM,
—the most magnificent consignment of this beautiful Odontoglossum which could possibly be seen. Masses with more than 100 bulbs are among the importation. This is an extremely rare Orchid, and is one of the most valuable Odontoglots.
CATTLEYA TRIANÆ,
in splendid condition, and altogether a grand lot, each plant being described by Collector.
ODONTOGLOSSUM ALEXANDRÆ,
one of the finest consignments ever imported, and in finest varieties.
May be viewed the morning of Sale, and Catalogues had.

## SUNNINGDALE NURSERY.

*To Gentlemen Seeking a Pleasant Healthy Occupation.*

To Nurserymen wishing to Enlarge their Business.

**To Gentlemen's Gardeners with Means.**

THE DIRECTION of the SUNNINGDALE NURSERY, established and successfully conducted by CHARLES NOBLE, must now, owing to the age and failing health of the Proprietor (who has no son to succeed him) be delegated to more robust hands, and he is prepared to entertain proposals for importing into the business new energies, either wholly or in part. The Grounds are extensive, over two-thirds being Freehold, and one-third Leasehold, to run some time, with little chance of objection to renewal. The situation is one of the very best in England (only a few minutes' walk from a railway station); it contains within itself every kind of soil, from heavy loam to peat and pure sand; and the neighbourhood is admitted on the highest authority to be one of the most healthy positions in Great Britain. The owner is prepared to consider any *bonâ fide* proposal, either from one or more persons, and every reasonable facility will be given to persons of moderate means. Skill and enterprise will be taken into account, and as favourably considered as mere money value. The business is capable of extension, or can be limited at pleasure, and contains within itself several specialities of undoubted value.
Bagshot, 1881.

**Yorkshire.—(4831.)**

FOR SALE, owing to death of late proprietor, a thoroughly genuine old-established NURSERY and SEED BUSINESS, in the centre of a good agricultural district. In thorough working order.
Particulars and terms of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, London, E.C.

**London, S.W.—(5120.)**
Seven miles from Covent Garden

FOR SALE, a capital MARKET BUSINESS, doing a good local trade in Cut Flowers and Furnishing, which could be much extended. Comprises an Acre of Land, Five modern Greenhouses, Pits, and Sheds. Rent, on lease, £15 per annum. Good reasons for disposal.
Full particulars of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, E.C.

**Suffolk.—(5119.)**

FOR SALE, an Old-established SEED, NURSERY, and FLORISTS' BUSINESS. In present owner's hands twelve years. Occupying a central and prominent position in a busy market town. House and Shop, Four Greenhouses and 2 Acres of Ground. Incoming low.
Particulars of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, E.C.

TO BE DISPOSED OF, a FLORIST and SEED BUSINESS, with a good connection. The Shop is well situated in a principal street of Wolverhamptoo. The stock of sundries and fixtures to be taken to. This is a capital opportunity for a man who thoroughly understands the business.—For particulars apply to C. SHAW, Finchfield, Wolverhampton.

**To Nurserymen.**

TO BE LET, a compact HOUSE of Seven Rooms, good Garden, Six Glass Forcing-houses, 60 feet long; large Orchard, about 1½ Acre, 100 large Fruit Trees, full bearing; situated in the heart of Old Southgate, facing main road. Rent low.—Apply, Mr. ROWE, The Chase, Southgate, N.

BATH and WEST of ENGLAND SOCIETY
(Established 1777) and
SOUTHERN COUNTIES ASSOCIATION.

TUNBRIDGE WELLS MEETING,
JUNE 6, 7, 8, 9, and 10.
ENTRIES of LIVE STOCK, IMPLEMENTS, &c., CLOSE APRIL 21. POST ENTRIES (with extra Fees) received up to May 1.
POULTRY ENTRIES CLOSE MAY 1.
Forms and all information supplied on application to
JOSIAH GOODWIN, Sec.
4, Terrace Walk, Bath.

PROTHEROE AND MORRIS, Horticultural, Market Garden and Estate Auctioneers and Valuers, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

TO BE SOLD, Five fine Specimen Plants, cheap:—
LATANIA BORBONICA
LIVISTONA HOOGENDORPII
SCREW PINE
CROTON PICTUM
CURCULIGO RECURVATA
For particulars apply to
The HEAD GARDENER, Brockley Hall, Brockley, Kent.

**Sweet-scented Rhododendrons.**

ISAAC DAVIES has pleasure in announcing that his beautiful varieties of the above will be in flower shortly. The earliest blooms will be out in Easter week, and there will be a succession of blooms for three weeks or more. The large specimen plants have several hundred buds on each, and the entire collection is generally well set. Intending purchasers should order immediately before the flowers expand.
Descriptive priced LISTS on application.
Brook Lane Nursery, Ormskirk, Lancashire.

**Spring Planting.**
SEEDLING and TRANSPLANTED FOREST TREES.
PLANTS for GAME COVERTS,
ORNAMENTAL TREES and SHRUBS,
FRUIT TREES, &c.—The immense stock of the above is in splendid condition, and special offers for large quantities will be made when desired.
CATALOGUES free on application.
The LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh.

## POTATOS FOR PLANTING.

The following popular sorts, true to name, are offered at extremely low prices, to effect a clearance:—

| | Per Cwt. | Per Ton. |
|---|---|---|
| | s. d. | £ s. d |
| MAGNUM BONUM | 6 0 | 5 10 0 |
| EARLY ROSE | 5 6 | 5 0 0 |
| LAPSTONE (true Old) | 6 0 | — |
| VEITCH'S IMPROVED ASHLEAF | 7 0 | 6 10 0 |
| MONA'S PRIDE | 7 0 | — |
| SCOTCH CHAMPION | 5 6 | 5 0 0 |

RICHARD SMITH & CO.,
SEED MERCHANTS & NURSERYMEN, WORCESTER.

TWELVE ORCHIDS, Valuable Winter-flowering Sorts, 21s.—The cheapest collection ever offered. All well established plants of Epidendrums, Odontoglossums, Oncidiums, Cypripediums, Dendrobiums, and other free-flowering and beautiful sorts, in 4-inch and 5-inch pots, strong, and well grown. Will not require repotting for a year. Packages gratis for cash. (Double size, extra strong, 42s per dozen.)
J. H. LEY, Royal Nursery, West Croydon.

**The Chief Bundle of the Season is now Ready.**

FORTY SEPARATE PACKETS of NEW FLOWER SEEDS, all different, for 1s.; double quantity for 1s. 9d. We thus exclipse all other offers, hoping to secure patronage for our miscellaneous seeds.
AGENTS WANTED to Canvass in spare time; liberal commission; experience not necessary.
W. H. HOWELL, Flackwell Heath, High Wycombe.

**New Dahlias, New Roses, and New Verbenas.**

KEYNES AND CO. are now booking orders for their splendid new Sets, which will be ready the first week in May; also their general collection of DAHLIAS and VERBENAS. The latter may be had at once in fine bushy and well hardened plants, free from disease.
Fine strong plants of the new ROSES for 1881 now ready.
Price LISTS free on application.
The Nurseries, Salisbury, April 6, 1881.
Trade orders respectfully solicited.

**To the Trade.—Seed Potatos.**

H. AND F. SHARPE have still to offer all the principal kinds of SEED POTATOS, at considerably reduced prices, in order to clear out. Special quotations on application.
Seed Growing Establishment, Wisbech.

**Verbenas.—50,000 now ready for Sale.**

S. BIDE is now prepared to supply his numerous customers, as on previous seasons, really good, strong, spring-struck plants of Purple, Scarlet, White, and Pink Verbenas, at 6s. per 100; 50s. per 1000. Best Exhibition Varieties, 8s. per 100, package free. Cash must accompany each order.
Strong healthy Cuttings of the above at half price. Free by post.
S. BIDE, Alma Nursery, Farnham, Surrey.

**The Best New Pelargoniums of the Season.**

SALTMARSH AND SON, The Nurseries, Chelmsford, will be prepared to send out early in May the undermentioned Seedlings of their own raising, and which they can confidently recommend as being of first-class merit in their respective classes:—

**Double Zonal Pelargoniums.**
LORD E. CECIL. 7s. 6d. First-class Certificate.
MRS. ARTHUR LATTEY. 5s.
SULTAN. 3s. 6d.
The above were awarded the prize for the best three not in commerce in June last.
EARL BEACONSFIELD. 3s 6d.
EMPRESS OF INDIA. 3s. 6d.
The set of five, 21s.

**Decorative Pelargoniums.**
MRS. H. C WELLS. 7s. 6d.
LADY RAYLEIGH. 5s.
LADY SELWYN IBBETSON. 5s.
MARS. 5s.
The set of four, 21s.

For description and further particulars see Advertisement in this paper on April 2.
The usual discount to the Trade, and a further allowance when three sets are taken.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.
Near 6000 species and varieties of plants are included in this List of eighty to ninety pages. No illustrations are given, nor any exaggerated descriptions to induce purchasers to buy varieties, which on proving they generally find so woefully disappointing. Special attention is given to the undermentioned classes, and purchasers selecting from our Catalogue may feel assured that no firm possesses larger collections of the finest sorts:—
CHRYSANTHEMUMS, GERANIUMS, FUCHSIAS, and other Soft-wooded Plants for Garden or Greenhouse.
DAHLIAS, PANSIES, PYRETHRUMS, CARNATIONS, and other Florists' Flowers.
HERBACEOUS and ALPINE PLANTS, many hundreds of the finest and most useful varieties.
BEDDING PLANTS, all the varieties required for any style of Bedding.
SPRING FLOWERING PLANTS, the most reliable sorts, in thousands of strong plants.
STOVE and GREENHOUSE PLANTS, Flowering and Ornamental Foliage Varieties, various sizes from quite young plants to quarter specimens, to suit various classes of purchasers.
The prices and plants need only to be compared with those of other firms, to prove that in no instance can buyers who study price and quality be supplied more advantageously than by ourselves.
W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

**Important to Market Gardeners, Farmers, and SEEDSMEN.**

ALL KINDS of AGRICULTURAL, GARDEN, and FLOWER SEEDS of best quality, particular attention being paid to all Stocks of Seeds suitable for Market Gardeners, Farmers, &c.
BROCCOLI, Edmonton, Late White.
,, Covent Garden, Early White.
,, Evesham Giant, White, quite distinct, large, conical, and well protected.
BRUSSELS SPROUTS, Covent Garden Strain.
CABBAGE, East Ham and Enfield Market, selected Stock.
CAULIFLOWER, Walcheren (English saved), selected.
,, Veitch's Autumn Giant.
CELERY, Covent Garden Red—the best grown.
CUCUMBER "The Market Wonder," no handle, wonderful cropper, good for frames or house.
RADISH, Red and White Turnip.
SPINACH, Extra Large Round.
VEGETABLE MARROW, Long White Ribbed.
Wholesale SEED CATALOGUE free by post on application.
Special low prices for all leading varieties of Hardy Annual and Perennial Flower and Vegetable Seeds in quantity by arrangements.
WATKINS AND SIMPSON, Wholesale Seedsmen, 1, Savoy Hill, Strand, W.C.; Seed and Trial Grounds, Feltham, and Twickenham, Middlesex.

**To the Trade.**
MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.
Seed Growing Establishment, Wisbech.

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor Lincoln.

CHRYSANTHEMUMS and FUCHSIAS.—We can now offer the above, in best named varieties, strong, well-rooted little plants; by post or rail as preferred.

FUCHSIAS or CHRYSANTHEMUMS.

| | | |
|---|---|---|
| 12 Plants, in 12 sorts | .. .. .. | 2s. 6d. |
| 25 ,, 25 ,, | .. .. .. | 5 0 |
| 50 ,, 25 ,, | .. .. .. | 8 0 |
| 100 ,, 50 ,, | .. .. .. | 14 0 |

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

NEW SEEDLING POTATOS.—Gordon's Royal Kidney Regent, and Gordon's Victoria Regent, were raised from Seedlings three years ago, and have hitherto resisted disease. The former is a Second Early, and this year yielded over 10 tons per acre. The latter is not unlike Paterson's, but rougher skinned; it boils equally well, and is a much heavier cropper, having yielded 13 tons per acre.

Further particulars, with price, may be had on application to Mr. JOHN GORDON, Balmuchy, Fearn, Ross-shire, N.B.

Messrs. DRUMMOND AND SONS, Stirling, have authority to take Orders.

SPECIAL OFFER OF PEAS.

LAXTON'S WILLIAM THE FIRST, 1s. 3d. per quart.
McLEAN'S ADVANCER, 1s. 3d. per quart.
TURNER'S DR. McLEAN, 1s. 6d. per quart.
CHAMPION of ENGLAND, 1s. 3d. per quart.

On receipt of Post-office Order or stamps.

CRANSTON'S NURSERY and SEED COMPANY (Limited), King's Acre, Hereford.

TWELVE AMARYLLIS, finest named, 21s.; fine bulbs to produce flowers early this spring (double size, very remarkably fine, 42s), will make a splendid show of flower. Packages gratis for cash with order, and one bulb gratis.

J. H. LEY, Royal Nursery, Croydon.

NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties are now ready, 2s 6d., 3s. 6d. and 5s. each. Full particulars and testimonials free on application to

Messrs. JONES AND NORTH, Hope Nursery, Lewisham, Kent.

**Notice.**

AUCUBA JAPONICA.—Splendid plants for immediate effect, 2½ to 3½ feet high, 24s., 30s., 36s., and 42s. per dozen. A few extra large specimens, 5s. to 7s 6d. each.

W. RUMSEY, Joyning's Nurseries, Waltham Cross, N.

VIOLAS, 20,000 fine strong plants:—

,, cornuta, white } 5s. per 100, 45s. per 1000.
,, ,, Queen of Blues }

Cash only. Carriage and package free.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

TWELVE HARDY EXOTIC and BRITISH FERNS, 10s. 6d.—Many being dormant, this is the best time to purchase, no injury being received by young fronds. Osmundas from America, Polystichums and Athyriums from Japan, Aspleniums from Jersey, &c. Strong plants for garden, rockery and other purposes. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, West Croydon.

FLOWER SEEDS in PENNY PACKETS.—One hundred of the most showy, popular, and beautiful varieties, including finest double ASTER and Ten-week STOCK, Scarlet LINUM, MIGNONETTE, NEMOPHILA, SWEET PEAS, CONVOLVULUS, Dwarf NASTURTIUMS, CLARKIA, COLLINSIA, CALLIOPSIS, &c., post-free, 8s. 50 packets, including as above, post-free, 4s. 2d.; 25 ditto, 2s. 2d.

Each packet contains sufficient seed for making two or three nice patches. Excellent for distribution amongst cottagers or children. All the varieties are easy of cultivation.

DANIELS BROS., The Queen's Seedsmen, Norwich.

**To the Trade.—New Roses for 1881.**

LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,

Gratis and post-free on application to

CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

TWELVE ADIANTUM CARDIOCHLÆNA for 12s.—This rare Fern is a grand rival of the beautiful A. farleyense, and forms a fine companion for it. Grows 3 feet high, fronds 3 feet over, and of a beautiful glaucous-grey colour. Strong plants, raised from spores for the first time, are now offered at one-fifth of all other Nurserymen's Catalogues. Equally valuable for Cutting, Decoration, or Exhibition. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, West Croydon.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.

HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.

Knap Hill Nursery, Woking, Surrey.

PALMS for DECORATION.—Twelve large and graceful Palms for 42s. Fine, strong, clean, well-grown plants, in 5-inch pots, fit for table or any decoration, including Euterpe edulis, Latania, Corypha, Areca, &c., in pairs or all distinct. Packages and extra Ferns gratis, to compensate for carriage any distance, for cash with order.

J. H. LEY, Royal Nursery, Croydon.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.

CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

WILLIAM BARRON AND SON offer the following, very good and cheap:—

PYRAMID PEARS, in best varieties, extra strong and good, 12s. to 15s. per dozen.
PINUS AUSTRIACA, 2-yr. seedlings, very fine, 3s. per 1000; 12 to 18 inches, very strong, 40s. per 1000.
PINUS LARICIO, 2-yr. seedlings, very fine, 4s. per 1000; 12 to 18 inches, very fine, 70s. per 1000; 18 inches to 2 feet, very fine, 100s. per 1000.
ASH, common, 4 to 5 feet, 35s. per 1000.
NORWAY MAPLE, 3 to 4 feet, 35s. per 1000.

Elvaston Nurseries, Borrowash, Derby.

FOR PRESENT SOWING—POST-FREE.

☞ *In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.*

Daniel's Prize Calceolaria.

| | Per Packet.—s. d. | s. d. |
|---|---|---|
| **AURICULA**, Daniels' Prize Alpine .. .. .. | | 1 0 |
| **BEGONIA**, Tuberous-rooted, choicest mixed .. | 1 6 | & 2 6 |
| **CARNATION**, choicest double, from named flowers .. .. .. ..1s. 6d. | 2 6 | ,, 5 0 |
| ,, perpetual double, from named flowers .. | 2 6 | ,, 5 0 |

*From* Mr. PETER SINCLAIR, *Greenock.*

"You will observe by accompanying report of Greenock Autumn Flower Show competition that I carried off Two First Prizes for Carnations raised from your Seeds."

| | | |
|---|---|---|
| **CALCEOLARIA**, Daniels' Superb Prize ..1s. 6d. | 2 6 | ,, 5 0 |
| ,, new dwarf, spotted, fine .. .. .. | 1 6 | ,, 2 6 |

*From* Rev. Dr. THOMAS SMITH, *Edinburgh.*

"I have had a splendid crop of seedling Calceolarias from your Seed. Some of the flowers were the most beautiful I ever saw."

| | | |
|---|---|---|
| **CINERARIA HYBRIDA**, from a splendid strain 1s. 6d. | 2 6 | ,, 5 0 |

*From* Mr. M. MOODY, Gardener to J. Rendall, Esq., *Wootton.*

"I must tell you the Cinerarias, the Seed of which I received from you last year, are now in bloom, and the admiration of every one; many of them are considerably larger than a crown piece."

| | | |
|---|---|---|
| **CYCLAMEN PERSICUM**, beautiful varieties, mixed .. .. .. .. .. .. | 1 6 | ,, 2 6 |
| **DAISY**, choicest double, mixed .. .. .. | 0 6 | ,, 1 0 |
| **GLOXINIA HYBRIDA GRANDIFLORA**, very choice, mixed .. .. .. .. | 1 6 | ,, 2 6 |
| **PANSY**, Daniels' Show and Fancy .. .. | 1 6 | ,, 2 6 |
| ,, Prize Blotched, magnificent varieties .. | 1 6 | ,, 2 6 |
| ,, Daniels' improved striped, beautiful .. .. | | 1 6 |

*From* W. MARSHALL, Esq., F.R.S., *Dublin.*

"Every Seed of the two packets of Pansy you sent me grew, and I have now a magnificent bloom of the finest Pansies in the neighbourhood."

| | | |
|---|---|---|
| **PICOTEE**, choicest double, from stage flowers, 1s. 6d. | 2 6 | ,, 5 0 |
| **PRIMULA**, Daniels' choicest red .. .. .. | 1 6 | ,, 2 6 |
| ,, Daniels' choicest white .. .. .. | 1 6 | ,, 2 6 |
| ,, Daniels' choicest mixed .. ..1s. 6d. | 2 6 | ,, 5 0 |
| ,, Fern-leaved, very choice .. .. .. .. | | 1 6 |
| ,, Superb double-flowered, mixed .. .. | 2 6 | ,, 5 0 |

*From* M. H. YOSS, Esq., *Streatham.*

"The Primula Seed you sent me last year gained my Gardener First Prize at the Brixton Hill Show. The Plants now in bloom far surpass your Catalogue Illustrations."

| | | |
|---|---|---|
| **PRIMROSE**, choicest mixed, from a fine collection of brilliant varieties .. .. .. .. | 2 | 6 |
| **POLYANTHUS**, finest gold-laced.. .. .. .. | 1 | 0 |
| **SWEET WILLIAM**, Daniels' superb strain .. .. | 1 | 0 |

**New Roses for 1881.**

SURPLUS NURSERY STOCK.

LIST of NEW ROSES, and other Roses in Pots, now ready. Prices and Particulars of Surplus Nursery Stock, also now ready. Both sent gratis and post-free to applicants.

EWING AND CO. Eaton, Norwich.

**Greens—Greens—Greens.**

GREEN KALE.—2,000,000 fine plants (autumn sown), earliest spring supply of Greens, at 7s. per 2000; 60s. per 20,000; £6 6s. per 50,000; or £12 per 100,000.

Post-office Orders payable Godalming, or Cheques crossed London and County Bank, Guildford, with order.—Apply

EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.

EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

ABIES DOUGLASII, 12 to 18 inches, 25s. per 100; 18 to 24 inches, 35s. per 100; 2 to 3 feet, 50s. per 100.

ABIES DOUGLASII GLAUCA, a distinct compact growing glaucous variety of the Douglas Fir, much hardier than the common, 9 to 12 inches, 12s. per dozen; 12 to 18 inches, 18s. per dozen.
,, MENZIESII, 12 to 18 inches, 30s.; 2 to 3 feet, 50s. per 100.
,, ORIENTALIS, 12 to 18 inches, 15s. per 100; 18 to 24 inches, 25s. per 100; 2 to 3 feet, 40s. per 100.
CUPRESSUS LAWSONIANA, 18 to 24 inches, 20s. per 100; 2 to 3 feet, 30s. per 100.
,, NUTKAENSIS, 2 to 3 feet, 12s. per dozen; 3 to 4 feet, 18s. per dozen.
PICEA CONCOLOR, 9 to 12 inches, 30s. per dozen; 12 to 18 inches, 36s. per dozen.
,, LASIOCARPA, 12 to 18 inches, 24s. per dozen; 18 to 24 inches, 30s. per dozen.
,, NOBILIS, 12 to 18 inches, 12s. per dozen; 18 to 24 inches, 18s. per dozen.
,, NORDMANNIANA, 4 to 6 inches, 10s. per 100; 9 to 12 inches, 6s. per dozen; 12 to 18 inches, 9s. per dozen.
PINUS ARISTATA, 4 to 6 inches, 12s. per dozen; 6 to 9 inches, 18s. per dozen.
,, BOLANDERII, a new Californian Pine, equal to insignis in its fine shade of deep green, and as hardy as our Scotch Fir, having stood this Russian winter uninjured, 2-yr., 1-yr. transplanted, 20s. per 100; 2-yr. 2-yr., 30s. per 100.
,, CEMBRA: this fine Pine stands the cold blast on exposed hills better even than the common Spruce 12 to 18 inches, 8s. per 100; 18 to 24 inches, 12s. per 100; 2 to 3 feet, 15s. per 100.
,, CONTORTA, 6 to 9 inches, 15s. per 100; 9 to 12 inches, 25s. per 100; 12 to 18 inches, 40s. per 100.
,, MONTICOLA, 12 to 18 inches, 12s. per dozen; 18 to 24 inches, 18s. per dozen.

With many other fine Conifers.

Priced LIST of which may be had on application.

MORRISON BROTHERS, Aberdeen.

J. H. BATH has the following SEED POTATOS for disposal:—

| | |
|---|---|
| Beauty of Hebron | Early Shaws |
| Myatt's Ashleaf | ,, Rose |
| White Elephant | Bresee's Prolific |
| Grand Mogul | Paterson's Victoria |
| Magnum Bonum | Scotch Champion |

And other leading varieties.

Apply at 1 and 3, York Street, Borough Market, S.E.

**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—

VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy, Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.
,, TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.
,, SILVER VARIEGATED—May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.
,, GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
,, DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.
,, BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.
,, Forcing, Show and French vars., 30s. per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.

Packing included. Terms cash.

Cemetery Nursery, Gravesend.

**Notice.—SEED POTATOS.—Notice.**

At Clearance Prices, for Cash only.

WOOD AND INGRAM beg to offer the following, at greatly reduced prices:—

| | Per cwt.—s. d. |
|---|---|
| CLIMAX (Bresee's) .. .. .. .. .. | 7 0 |
| EARLY ROSE .. .. .. .. 100s. per ton | 5 6 |
| KING of THE EARLIES (Bresee's) .. .. | 6 0 |
| SNOWFLAKE .. .. .. .. .. .. | 8 0 |
| SCHOOLMASTER .. .. .. .. .. | 12 0 |
| COVENT GARDEN PERFECTION .. .. | 8 0 |
| BEAUTY of HEBRON .. .. .. .. | 8 0 |
| DIPLOCK'S EARLY ROUND .. .. .. | 7 0 |
| MAGNUM BONUM (Suttons') .. 110s. per ton | 6 0 |
| EXCELSIOR (Porter's) .. .. .. .. | 8 0 |
| SCOTCH CHAMPION .. .. 100s. per ton | 6 0 |
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" Golden, many thousands, 3, 4, 5 to 10 feet high.
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WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
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THUYA AUREA, 2, 3 and 4 feet high.
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RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
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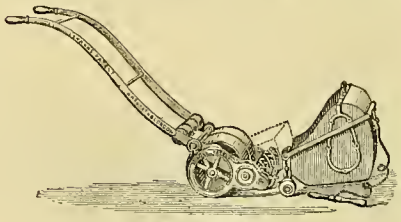

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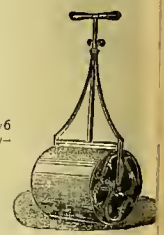

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THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

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| 15-oz., | 6 × 4 to 7½ × 5½, | 9*s.*, | 10*s.*, | 11*s.*, 12*s.* |
| | 8 × 6 to 10 × 8, | 9*s.* 6*d.*, | 10*s.* 6*d.*, | 11*s.* 6*d.*, 12*s.* 6*d.* |
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Per 100 ft. Box.

| | Inches. | Inches. | |
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| 21-oz., Orchard House, | 20 × 12, | 20 × 15, | 16*s.*, 17*s.* 3*d.*, |
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15-oz., for Cutting up, 34*s.*, 41*s.*, 42*s.* 6*d.*, 53*s.* per 300 feet case.
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LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.
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The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
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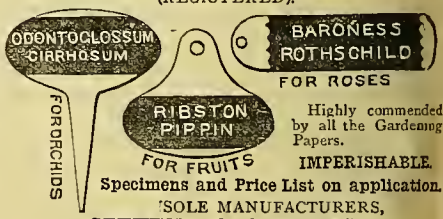


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WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers.
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TIFFANY, SCRIM CANVAS, and every kind of NETTING.
Several good Second-hand GOVERNMENT TENTS for SALE Cheap. Sample of material free on application.
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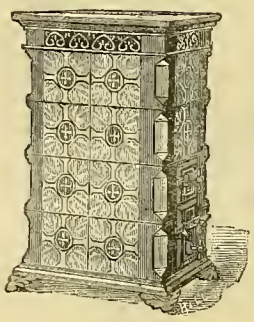

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MAINTAIN A WARM AND MOIST HEAT.
NEED NO CLEANING.
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ARE VERY DECORATIVE, AND BLEND WELL WITH THE SURROUNDING FOLIAGE.

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May be had of the principal Ironmongers.

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**Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.**

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

AWARDED
HIGHEST PRIZE AT
PARIS EXHIBITION, 1878;
and the Jury in their Report say:—
"The 'Archimedean' did the best work of any Lawn Mower exhibited."
Also
HIGHEST PRIZE AT
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"Far superior to any of ours."—*Vide* the *Field.*
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Discount—Five per Cent. for Cash.

IT IS SPECIALLY APPLICABLE TO

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# AMIES' HORTICULTURAL MANURE

(SEASON 1881.)

**Established Ten Years, and Pronounced by Eminent Horticultural Authorities and Numerous Practical Gardeners to be the most efficacious Manure ever introduced.**

PRICES.

| 7 lb. | 14 lb. | 28 lb. | 56 lb. | 1 cwt. | Per ton. |
|---|---|---|---|---|---|
| 2s. 3d. | 3s. 6d. | 6s. | 9s. 6d. | 15s. | £12 |

Boxes containing 2 lb., for Conservatory use, 1s. each.

*Carriage paid on 1 Cwt. and above to Country Stations. Half-pound Samples Post-free for Six Stamps.*

**ANALYSIS and REPORT by Dr. A. VOELCKER, Ph.D., F.R.S., F.C.S., &c.**
(The Eminent Chemist to the Royal Agricultural Society.)

ANALYSIS.

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|---|---|---|---|---|
| Moisture | 3.98 | Sulphuric Acid | 7.97 | *Equal to Sulphate of Ammonia 15.04 |
| *Organic Matter, Carbon, and Salts of Ammonia | 24.40 | Oxide of Iron | 6.38 | **Equal to Phosphate of Lime 42.83 |
| **Phosphoric Acid | 19.62 | Carbonic Acid, &c. | 1.98 | ***Equal to Sulphate of Potash 4.63 |
| Lime | 26.90 | Siliceous Matter | 4.04 | |
| **Alkaline Salts of Magnesia | 4.73 | | 100.00 | |

"This Manure, in addition to a high percentage of Phosphate of Lime, contains, in **well balanced proportions**, Ammonia, Potash, and other useful fertilising ingredients, and thus differs materially in its constitution from Manures which, containing excessive proportions of Ammonia, are apt to cause over-luxuriance of the leafy parts of plants at the expense of their healthy and vigorous growth and proper maturity of 'Horticultural' produce."

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"Amies' Horticultural Manure contains an ample supply of Potash, Nitrogen, and Phosphates in a **favourable condition for assimilation by plants**, the Nitrogen being in a fixed and soluble form. It is in a finely-divided condition, and in a convenient form for 'Horticultural' use. It is free from any considerable acidity, which is undesirable in Manures intended for 'Horticultural' purposes, but at the same time contains ingredients capable of fixing any Ammonia generated by the decomposition of organic matter in the soil itself. The carbon which this Manure contains will tend to maintain a 'sweet' and healthy condition of the soil; and certain of the other chemicals entering into its composition are possessed of antiseptic or antifungoid properties which enhance its effect as a Manure."

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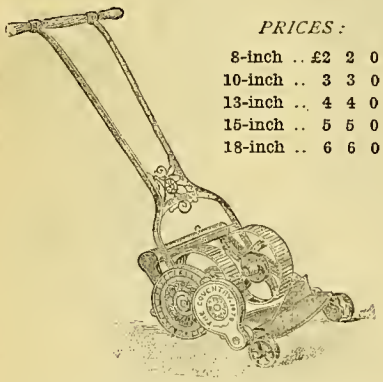

*PRICES:*

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| 8-inch | £2 2 0 |
| 10-inch | 3 3 0 |
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| 15-inch | 5 5 0 |
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Awarded the First Prize at the Sydney Exhibition.

# "THE COVENTRY" LAWN MOWER

(REGISTERED). MANUFACTURED BY

## NETTLEFOLD & SONS,

54 HIGH HOLBORN, LONDON, W.C.

The great success which has attended "THE COVENTRY" LAWN MOWER during the two seasons in which it has been before the Public, enables the Manufacturers to recommend it with increased confidence as the best and cheapest yet introduced; for lightness and ease in working it cannot be surpassed.

It has all the improvements which have of late been introduced into this class of Machine, either in England or America.

It will cut wet or dry grass of any length, will turn in its own width, and is so light that a lady can use a 15-inch Machine of this make with greater ease than a 10-inch of the ordinary kind.

It is made, as it name implies, at Coventry, by skilled English workmen, and of best English Steel and Iron.

These Machines can also be supplied with ROLLERS at the same price, and with Grass Boxes at the following extra cost:—8-inch, 6s. 6d.; 10-inch, 7s.; 13-inch, 7s. 6d.; 15-inch, 8s. 6d.; 18-inch, 9s. each.

Front Wooden Rollers for cutting verges.—8-inch, 2s. 6d.; 10-inch, 2s 9d.; 13 inch, 3s.; 15-inch, 3s. 6d.; 18-inch, 4s. each

# W. CLARK'S
# PATENT TURF CUTTER

## And Combination Garden Implement.

This simple Machine will cut Turf and Grass, at the same time clearing the lower part of the pathway which forms the gutter, throwing the rubbish on one side, making a clean cut of the Turf, and leaving a smooth bottom to the pathway. Acts for Weeding Gravel Walks, Hoeing, and Gathering the Refuse. It will cut out all kinds of Ornamental Flower Beds, Watercourses, and Gutters, &c. This Patent Machine has been shown in Hyde Park, where there are upwards of twenty miles of Turf-edging, and is considered to be the best implement for the purpose ever seen. It was sent to the Crystal Palace, where there are about ten miles of Garden-edging, besides all their Ornamental Flower Beds, and gave every satisfaction, a supply being sent in at once.

The Machine shows at a glance Simplicity and Lightness in Construction, and being so cheap it is at every one's command.

It can be sharpened with a stone in the ordinary way, and is sold in three sizes:—

| No. 1. | | No. 2. | | No. 3. |
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| 10s. | ... | 12s. | ... | 14s. |

SOLD BY ALL IRONMONGERS IN THE UNITED KINGDOM, AND BY THE PATENTEE,

**W. CLARK, 232, Oxford Street, London, W.**

# WILLIAMS' NEW PRIMULAS FOR 1881.

*POST-FREE.*

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA ALBA "MAGNIFICA."**

(Raised by Messrs. J. & J. Hayes, Edmonton; purchased by B. S. Williams.)

The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.

Awarded a First-class Certificate by the Royal Botanic and Horticultural Society of Manchester, March 15, 1881.

**Per Packet, 5s.**

**WILLIAMS' PRIMULA SINENSIS FIMBRIATA "CHISWICK RED." Per Packet, 5s.**

For Opinions of the Press and Testimonials see *B. S. W.'s Illustrated Seed Catalogue for* 1881, Post-free.

## NEW and CHOICE FLOWER SEEDS.

| | Per packet—s. | d. |
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| **Balsam**, Williams' Superb Strain .. .. 2s. 6d. and | 1 | 6 |
| **Begonia**, New Bedding variety, finest mixed, 2s. 6d. and | 1 | 0 |
| **Calceolaria**, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. & | 1 | 6 |
| **Carnation**, finest mixed .. .. .. .. .. | 1 | 6 |
| **Celosia pyramidalis plumosa** .. .. .. .. | 1 | 0 |
| **Cineraria**, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and | 1 | 6 |
| **Cockscomb**, Williams' Prize (New) .. .. .. | 2 | 6 |
| **Cyclamen persicum**, Brilliant (New) 5s., 3s. 6d., and | 2 | 6 |
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| **Dahlia**, Single, Yellow, Scarlet, or Mixed .. .. | 1 | 0 |
| **Mignonette**, New Hybrid Spiral .. .. .. .. | 1 | 0 |
| **Musk**, Williams' New Giant.. .. .. .. .. | 1 | 6 |
| **Picotee** finest mixed .. .. .. .. .. .. | 1 | 6 |
| **Polyanthus**, Wiggins' Prize Strain .. .. .. | 1 | 0 |

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| **Primula sinensis fimbriata coccinea**, 5s., 3s. 6d. and | 2 | 6 |
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| **Stock**, East Lothian Collection, three varieties .. .. | 2 | 6 |

**B. S. WILLIAMS,**
Seed Merchant and Nurseryman,
**VICTORIA AND PARADISE NURSERIES,**
UPPER HOLLOWAY, LONDON, N.



# NEW PLANTS FOR 1881.

## MR. WM. BULL'S ILLUSTRATED CATALOGUE FOR 1881

is now in the Press,
And will be issued the end of this month; price 1s.

**It will contain Names, Descriptions and Prices of the following New Plants; which will be sent out in May:—**

ADIANTUM ANEITENSE
ANTHURIUM INSIGNE
,, SCHERZERIANUM MAXIMUM
ANTIGRAMMA BRASILIENSIS
APHELANDRA PUNCTATA
ARUNDINARIA KHASIANA
AZALEA BALSAMÆFLORA
CARLUDOVICA WALLISII
CHAMÆCLADON RUBENS
CŒLOGYNE CRISTATA ALBA
CROTON BROOMFIELDII
,, EBURNEUS
,, ELEGANTISSIMUS
,, FORMOSUS
,, KINGIANUS
,, ORNATUS
,, VITTATUS
DAVALLIA FIJIENSIS
DIEFFENBACHIA COSTATA
,, INSIGNIS
,, NITIDA
,, TRIUMPHANS
DIPLADENIA CARISSIMA,
,, DELECTA
,, DIADEMA
DRACÆNA LINDENI
ERANTHEMUM EBORACENSE
HELICONIA AUREO-STRIATA
ISOLOMA HIRSUTA
IXORA BELLA
,, EXIMIA
,, ILLUSTRIS
,, ORNATA
,, PICTURATA
,, SPLENDIDA
LATHYRUS SPLENDENS
MICROSTYLIS CHLOROPHRYS
,, METALLICA
MUSA URANOSCOPAS
PITCAIRNIA BROMELIÆFOLIA
POTHOS AUREA
PRITCHARDIA GRANDIS
RHODODENDRON ASSAMICUM
SCHISMATOGLOTTIS LONGISPATHA
SPARMANNIA AFRICANA FLORE-PLENO
TECOMA ROSEA
ZAMIA PRASINA.

Twelve NEW TYDÆAS of sorts.

Six NEW GLOXINIAS, with erect flowers, of sorts.

Four NEW FUCHSIAS of sorts.

Six NEW SHOW PELARGONIUMS of sorts.

Six NEW SPOTTED PELARGONIUMS of sorts.

Six NEW FANCY PELARGONIUMS of sorts.

Twelve NEW ZONAL PELARGONIUMS of sorts.

Six NEW NOSEGAY PELARGONIUMS of sorts.

Six NEW DOUBLE-FLOWERED ZONAL PELARGONIUMS of sorts.

Eight NEW BEGONIAS, with Variegated Foliage, of sorts.

Five NEW HYBRID HANDSOME-FLOWERED BEGONIAS of sorts.

Sixteen NEW COLEUS of sorts.

Eight NEW FRINGED COLEUS of sorts.

**PRIZES FOR NEW PLANTS.**

**Twelve Handsome Silver Cups,** *specially designed by Messrs. Elkington & Co., are offered as Prizes for* **Twelve New Plants** *of Mr. William Bull's introduction, at the Great Summer Show of the Royal Horticultural Society, to be held at Kensington, June 3, 4, 6 and 7, 1881.*

**Establishment for New and Rare Plants,**
KING'S ROAD, CHELSEA, LONDON, S.W.

THE

# Gardeners' Chronicle.

*SATURDAY, APRIL 16, 1881.*


## A TRIP TO SIKKIM.

(*Concluded from p.* 462.)

Of Orchids by far the most numerous is a Pleurothallis, which, if any Orchid can be called a weed, is one here, breaking down large limbs with the weight of its tangled masses. Pleione Wallichii and P. humilis are very abundant, the latter flowering in February and March in the moss on stones and branches, and quite indifferent to the night frosts, which prevail for three months in the year at this elevation. Cœlogyne ochracea and C. nitida are also abundant at 7000 or 8000 feet, the latter growing even as high up as 9500 feet, where I have found it on Yew trees, which though rare in Sikkim are found scattered through the forest on Tongloo and other places. Cymbidium is also very abundant at 7000 feet, whilst a beautiful species of Ampelopsis, a Jasminum, Dicentra thalictrifolia, and many other climbing plants help to make the larger trees a garden in themselves. The red berries of the curious Arisæma speciosum (see *Gard. Chron.*, p. 585, vol. xii., fig. 96) are conspicuous on the ground in winter, forming a cluster of 5 or 6 inches long by 2 or 3 in diameter. The flowers of this and of other species with which we are now acquainted in England all appear early, but the seeds take a long time to ripen. A. Hookeri, which grows on the Goompahar, has a conch-shaped spathe 5 or 6 inches across, marked with lurid streaks of purple and whitish, and is perhaps the most striking of all the Arisæmas when in flower. The curious Paris polyphylla, growing 2 feet in height and closely allied to our English species, also grows here, with Tovaria oleracea, a Smilacina-like plant, of which the shoots are eaten like Asparagus; Polygonatum oppositifolium, a fine Solomon's Seal of epiphytical habit; some fine species of Anæctochilus and Goodyera, with Calanthe Masuca and other terrestrial Orchids.

Of Ferns I can only say their name is legion not less than sixty or seventy species being found along this one road in a few miles distance. Going a little further, and crossing the spur which runs down to the junction of the Runjeet and Teesta rivers, the road begins to descend, and passes through a jungle of Plectocomia sikkimensis, a splendid species of Rattan-Palm, which, though not so useful as some of the Calami, grows at an elevation of 6500 feet or more, climbing over the tops of trees 70 or 80 feet high. It would be a great ornament to an English conservatory. No other Palm grows at this elevation in Sikkim, though a little lower down the same road, at 3000 to 4000 feet, several others are found. Tree Ferns soon become numerous and varied, no less than eight species being found within 2 or 3 miles of the old Rungbee bungalow, which is situated at a height of 4800 feet, where the Cinchona plantation was first opened. It is now deserted, the situation having been found too moist and elevated for the Cinchona; but it would be a splendid place for a naturalist to reside in, being just on the edge of the virgin forest, and having an extensive glazed verandah admirably adapted for collections of all kinds. An entomologist or ornithologist would probably

find this as convenient a place as any in British Sikkim for his work, the number of species of birds and insects found here being most remarkable; and though the damp and rainfall are excessive, yet with good fires and a comfortable house, which the Government would doubtless be glad to let at a nominal rent, much more might be done here than in Darjeeling.

From here there are two roads to Mongpoo, which is 16 miles from Darjeeling, the new one which passes Dr. King's new bungalow at Serail being the most pleasant, as it passes through a forest full of beautiful plants, among which is Alsophila Oldhami, a Tree Fern remarkable for losing its fronds entirely during July and August, and the only deciduous Tree Fern, as well as one of the most local in Sikkim. The Cinchona cultivation commences a little above Mr. Gammie's house, at an elevation of about 4300 feet, where a hybrid between C. officinalis and C. succirubra is growing freely. The greater part of the plantations, however, consist of C. succirubra, from 10 to 3 years old, and growing down to 2500 feet. Below this, C. Calisaya thrives, together with its variety, C. Ledgeriana, the most valuable of all. Large nurseries and ranges of propagating frames are used for raising these and other varieties. Seed is freely produced by nearly all of the trees, but in the case of the best varieties of Ledgeriana and Calisaya, it cannot be relied on to come true, and cuttings are therefore taken to a large extent from stock plants kept under glass, and put in glass frames in pots, where, with good management, they soon take root. The raising and propagating of Cinchona plants is, however, a work requiring some skill and knowledge, and not to be undertaken by any one, as the numerous failures in other places prove.

The young plants are put out as soon as possible after the rains have set in in May, and require to be kept clear from grass and weeds for some years. They do not seem very long-lived in this country, and at ten or twelve years old are usually large enough to cut down and root up, though in some places the coppicing system answers well.

The Cinchona succirubra is an extremely handsome evergreen tree, with clean, smooth stem, large shining green leaves which are as much as 6 inches to 1 foot long, and turn red before they fall. It flowers at various seasons, and by the character of the flowers in C. Calisaya an expert can generally tell whether the bark is valuable or not. C. officinalis, which has been largely and profitably grown in Ceylon, is here of little value, and the planting of C. succirubra is now to a great extent suspended, all the energies of the establishment being concentrated on C. Calisaya and Ledgeriana, besides hybrids and a new species lately introduced from Cartagena, which is on trial. The manufacture of the bark into medicine is also carried on here on a large scale under Mr. Gammie's superintendence, some thousands of pounds of the febrifuge being produced annually. This febrifuge, though not quite equal to the pure sulphate of quinine in some respects, is very largely used in all the Government hospitals and dispensaries, and answers its purpose of curing fevers as well, and at an infinitely lower cost than the sulphate. It has already saved very large sums in the purchase of quinine, and is so simple that all the work is done by half a dozen Nepalese coolies who were trained on the plantation, and with no more plant than a lot of casks and strainers, and a few carboys of cheap chemicals.

In the warm valleys below Mongpoo are numerous fine plants and Orchids, many of which have been collected by Mr. Gammie and his energetic assistant, Mr. Lister, in their gardens. Among these I noticed especially that fine Orchid Arundina bambusifolia, which though found in the Terai in ditches, was here thriving on a rockery at nearly 4000 feet; Pleione maculata, a new species of Phalænopsis from the Teesta valley, several Anæctochilus, which do well planted in moss in a bamboo basket; Dendrobium sulcatum and many others. Of Palms, Phœnix rupicola, Wallichia disticha, a noble species, and the pretty little Calamus leptospadix, were the most ornamental. Among the great curiosities of Mongpoo is a branched Tree Fern, which Mr. Gammie contemplates sending to Kew, where annual contributions of seeds, &c., find their way from here. But what excited my highest envy was an account of some new species of hardy Cypripediums, brought down last year from the Tibetan valley of Choombi by native plant collectors, one of which is said to surpass C. spectabile in beauty. With good fortune and kind assistance I hope to succeed in introducing these and other Tibetan plants next year, but the extreme jealousy of the Lamas and the government of that country makes it impossible for Europeans to go there, and native collectors, though willing and able enough to work when accompanied by their employer, are very apt to overlook the best plants when on an expedition by themselves. *H. J. E., Darjeeling, Dec.* 28, 1880.

## New Garden Plants.

Catasetum fimbriatum (*Lindl.*) fissum, *n. var.**

This was very justly regarded as Catasetum fimbriatum, Lindl., by my invaluable correspondent, Mr. J. Day, who favoured me with a specimen of this very surprising Catasetum. Its petals are broader than the sepals, with small teeth, and spotted with dark purple on a light ground, as also is the column. The very conspicuous lip is quite extraordinary in the expansion of its lateral lobes, which remind one of the wings of a bird split into many toothed laminæ, but the median blunt part has simply teeth. It is prolonged into a conical sac, and has a small solid conical callus before its opening.

The genuine Catasetum fimbriatum of our master was figured in *Paxton's Flower Garden*, i., xyl. 84. I am not well acquainted with it, and the representation must be understood with the help of the description; hence my reference of Mr. Day's plant to the old one may be regarded as standing in jeopardy. The type of Dr. Lindley (Myanthus fimbriatus of the late Professor Morren in the *Annales de Gand*) has very small teeth to the lip (no long teeth or laciniæ), and entire petals. The whole *tournure* of the flowers is very much the same. Cataseta are such very polymorphous creatures, that one could name new species by herds. Yet—*post equitem sedet atra cura*—you would have to give new names to many individuals.

Dr. Lindley did not admit Mons. Morren's view. He had stated that, at the Brussels Exhibition in 1848, "*Pendant trois jours plus de* 100,000 *yeux se fixèrent sur cette étrange et admirable gynandre, dont le parfum embaumait la salle.*" Lindley added:—"In this country people would have hardly remarked it." This was decidedly truly said, and may now-a-days be true for Belgium too.

But is this an improvement? Was there not more genuine pleasure in the wonders of Orchids in those days? Was Professor Morren not quite right in admiring such an elegant flower with his 50,000 countrymen? And last, not least, would the present taste not suddenly be changed, if some gentleman or lady of the highest social position showed to the loyal people a fancy for such plants, which are quite as much wonders of sculpture as they are modest in colours?

I had this very fine variety from Messrs. Jacob-Makoy & Co., Liège. Its flower is green, with neat purple-brown bars on the petals, and spots and short bars on the sepals. The lip is simply green.

Exhibition News. — The Horticultural Society of Hamburgh, Altona, and the vicinity, has purchased a portion of the Paris International Exhibition building, which is to be erected in Hamburgh; and it is expected to be completed in time to hold an exhibition next October.

* *Catasetum fimbriatum* (Lindl.) *fissum*, nov. var.—Sepalis triangulo-lanceis; tepalis latioribus oblongis acutis minute denticulatis, labelli sacco conico, limbo utrinque expanso in partem medianam anticam excurrente multifido, laciniis superioribus linearibus apice plurifidis, laciniis medianis acuminatis acutisve, callo conico acute ostium. *H. G. Rchb. f.*

## SWISS FLOWERS IN MAY.

When reading the *Gardeners' Chronicle*, I see from time to time letters from English horticulturists who come to Switzerland but fail to see many objects to interest them from their peculiar point of view. This is mainly because they do not know what to look for, or how to see it with the least loss of time. The ordinary guides never speak of horticulture, and no one in the hotels is able to give travellers any information about it. Let me, therefore, endeavour to send you a little information on this subject, at least, as regards the western part of Switzerland, which I know best. I will suppose the traveller to have reached Geneva. On leaving his hotel with the intention of seeing the town, and while admiring the purity of the water of the lake and of the Rhone, he will notice that the promenades, although not spacious, are planted with well-chosen shrubs. They are under the direction of M. Nitschner, the head gardener at the Botanic Garden. Around the Duke of Brunswick's monument (on the right bank of the Rhone) a piece of turf should be noticed, composed of Pyrethrum Tchihatchewi,* which has resisted for three years the extreme cold (7° Fahr. in 1880) and the intense dryness of the air at Geneva. No grass sprouts so well. The chief drawback to this Pyrethrum is the trouble of cutting off the flowers, which are produced abundantly.

In the neighbourhood of Geneva are several country seats where special groups of plants are cultivated, as in France and Belgium. One of the most interesting of these estates, noticeable also for its lovely situation, is that of Baron Adolphe de Rothschild at Pregny (three English miles from Geneva), and, thanks to the liberality of the proprietor, visitors are admitted during certain days of the week by showing a card, which is easily obtained at most of the hotels gratis. On market days, Wednesday and Saturday, the Places Molard and Place de la Fusterie, in the months of April, May, and June, are interesting to visit, on account of the numbers of alpine plants which are brought there. The cultivation of these plants is very general in the little villas which abound in the neighbourhood of Geneva. Those bought in the markets do not always succeed, since they are often torn out of the ground while in flower, so that amateurs requiring such plants will do better to apply to M. Correvon, nurseryman, à la Boissière, route de Chêne, who specially cultivates alpine plants and raises them from seed.

During May and June the collection of alpine plants in the Botanic Garden at Geneva is remarkable. It has been enriched by M. Edmond Boissier, a well-known botanist, who has travelled in Spain, Sweden, and the East, and who also possesses a large collection of alpine plants in his garden at Valeyres, Canton de Vaud. The alpine plants in the garden at Geneva are carefully labelled. The public are admitted at certain hours, usually from two to four; but a stranger interested in plants can obtain entrance to the enclosure containing the rockwork by applying to the director of the garden, M. Müller, or to the head gardener, M. Nitschner. It seems to me that an English horticulturist would also wish to see alpine plants growing in their natural habitats. Unfortunately, the well known regions famous for the beauty of their glaciers—Chamouni and the Bernese Oberland, for instance—do not possess the richest floras, and they are overrun with tourists' guides and beggars. I will mention one or two places where lovers of alpine plants may see them without much trouble or expense. First, I will name quite close to Geneva—Mont Salève, of which one of the correspondents of the *Gardeners' Chronicle* spoke in such high terms on July 3, 1880. Spring is the best time to make an excursion to it, since the mountain soon becomes dried up.

In May and June the Grand Salève is enamelled with flowers—Gentians, Trollius europæus, Orchis globosa, O. nigra, &c., which have a charming effect. Some of the rarer alpine plants are to be found amidst the rocks on the northern slope of the Grand Salève, but it is a dangerous place, where some adventurous person is killed every year. It is easy to take an omnibus from Geneva to the foot of the Salève at Veyrier, thence the mountain may be ascended by a path called the Pas de l'Echelle to Monnetier, thence to the top of the Grand Salève, whence it is best to descend by La Croisette, and return in the evening to the hotel after

* A species named in honour of P. Tchihatchew, a Russian traveller, who visited the Altai Mountains and Anatolia.

a delightful excursion. Amateurs fond of botanical excursions may avail themselves of those undertaken by M. Müller and the members of the Botanical Society of Geneva in the months of May and June. M. Calloni, engaged in the herbarium at the Botanic Garden, will give them the necessary information.

I will now mention another excursion, longer than that to the Salève. Even more alpine plants may be found there, and it may be undertaken somewhat later in the year—from the middle of May to the middle of July. This is a visit to the group of mountains above Bex, in Canton Vaud. I recommend travellers to leave Geneva in the morning by steamboat for Villeneuve. It is a charming ride down the whole length of Lake Leman. At Villeneuve the railway is taken to Bex, where a little carriage can be hired to enable one to sleep at Plan de Frémière. There are in this alpine village several small hotels and *pensions*, simply but well conducted, where many Swiss families go in summer to breathe pure air, drink milk, and walk about the mountains. I have heard the *pension* Marletta well spoken of, and it is a very good centre for botanical excursions. An English family would find it very comfortable and agreeable, and the society less mixed and less pretentious than in the larger hotels in more frequented neighbourhoods.

There are above the valley small glaciers, and around them, as on all these mountains, there is a rich vegetation, alpine and sub-alpine. The most interesting spots for a botanist to visit are Anzeindar, the Col de Cheville Bovonaz, la Vare, and Javernaz. If the visitors can join the Swiss botanists, who frequently make excursions in this neighbourhood, they will be much delighted. Professor Favrat, of Lausanne, brings his pupils here. I observe also that M. Jean Louis Thomas, of Devens, near Bex, cultivates and sells alpine plants. He knows them well, and can give any information with regard to them.

Amongst the excursions to celebrated valleys, to admire glaciers and very high mountains, the best, without doubt, from a botanical point of view, is that to Zermatt in the Valais. The guide-books will direct the traveller how he may arrive there in a day and a half, or even in one long day from Geneva. The view of Mont Cervin and of Monte Rosa, with their glaciers, is very fine, but the large number of tourists is a drawback to the pleasure of a stay here. M. Biner is to be met with at Zermatt: he sells things interesting to naturalists and also understands plants, and can give valuable directions to those who seek them.

The traveller who arrives in Switzerland after the middle of July has little to see as regards wild or cultivated plants. He resembles a man who seeks for handsome equipages in Hyde Park in the middle of September. I would advise him, if he cannot visit Switzerland earlier, to study the vineyards in Canton Vaud, between Rolle and Villeneuve; they are cultivated with a care which rivals that of a horticulturist. The way in which the ground is prepared, planted, the manner of tying the Vines to the stakes, the pruning, the thinning out the leaves at the proper season, all tend to produce an enormous crop of Grapes, and a rental in value excelling that of the vineyards of Bordeaux or of Burgundy, although the wine is not so good. One English acre of Vines in this district is worth from £640 to £900, and the mean annual produce of a district nearly as large as the county of Kent averages about three millions sterling.

It is thus easy to understand why there is a law in Switzerland which compels Vine growers to form a society to indemnify those whose Vines have to be destroyed in the event of the appearance of Phylloxera, and there is another law (vexatious to horticulturists) which prohibits the entry of any living plant into Switzerland, unless it comes from a country where there is no Phylloxera. The consignments of your English nurserymen have been stopped for this reason, and for fear that, after having given us the Oidium in former times, they may now harbour in their houses the Phylloxera. This is hard, but the value of gardens with us is not to be compared with that of the vineyards, and by these vigorous measures we have escaped for several years, and it is to be hoped that in time some specific will be discovered which will destroy this terrible insect.

In the autumn after the first frosts the charming tints of many leaves are noticeable in Switzerland, and the abundance of brightly coloured fruits distinguishes this country from England. The leaves of the Virginian Creeper (Ampelopsis) are, it is said, redder even than in America, and the Cherry trees in the country, the Liriodendrons, Kolreuteria, Forsythia, Maples, &c., in the gardens, acquire magnificent tints. Speaking generally, an abundance of ornamental flowering plants in the spring, and numerous brightly coloured fruits in the plantations, woods, and hedges in autumn, show the effects produced by a dry climate, and one subject to great variations of temperature. Thus many shrubs neglected elsewhere are planted here. I admired, for example, last autumn in the promenade of St. Jean, in Geneva, a group of Hippophaë rhamnoides covered with orange-coloured berries, which had an excellent effect.

Bee-keepers have a zealous colleague in M. Edouard Bertrand, of Nyon, Canton de Vaud. He is the publisher of the journal called *l'Apiculture de la Suisse Romande*.

I must now say a few words with regard to vegetables. They are not so fine as English vegetables, but we have more variety and more flavour in ours. Those obtained at the hotels must not be considered as good examples, since the preparation of them needs more care and time than it is possible to give in these large establishments, but if invitations to private houses are not attainable something may be learned in the markets. In Geneva during the spring the buds of Ornithogalum pyrenaicum gathered in the meadows and hedges are sold under the name of Aspergines. It is somewhat like a wild Asparagus, and as regards flavour it is something between Asparagus and "Hop-tops," which are eaten here and I suppose in England. Amongst summer vegetables we have one which I think may be classed amongst the best of vegetables. I allude to the Courgeron* a small variety of the Vegetable Marrow, the flavour of which, although more delicate, somewhat resembles that of the Aubergine (Solanum Melongena). It is said only to grow well at Geneva. The fact is, it is but little known, and is not mentioned in the *Bon Jardinier*. Those who know it do not know how to cook or prepare it properly. It is the test of the skill of a Genevese cook, and as far as I can solve the mystery of its preparation it requires to be stewed over a slow fire for four hours and the half liquid paste stirred every ten minutes. When English cooks have learnt to prepare Potatos in twelve or fifteen different ways instead of two or three they can apply themselves to this problem. *Alphonse de Candolle, Genève.*

Fig. 93.—Acer distylum.

## THE KEW ARBORETUM.

### The Maples.—IX.

Acer distylum, Sieb. and Zucc., *Flora Japon. fam. nat.* i., No. 172; Maximowicz, *Mélanges Biologiques*, tome x., p. 595.—Nippon, high mountains in the provinces of Senano and Nambu.

No figure of this new and distinct Maple has hitherto been published; the present illustration (fig. 93) has been prepared from a specimen collected by Mr. Maries, and living plants sent home by that gentleman from Japan are now growing in the establishment of his late employers, Messrs. J. Veitch & Sons. As a species, A. distylum comes near A. sikkimense, Miq., but differs from that in its compound raceme of small yellowish flowers and its fruits with ascending wings. In the fruiting stage, owing to the non-development of most of the flowers, the species generally, as in the specimen figured, becomes truly racemose. The foliage often attains a much larger size than is indicated in the figure, is green above, paler beneath, and quite glabrous except at the base in the axils of the larger nerves. *Geo. Nicholson, Kew.*

* Sèringe has described it under the name of Cucurbita maxima var. Courgero in the *Prodromus*, 3, p. 316.

## ELVASTON NURSERY.

These extensive nursery grounds occupy a large portion of land on each side of the road which leads from Derby to Nottingham, near to or rather in the village of Borrowash, about 3 miles from the town of Derby. The intending visitor to this establishment on leaving the Borrowash station of the Midland line can hardly fail to be attracted by the appearance of an interminable assemblage of ornamental trees and shrubs of all kinds and of nearly all sizes immediately in front of him, and on approaching the village by the Elvaston Lane and bearing to the right the residence of the proprietor and entrance to the nurseries will be observed at a distance of little more than a hundred yards, As has been stated the nursery occupies a portion of land on each side of the public road, amounting altogether to between 40 and 50 acres, in which all the various branches he nursery business are assiduously and successfully pursued—from the propagation and cultivation of hardy trees and shrubs of all kinds, including Roses, Rhododendrons, fruit trees, &c., to stove and greenhouse plants, hardy herbaceous plants, and florist's flowers, together with an extensive trade in horticultural seeds and cut flowers. The grand feature, however, of the Elvaston Nursery is its almost unrivalled collection of the choicest coniferous trees and ornamental evergreen shrubs. The soil is mostly of a rich and adhesive loamy nature, and is admirably suited to the development of such plants, which are all subjected to a periodical or an annual system of transplantation, and are consequently in a fit condition for removal at almost any season, with little or no risk of failure, so that healthy and well-furnished specimens of all kinds of ornamental trees and shrubs are to be procured of any desired dimensions. Extensive plantations are here to be seen of such species as the Chili Pine, or Araucaria imbricata, from 3 to 20 feet or more in height, and well furnished with healthy branches to the surface of the soil; fine large specimens of Cupressus Lawsoniana, and its numerous varieties, in fine condition; golden striped Yews in the form of pyramids, 10 or 12 feet high; plantations of fine large variegated Hollies of various varieties, covered with their beautiful scarlet berries, producing (more particularly in winter) a remarkably fine effect, and proving them to be among the finest of perfectly hardy ornamental evergreen plants. They appear also to thrive in all kinds of soil, although a somewhat rich sandy loam evidently suits them best. There are also extensive plantations of seedling Aucubas, showing great diversity of foliage and individuality of habit of growth, and these appear to have scarcely suffered from the severity of last winter. The comparatively recent introduction of the male varieties of these shrubs from Japan has added greatly to the interest of their cultivation, as they may now be obtained in considerable variety clothed with their bright scarlet berries, which remain upon the plants throughout the winter, rendering them exceedingly ornamental.

Two wide borders on each side of a broad walk, which stretches from Mr. Barron's residence towards the south, are exceedingly rich, containing, as they do, fine and numerous specimens of various sizes of nearly all the finest and most ornamental species of newly introduced hardy ornamental plants, deciduous as well as evergreen, and all of them are in an exceedingly healthy condition. The walk is margined by the Vinca elegantissima, a plant remarkably well suited to this purpose, and which might with advantage be more used than it is at present. On those borders, among many other remarkable plants, I observed fine young specimens of the Abies Alcocquiana, an exceedingly beautiful species, with two-coloured leaves, viz., dark green on the upper, and silvery white on the under surface. This beautiful plant is from Japan, and if it prove perfectly hardy—which it is confidently expected to do—it will without doubt prove to be a grand and most ornamental tree for lawns and pleasure grounds, &c. Abies Engelmanni, a species from Colorado, has rich glaucous foliage and a conical form of growth, but it is unfortunately somewhat tender and apt to be injured by late spring frosts. Abies Hookeriana is a fine tall growing tree from California, resembling the Hemlock Spruce, but with foliage of a pale blue-green colour. Abies Parryana glauca, resembles A. Engelmanni, but, unlike it, it is perfectly hardy; both are natives of the Rocky Mountains in Colorado, Abies Pattoniana is a handsome Californian Spruce, with very dark green foliage, which will be sure to make a fine lawn or even a park tree. I may also mention Abies polita, a Japanese species of conical habit, and with pale green leaves, a very distinct, handsome, and fast-growing plant; together with beautiful plants of Biota or Thuja aurea, Biota elegantissima, B. semperaurescens, B. variegata aurea, &c.; Cedrus atlantica, Deodara, and Libani; the first-named is of rapid growth, and possibly the finest of the three; Cephalotaxus drupacea, Fortunei, and pedunculata; Chamæcyparis sphæroidea aurea, or the Swamp Cedar, a very pretty and hardy variety of Cypress, with golden foliage. Cryptomeria elegans, or the Japan Cedar, is a very ornamental plant, with fine foliage of a delicate green colour, changing to a reddish-purple in autumn, presenting a remarkable contrast to most other shrubs and trees. It is somewhat tender, but succeeds well in a sheltered situation and in light soil. Of the beautiful Cupressus Lawsoniana, which has already been alluded to, there are to be seen here many fine and distinct varieties, such as erecta viridis, which has been well said to be the greenest of green trees; also argentea, and, possibly the finest of all, lutea, which is of free growth and of a rich golden colour, which it retains throughout the entire season; also Cupressus Lawsoniana pyramidalis alba spica, which is of moderate growth, conical in habit, and which when growing freely is nearly quite white. C. nutkaensis or Thuiopsis borealis is a fine ornamental and perfectly hardy tree, and is said to withstand the effects of smoke better than any other coniferous trees. Dacrydium Franklinii is a beautiful Cypress-like Conifer, requiring a somewhat sheltered situation, while Juniperus chinensis aurea and variegata are very pretty varieties, but of somewhat slow growth. Libocedrus decurrens is a fine ornamental tree with deep green foliage and of rapid growth. Of the beautiful genus Picea I observed fine specimens of most of the species, as well as extensive plantations of smaller plants of such species as magnifica, nobilis, Pinsapo, Parsonsiana, Nordmanniana, Veitchii, Webbiana, &c., together with fine plants of all the best forms of the genus Pinus. Podocarpus alpina, with a weeping habit of growth and whip-cord-like branches and dark green foliage, is also found to be quite hardy; while P. vitiensis, from the Fiji Islands, although one of the prettiest of Conifers, requires the treatment of a greenhouse plant in this country.

The Elvaston Nurseries are exceedingly rich in the very numerous varieties of Retinospora, or Japan Cypress, which may justly be considered among the prettiest of coniferous plants. Retinospora decussata has leaves of a greyish-green, changing in autumn to purple or plum colour, and forms, together with most of the family, useful plants for the decoration of the greenhouse or the conservatory during the winter. R. obtusa forms a fine evergreen tree of considerable dimensions, and is perfectly hardy, while R. obtusa aurea is a very beautiful golden plant of free growth. R. pisifera is an evergreen tree of rapid growth with recurved plume-like branches, and R. pisifera aurea retains the free-growing properties of the species, and is at the same time of a fine golden colour. R. plumosa is an elegant plant, with silvery-green foliage, useful as a pot-plant or for winter bedding, &c. R. plumosa argentea and aurea are also very suitable plants for this purpose, and are also perfectly hardy, and on account of their distinct shade of colour might well be employed for the purpose of winter carpet-bedding, and as edgings to walks, &c.

The fine pyramidal-formed variegated Yew trees, which have been already mentioned, and which in connection with other fine-foliaged plants produce so charming an effect, are composed of the Taxus baccata aurea variegata, or the old gold-striped Yew, together with a seedling from it, which originated in this establishment, and has been named Barroni fœmina, and is a very great improvement upon the old variety, being of free growth and much brighter colour. Taxus adpressa is a very distinct species from Japan with dark green leaves, and bears scarlet berries larger than those of the common Yew. There are also to be seen here fine standard specimens of the Taxus Dovastoni, or Weeping Yew, together with its variegated variety; also a yellow self-coloured variety of the Taxus fastigiata, or Irish Yew.

Among hardy evergreen shrubs few species are more useful and effective than the Ilex Aquifolium or the common Holly, and here are to be found possibly every distinct species and variety of this extensive and ornamental family of hardy plants, such as Ilex A. donningtonensis, of tall and spire-like habit of growth, narrow green leaves, and dark purple bark. Ilex A. Hodginsii, a free-growing plant which also fruits freely, and is said to stand the smoke of towns better than most other varieties; Ilex laurifolia is a fast growing plant with large glossy dark green leaves, Among variegated kinds the well known argentea, or silver-margined variety, is surpassed by the Silver Queen, a truly grand plant; and beautiful as it undoubtedly is, it is quite equalled, if not in its turn surpassed, by the Golden Queen; while versicolor, in addition to the fine foliage of the Golden Queen, has its young shoots richly tinged with crimson. Many other species and varieties of the Ilex, too numerous to be specified, are here to be found. But I ought not to omit to say that fine standard specimens are also to be seen of all the finest of green-leaved as well as of variegated varieties, some of which being of drooping or weeping habit, are remarkably effective and well suited for the purpose of standing as single specimens on lawns or other suitable situations. In writing of the merits of evergreen shrubs it would hardly be right to omit to mention the Euonymus or Spindle-tree, which is grown here in great abundance, and they are certainly very pretty and effective little shrubs, some of them having very pretty variegated or marginated foliage; two of the best varieties are albo-variegatus and aureo-marginatus. The Buxus arborescens, or Tree Box, is also an exceedingly useful and perfectly hardy plant. The genus comprises many very pretty species and varieties, such as latifolia, rotundifolia, and such variegated kinds as argentea and japonica aurea, the last-named being a fine marginal plant for beds or for walks, as the closer it is clipped or cut-in the brighter in colour it becomes.

The original soil of the Elvaston Nurseries is of excellent quality, and this, combined with skilful culture, has its result in the most thriving and healthy condition of the various kinds of plants propagated and cultivated therein, and this includes all kinds of fruit trees, Roses, hardy Rhododendrons, and other American plants. The latter, although grown entirely in loam, or the original soil of the nursery, without a particle of peat, are nevertheless in a remarkably healthy and thriving condition.

Most of the glasshouses here are on the left-hand side of the turnpike road from Derby to Nottingham, and these consist of numerous structures, most of which are span-roofed, some of them being of considerable dimensions, the smaller erections being used principally for the purpose of propagating the various species of plants which comprise the stock of the nursery. At the period of my visit several young German gardeners were thus occupied; and as the circumstance of foreign gardeners being employed in this country was about that time being discussed in the pages of the *Gardeners' Chronicle*, I asked Mr. Barron if he found them to be superior to his own countrymen. He did not say that such was the case, but he said that such men sought employment in this country with the view of improving themselves by acquiring knowledge in their profession, and that they were in all respects assiduous and trustworthy.

Cuttings of all kinds were here being inserted by thousands, in pots, pans, and hotbeds, as well as in cold pits and frames, &c., while seedling coniferous trees, as well as seedlings of many other trees and shrubs, were here to be seen in thousands and tens of thousands, in all stages of infantile development. One large span-roofed structure was occupied by a fine collection of Camellias of various sizes. Some large plants were planted out in the borders, while others were in large tubs, but all were in excellent health, and full of flower-buds in a forward condition. This house also contained Chrysanthemums, Indian Azaleas, &c., while other structures were furnished with Poinsettias, Bouvardias, Begonias, Eupatoriums, Cinerarias, and other decorative plants; also an immense stock of the finest kinds of Ferns, including fine healthy plants of the Adiantum farleyense and other rare Maidenhair Ferns, &c. Another house contained a fine assortment of the Chinese Primrose, of various varieties, with double as well as single flowers, and in various shades of colour; also a remarkably fine strain of the beautiful Cyclamen persicum. In addition to their very large nursery and seed business the Messrs. Barron & Son have also an extensive practice as landscape gardeners, and they are unrivalled as successful transplanters of large trees. *P. Grieve, Bury St. Edmunds.*

## SAPONARIA CÆSPITOSA.

This is a dwarf-growing herbaceous plant, of great beauty when seen in masses, as shown in our illustration (fig. 94). The linear glabrous leaves, keeled on the under surface, are crowded in tufts at the end of the branches of the thick woody stock. The flower-stalks are 2 to 3 inches in height, with one or two pairs of linear leaves, with a dense tuft of flowers at the top. The calyx is tubular, about half an inch long, and pubescent; the petals are of a deep rose colour, twice the length of the sepals. The plant was originally described by De Candolle in the *Flore Française*, v., p. 601; it is a native of limestone rocks in the Pyrenees, both on the Spanish and on the French side. It is well described in Willkomm and Lange's *Prodromus Floræ Hispanicæ*, vol. iii. (1880), and an excellent figure of it is given in Willkomm's *Icones*, p. 36, t. 22.

Fig. 94.—SAPONARIA CÆSPITOSA: FLOWERS ROSE-COLOURED.

## Orchid Notes.

The Wintering of Orchids.—Now that we are "out of the wood"—at least we may fairly calculate so after six months of cold of continuous and unprecedented severity—we might, not without some profit to the general grower, cast a retrospective glance at the behaviour of Orchids, especially of cool Orchids, under the trying ordeal of artificial heat they have all been subjected to. So far as my information goes, even with a thermometer considerably below zero, most of the collections formed have been saved, thanks in the first place to the excellent modes of heating which have been provided, and to the assiduity of the gardener, who doubtless has had many an "anxious night" in battling against the very sudden depressions of cold—quite unexampled in my experience in that respect. In truth so powerful was the cold during the nights and mornings of January 15, 16, and 17, that while the thermometer 2 feet from the glass was standing at 40° Fahr., the icicles at the top 2 feet above were distinctly observable, and where there were no side lights—in other words when the astragals were resting on the wall—the glass at the base was one sheet of ice in the interior. This only happens under very severe pressure of cold, and at such a time it requires very powerful "stoking" to keep up temperatures for the various groups of plants, classified as they ought to be—cool, temperate and tropical.

Fortunately for the successful growth of cool Orchids, we have found out by experience that a little extra winter warmth is not only good but desirable—that their constitution, in fact, bears this sort of treatment better than allowing a too severe wave of cold to pass amongst them, because, doubtless, of the uniform temperature that prevails in a state of Nature. There are two opposing elements in our climate which the grower has to meet—want of heat and want of light during our winter. We can give the one in an artificial state; hitherto we have not been able to do anything with the other, and unless the electric light comes to our aid darkness in this matter is still likely to prevail. Of the two evils the plants do not seem at all disposed to meet them half way; they prefer the warmth without the light to the ordinary mode of meeting differences, and doubtless in some measure recoup themselves as our day lengthens and as brightness and duration of light strengthen. This is, of course, a plea for husbanding all the available light which the months of April and May can produce, barring, of course, the fierce rays of the sun for a few hours at mid-day.

But there is no rule without exception, and I have found out this winter what I have not experienced before—that while the whole body of Odontoglossums, without a single exception, will grow best if not placed in a temperature either below 45° or above 60° for, say, the months of October, November, December, and January, that Masdevallias, and even such of them as I shall hereafter name (which most growers relegate to houses of greater warmth than the ordinary cool Orchid-house) do grow and thrive best even if subjected to a temperature bordering upon the freezing point. It is well known that coddled Masdevallias show black specks and stains—ugly-looking things—on the backs of their leaves, and even towards the tips of the upper surface, so that some growers go the length of asserting that it is impossible to grow them without this affection. The imported Masdevallias that came in last season as green as Scotch Leeks and with leaves aping some of our Cos Lettuces, afford direct evidence against this assumption, and from what I have seen and can testify I am of opinion that hot treatment in winter predisposes the plants to this leaf affection. Nothing can possibly be finer than the greenery and strength of bud that is apparent in plants subjected to cold in winter. In a house which touched 33° at Meadow Bank, not a single Masdevallia was injured, and every grower knows that these plants grow continuously. Some plants of Odontoglossum Pescatorei which were at the warmer end of the house were partially injured, but the temperature at that spot would be 38°. At such a figure Odontoglossum roseum was killed. Well at the lower temperature stood the popular Masdevallias Harryana, Lindeni, Veitchiana, and ignea; but amongst these were gongora, Trochilus, corniculata, Houtteana, peristeria, Benedicta, ionocharis, militaris, coccinea, Chimæra, bella, tovarensis, and some others—all quite unscathed, and growing now vigorously. While this happened, I should not like to make a practice of it, but it pointed out clearly to me that Masdevallias are better treated cooler than any other Orchid of a popular character, Disa grandiflora excepted, and that if growers would give them cooler treatment in winter there would be less complaint of spotting of leaves, and a better general health maintained.

As to other classes of Orchids, such as Phalænopsids, Saccolabiums, and some of the tropical Lady's Slippers, there must be considerable heat maintained else root rotting and general debility will soon become apparent. Vandas, on the other hand, seem disposed to live at less high temperatures than they generally get. Where they are grown in a temperate-house there the lower leaves remain, and the general consolidation that goes on imparts a vigour to plants cultivated in this manner that does not require an educated practical eye to notice. Cattleyas and Lælias, as a rule, cannot endure cold. Warmth accompanied with well-balanced moisture is according to their needs. Whenever myriads of thrips infest them then the temperature is not properly balanced with moisture. It is better to have a little coldness than it is to have the right temperature without properly balanced atmospheric moisture. A winter such as we have passed through will have brought experience of a kind to hundreds—possibly to thousands—that no amount of reading on the subject will have furnished, however safe and practical, as hard bought experience after all tells best generally.

*James Anderson.*

Calanthes.

Enough has been said about the easy culture and the great value of this class of plants for decorative purposes, and once or twice a year we read of the wonderful examples to be seen in some gardens not hitherto renowned for brilliant examples of skilful culture. The fact is that, given the simple cultural requirements, Calanthes are as easily grown as Zonal Pelargoniums. As the time has again come round for repotting the plants, or, more correctly, the pseudobulbs, a few remarks on them may be useful. Up to this time, and since the flowering period was over, no water at all has been given to them; they had merely been placed in the background upon the stages in the plant stove. Now the young growths are starting strongly from the base of the pseudobulbs, and this is the signal for repotting, because very soon after this the roots also start from the base of the young growth, and the repotting should be done before this. The best compost is good turfy yellow loam and dried flaky cow-manure, in the proportion of four to one; potsherds broken small and bits of charcoal as large as Hazel-nuts should be mixed with it, and a little sand. Do not over-pot; they will succeed in large pots and pans, but they do much better when they are under rather than over-potted. One point in their management of considerable importance is, that they should be placed near the glass in a stove temperature during the growing period, and be liberally supplied with water. The water should be applied rather cautiously at first, and until the roots penetrate the soil thoroughly, when it may be applied quite freely; weak manure water should be given twice a week when the pots or pans are full of roots. The largest pots used here in potting are those 6 inches in diameter; three of the largest pseudobulbs are placed in one of these, one-third of the depth being filled with clean drainage. The smaller bulbs are potted three in a 5-inch pot. I have not yet grown them in the shallow Orchid pans manufactured by Mr. Matthews, but I have seen them grown in these in Messrs. Veitch's nursery, Chelsea. They were suspended from the roof, the leaves very nearly touching the glass, and the healthy, strong clean growth was, I think, the most perfect I had ever seen. I alluded some time ago to the mistakes made in classifying this genus of plants, and was at some pains to obtain correct information. This was given in vol. ix., n.s., p. 105, and as it was not called in question that classification must be taken to be the right one. I must therefore refer those interested to that article for full information as to the different species and varieties and fuller cultural details. Besides the winter-flowering species and varieties which are deciduous losing their leaves before the flower-spikes are fully open, there are also the evergreen species, of which the most frequently cultivated are C. veratrifolia and C. Masuca. These must not be confounded with C. vestita and the hybrid C. Veitchii; they require rather different treatment, and ought to be potted late in the autumn. Being evergreen they should not at any time be allowed to become quite dry. They are now throwing up their flower-spikes, and must be kept free from greenfly; this pest gets into the flower-spikes, and is very difficult to dislodge. It utterly ruins the delicate pure white flowers of C. veratrifolia. I have found some difficulty in growing C. Dominii. It absolutely refuses to thrive (although it exists) with the same treatment as the others. *J. Douglas, Loxford Hall, Ilford.*

Cypripedium Stonei platytænium.

About thirteen years ago (I forget the exact date) a number of Orchids were stolen from Mr. Day's houses at Tottenham, and Mr. Stone, gr. to Mr. Day at that time, told me that he believed that this plant was one of the objects sought by the raiders, for a Cypripedium standing next to it was carried off by the thieves. It would be very interesting to know what those amiable persons proposed to do with such a rare and distinctive plant if they had got it, for its remarkable flowers would betray its presence anywhere. *W. Wilson, Priory Lodge, Isle of Wight.*

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Chamisso's Garden-house.—A recent number of the *Deutscher Garten* contains an original sketch of the great poet and naturalist's rustic dwelling in Berlin, accompanied by some lines from the pen of the genial Carl Bolle, the Editor of the periodical named, the occasion being the hundredth anniversary of Chamisso's birth. Chamisso may be better known to some of our readers as the author of the remarkable tale, entitled the "Shadowless Man," than as a botanist.

## Florists' Flowers.

The Rev. F. D. Horner's Garden at Kirkby Malzeard.—Five years ago this month of April I first visited the Rev. F. D. Horner and spent a few hours most pleasurably and enjoyably with him amongst the Auriculas. Again I have been privileged to compare his collection this year with what it was in 1876. And what a change is there! In that year we lingered over the well-finished trusses of Lady Blucher, Lady Ann Wilbraham, Anna, &c., and greatly admired the beautiful green edge of Prince of Greens, and hoped that some day a variety would be raised having all its merits without its failings. In grey edges George Lightbody and Lancashire Hero were stars of the first magnitude; these, with Complete, Ringleader, Beauty, Dr. Horner, and Richard Headley, were the cream of this class. In white edges John Simonite was just coming into notice, and Smiling Beauty was in grand form, but the remainder of the collection was composed of such sorts as Ann Smith, Earl Grosvenor, True Briton, Miss Ashley, and Bright Venus. In selfs Kay's Topsy, Pizarro, Lord Clyde, Lord Lorne, Charles J. Perry, &c., held the chief places. Now all is changed; seedlings of Mr. Horner's own raising will take the place of the old named varieties. None of them will be retained except George Lightbody (Headley) and Lancashire Hero (Lancashire); even James Heap's justly admired Smiling Beauty must go with the others, although it will remain long in the memory of Auricula fanciers as the best in its class.

How has this change been brought about? may well be asked. About ten years ago Mr. Horner began a systematic method of crossing Auriculas to obtain certain results; quietly and steadily during the intervening years greater and greater progress has been made, and the result up to the present time is now before us. I well remember on the occasion of my first visit going over the collection of 2000 seedlings, many of them in bloom, and how intensely interested we became in the new colours and quaint forms of many of them, until Mr. Horner remarked that they were "amusing in their absurdity;" but amongst these eccentric varieties there were a few flowers of great merit. These were crossed and re-crossed with other seedlings and named varieties in successive years. It is an old saying that "What man has done man can do." To fanciers with collections, and to others just starting to grow Auriculas, I would say, Get all the best varieties that are to be obtained, grow them well, and raise seedlings, too, from the best varieties. The amateur who has seedlings to anticipate, has his enjoyment many times increased. There are many other growers at work raising seedlings, notably Mr. Simonite, of Sheffield, but their efforts must be dealt with at another time.

At present it is enough to say that the seedlings at Kirkby, in all the classes but grey, far surpass the efforts of all previous seedling raisers put together. Beginning with the green edges, I cannot name a variety that has not very serious faults in the eye of an amateur; Anna (Trail) is a poor grower, and has a starry body colour; Colonel Taylor (Leigh) is very inconstant, and Prince of Greens (Trail) has a pale watery eye which dies off inky. Mr. Horner's greatest success in green edges is a seedling of 1879. No. 12. It has the petal and form of George Lightbody with a perfect green edge, black ground colour, round, dense, pure white paste, and yellow tube. Next to it we placed Enterprise, olive-green edge, well opened petal, dense round paste, and black ground colour, yellow eye. Emerald, rich deep green, dark maroon ground colour, rather heavy dense paste with yellow tube, truss large. Sybil, from the same seed-pod as Heroine, has a lively green edge, maroon body, good paste and yellow tube. This is much superior to the old Page's Champion. Minotaur is another variety with deep olive-green edge, black body, tube pale yellow. There are yet two more green-edged flowers having good points, and, like the others, without any spots of farina on the green. Benjamin Simonite and Richard Gorton were not sufficiently developed, but one pip open on Ben was quite first-rate.

In grey edges I only noticed a seedling raised some years ago named Ajax; it is a good and distinct flower, but cannot displace George Lightbody or Hero. There are other promising flowers, but they are not yet developed.

In white edges one of the most promising is a seedling flowered for the first time this year. It is in the way of Smiling Beauty, but has a pure white edge, which Heap's flower has not, a black ground colour and golden tube. Water Lily is a distinct and striking flower, very large and flat, pure white edge, black body colour, bold wide and pure paste, gold tube, and green neat foliage. May Queen, very round, smooth, and white edge, quite black ground colour, yellow tube, and fine truss of seven pips. There are many distinct and good white-edged flowers, but these three are the cream. Frank Simonite, now being sent out by Mr. Simonite, was very distinct and good.

In selfs there are some beautiful and distinct things; the most striking, I think, was Constance, cobalt-blue, round, and pure paste; petals what the fanciers call rose-leaved. Dora has most beautiful pure white foliage; colour of pips blue with a mauve shade, good paste. Selina, a good maroon flower with round dense paste; pips very large. There are also some good crimson selfs from Duke of Argyll; one with green foliage will be heard of again. I think the green foliage makes a better setting for the crimson truss. Kingdom was flowering freely, and maintaining its first promise of goodness. It may be described as a vastly improved Topsy. Mazzini (Pohlman) had a noble truss opening, and will take a high position amongst dark selfs. Sunshine is a clear yellow self, with very good qualities, notably a better paste than in any of the old forms. I have not left much room to describe the other treasures in the Vicarage garden.

The Tulip beds are next in importance to the Auriculas. Mr. Horner was not slow to discover the defects of the old system of covering Tulip beds with canvas, old mats, and sundry other frost and rain defying material. He has therefore covered his two 4 feet wide beds with a house 12 feet wide and 48 feet long. It is thoroughly ventilated and the glass sashes are even with the rows of Tulips, and scarcely any light or sunshine is intercepted. The Tulips are not in any way forced, indeed they are not so far advanced as our own planted out-of-doors without any protection. The foliage is very beautiful and healthy. Amongst other fine sorts Tulipa Greigi shows prominently with its beautifully marked foliage. Mr. Horner is also one of the very few raisers of seedling Tulips. He sows the seeds in November and they vegetate in March. It requires very patient waiting for results. The "breeders" are very eccentric as to the time of breaking into flame or feather. I was shown a seedling between George Hayward and Everard breaking this year for the first time; it has taken eighteen years to do it. Mr. Simonite, who was with us, remarked that he had been waiting thirty years for some of his breeders to break; of course this is exceptional, but it shows that florists are bound to go slowly.

To many the collection of hardy terrestrial Orchids would be more interesting than Auriculas and Tulips; they are well grown in a cool span-roofed house. They succeed best in the rich yellow, moderately clayey loam of the district. There are a dozen plants of the great Lizard Orchis (Himantoglossum hircinum), stronger than I ever saw this species. Ophrys aranifera (Spider Orchis), which had been sent from Eastbourne, is growing freely. Others doing well are Ophrys bombylifera, O. apifera (the Bee), found wild in the neighbourhood in great plenty; O. fucifera, Orchis expansa, hardy Cypripediums, &c. I ought to say that the loam is taken from the limestone. The finest hardy aquatics and sub-aquatics are also grown in tanks and tubs. The double Marsh Marigold was very beautifully in flower. It is well known that the most enlightened florists, like Mr. Horner, Mr. Barlow and others, are the greatest patrons and lovers of all hardy flowers and interesting botanical specimens. *J. Douglas, Loxford Hall, Ilford.*

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## Garden Operations.

*KITCHEN GARDEN.*

Advantage must now be taken of the genial showers and warm sunshine that have succeeded the "Nor'-easters" to plant out good breadths of Cauliflower (between the ranks of Potatos), Cabbage and Lettuce plants, also Brussels Sprouts, which should be planted in rows not less than 3 feet asunder, and the same distance from plant to plant in the rows. This will also be a good time to sow the main crop of Broccoli and Kales, which should be sown in beds 4 feet wide, with an alley 1 foot wide between each bed. The ground should be trodden over and raked before the beds are marked out; these should be made square with the wall or walk, the seed should be covered with a quarter of an inch of soil from the alleys, which should then be raked, and the surface of the beds patted with the back of the spade so as to compress the soil and seed, and the alleys neatly cut off. The work when thus completed should present a good example of kitchen gardening taste and mathematical precision. After this chaffinches, which are very troublesome and destructive to seeds and seedlings, should be looked after, and the bed occasionally dusted with a mixture of new soot and lime, which will have the effect of keeping them at bay. Perhaps it may not be out of place here to enumerate a few varieties of Broccoli that may be thoroughly

depended upon, and which I shall divide into four classes, and in the order in which the respective kinds come into use, viz.:—Autumn varieties: Dancer's Late Pink Cape, Early Purple Cape, Grange's Autumn White Cape, and Veitch's Self-Protecting. Early winter varieties: Snow's Winter White, Backhouse's Winter White, Early Penzance White, and Osborn's Winter White. Early spring kinds: Adam's Early White, Early Purple Sprouting, Chappell's Cream, Dilcock's Bride, Frogmore Protecting, Brimstone, and Knight's Protecting. Late spring varieties: Cooling's Matchless, Cattell's Eclipse, Carter's Champion, Richmond Late White, and Wilcove Late White. Globe Artichokes.—Now that the plants have made sufficient growth to admit of offsets being taken off to make good any deaths that may have taken place during the winter, and also for the purpose of making fresh plantations, our plan, which we have practised for several years with the most satisfactory results, is to destroy a few rows of the oldest plants every year, at the same time saving therefrom enough of young plants wherewith to plant an equal number of rows, which are planted in clumps of three plants set triangularly, in rows 4 feet asunder, and at the same distance from clump to clump, in rich well-prepared ground. When planting the soil should be made firm around each plant with the hands, after which they should be watered, to settle the soil about the roots, and the ground between them should be subsequently mulched with a few inches thick of well-rotted manure. These plants will yield a good supply of Artichokes late in the autumn, and long after those which have been planted a year or two previously have ceased to bear. The manure that was put on as a surface-dressing and protection to the roots of the Globe Artichoke plants late in the preceding autumn should now be forked in, the blanks, if any, having been previously filled up. Another sowing of Turnips and Lettuce should now be made, also a sowing of Salsafy and Scorzonera (where used) should be made in drills 1 inch deep and 1 foot apart. Where Cardoons are in request the seed should be sown at once in a box or pan and placed in a frame, and so soon as the seedlings have come up they should be gradually hardened off and subsequently planted in trenches, 1 foot deep and 16 inches wide and 4 feet from centre to centre, and about 16 inches from plant to plant in the row. The trenches are prepared similarly to those for Celery. Scarlet Runners and Canadian Wonder French Beans should now be sown. We grow two rows of the former, each row being nearly 60 yards long and 8 feet between the rows, which run east and west; and as our mode of treatment is somewhat different from that generally practised, I will briefly state it. We plant our first on or about April 24, and the second row two months later, and in front (south) of the first row. Instead of using sticks 8 or 9 feet long as supports for the bines, we use the poles (Ash) as long as we can get them without being too thick and heavy—say from 20 to 30 feet long—which are stuck firmly in the ground 1 foot apart on either side the row of Runners and braced together by a series of bean-sticks fastened longitudinally on either side the upright sticks at 6 or 7 feet from the ground by means of a series of cross-ties made of tarred string, by which means the rows of sticks are made secure against the effects of rough winds. Instead of stopping the Runners, as is usually done, we allow them to grow uninterruptedly, and so cover their alloted space, thereby prolonging considerably the supply of Runners. We frequently gather (by the aid of a long pair of steps) from the row sown the end of June, which is protected by the shelter afforded by the first row from the effects of cutting winds and autumn frosts, good supplies of Runners to the middle and end of November. General work will consist in the sticking of Peas, earthing up of Cauliflowers and Cabbage plants, thinning and weeding early crops of Turnips, Carrots, &c., Dutch-hoeing between young crops, hand-weeding, and the maintaining of good order in the garden generally.

Forcing Department.—Attend to the pricking out of young Celery plants as recommended in a former Calendar, and see to the hardening-off of the early batch of plants for planting out in trenches early next month; make another sowing of some of the most approved kinds for late planting. Sow Mustard and Cress under hand-glasses in a warm corner out-of-doors. *H. W. Ward, Longford Castle.*

## *FLOWER GARDEN.*

Every hour of the fortnight intervening since my last note under this heading was written this part of the country has been afflicted with the most bitter "Nor'-easter" that ever blew, the consequence being that recently planted trees and shrubs are getting so parched up that the watering of them has become imperative, and the mulching given when the trees were first planted should still be retained. Lately moved plants of every kind are suffering, and the only chance of saving them is to give them plenty of water. Box edgings, Roses, herbaceous plants, and newly-laid turf all need this attention; where much of the latter has been moved a thin mulching of litter would materially aid a speedy re-establishment of it in its new position. Newly sown lawns should be repeatedly rolled, and any parts of lawns that are of a sickly hue may be quickly improved by a dressing of wood ashes and soot. We usually mix these with double their bulk of finely sifted soil and then scatter them thickly over the lawn, and the improvement is perceptible in a very few days after the first heavy shower. Mowing is of first importance, negligence of it now would tend to the production of coarse bottom grasses that would be visible most of the season. Nothing adds to the beauty of a garden more than a well kept lawn, but then it should be well kept; I would certainly prefer not to mow any at all, than to but half keep a large surface—better have a little done thoroughly than incur the reproaches for untidiness in attempting to mow acres, when there is only strength to do poles. The same rule is applicable to walks; many gardens are spoiled and the work of keeping in order increased by meaningless and unnecessary walks. All walks should now be put in trim order by re-surfacing with fresh gravel. Under trees, where the gravel gets discoloured and moss-grown, a sprinkling of salt will give brightness to the gravel and kill the moss. It should be put on during dry weather, the better to insure its full effect, by lying longer on the walks; the risk of injury to the grass verges is also thus lessened, for the longer it lies before rain the less likely is it to wash against the verges. Continue to prepare beds and borders for summer planting out. All hardy varieties may be planted at first convenience; Violas, Pansies, Sedums, Cerastiums, and such-like, should all now be done. Last year our neatest edging plant for perpendicular raised edgings was Herniaria glabra, and this plant therefore has first place in our arrangements this year. It naturally grows close to the ground, so that no trimming whatever is necessary, whilst the colour, though dark green, seems as decided a contrast from the colour of the turf as does any of the grey Sedums. Indoors the greatest difficulty will now be to find space for the number of plants required for bedding purposes, the hardier kinds will therefore have to be drafted out of pits and frames to make room for tender varieties. Calceolarias we plant in Celery trenches, and protect with Laurel and Yew spray; Gnaphaliums, Lobelias, Verbenas, Mesembryanthemums and some kinds of Pelargoniums we plant out in turf pits, and protect with felt-covered shutters. By these makeshifts abundant space is usually found for all. Seedling sub-tropicals must not get pot-bound. Solanums, Ricinus, and Wigandias root so freely that all of these need 5-inch pots before planting time. Abutilons, Acacias, and Cannas do not suffer so readily from being root-bound, and therefore, as a rule, 3-inch pots are ample. Make up slight hot-beds for striking Alternantheras: stable litter and lawn mowings answer admirably—on this place 6 inches of light soil, and insert the cuttings; keep the frames closed and shaded till struck, when, as regards airing and watering, they may be treated the same as other bedding plants. It will not be necessary to transplant them till they can be finally planted out for the summer, but as the weather becomes warmer they should be gradually inured to bear full exposure. Beds of Tulips and Hyacinths will shortly be in full beauty, and if the bulbs were not planted on low-growing surfacing plants the beds should be surfaced with cocoa-fibre refuse, which, whilst it renders watering unnecessary even in the driest season, also imparts neatness. Beds of other kinds of spring flowers that have not had such a mulching will probably have suffered by the dry parching winds of the past two or three weeks, and will therefore be improved by surface stirring; and if the growth of the plants is not likely to fill out the beds cover the bare space with fibre. *W. Wildsmith, Heckfield, Hants.*

## *FRUIT HOUSES.*

Peaches and Nectarines.—Since I wrote last, we have had a continuation of bitter east wind, until to-day, the 12th; but at the same time we have had a moderate amount of sunshine, consequently Peach trees in the early houses have made rapid growth. Directions already given as regards temperature will still apply. Keep a check on red-spider by thoroughly syringing the trees twice daily, and give them a good watering with chilled weak liquid manure, at about 80°. Stop any gross shoots to equalise the sap before they rob the weaker portion of the trees. Maintain a steady temperature until they have finished stoning; when they commence their last swelling the temperature may be increased by day, but still keep a low night temperature of 65° to 60°. The same treatment may be given to the second house, which, although started a month later, will almost overtake the first one. Third and succession-houses will require continual attention in the shape of disbudding, heeling down the young shoots, and thinning the fruit, which may now be done freely, for if the trees are in good condition very few will drop during the stoning period. Keep a sharp look-out for green-fly, and settle with them, either by fumigation, or syringing with tobacco-water, &c.; I prefer the former when the houses are close glazed, and it can be done easily. Do not allow them to get dry at the roots. If the borders are well drained, it is astonishing the quantity of water they will take. The blooms in the latest houses are setting fast, and look promising for good crops. Ventilate freely on fine days, and leave a little on front and back all night in mild weather to keep them as late as possible. We have a good sprinkling of bloom on the trees outside that look tolerably well up to the present. *J. Wallis, Keele Gardens, Staffordshire.*

### Melons.

The long-looked-for change has come at last, and we are once more enjoying April sunshine and refreshing showers. Having now obtained a genial atmosphere the temperature hitherto maintained in a great measure by fire-heat should be modified to one more truly representing natural conditions which are only secured by making a judicious use of those natural elements in the shape of warmth and sunshine which are so beneficial and conducive to the welfare of plants. Fire-heat should, therefore, be reduced to a minimum, and the ventilating apparatus so arranged that the requisite temperature is secured by means of solar heat. Plants that are bearing full crops are never troublesome in the way of producing redundant growths, while upon the other hand plants that are carrying but light crops should be looked over from two to three times a week, removing all sub-laterals and flowers, both male and female, in order that the full vigour of the plants may go to nourish and sustain the crop. The fruits in the earliest house will now be swelling fast, and should not be syringed, as in case of extreme vigour the fruits are liable to crack about the time they commence to change colour. Atmospheric moisture should be supplied by damping the borders, walls, and paths of the house, closing in with a temperature of 90°, and keeping the night temperature not lower than 70°. Where a regular succession of Melons is required succession crops should be advanced to follow each other in regular order. Our succession batch is showing flower, and a third batch of seedlings is pushing through the soil. These are grown in hot-water pits with a bed of fermenting materials for bottom-heat. A ridge of soil is laid along the centre of the pit, two plants are planted into each light, one being trained to the top and the other to the bottom of the pit. When the bines reach this point the plants should be finally earthed up, and then pegged into their respective positions; the points of the bines are pinched, and fruiting laterals (which should also be pinched at one joint beyond the fruit) are produced soon afterwards. Melons, which are grown in frames with the aid of fermenting materials only, should have fresh linings added whenever the heat is found to be decreasing. Place two bricks, one upon the other, under each of the four corners of the frame, and then add the linings upon the space left for the purpose when the bed was made. The heat will then ascend into the vacuum made by elevating the frame, and will not only warm the soil in which the plants are growing, but also generate a moist, genial atmosphere in which the plants will luxuriate. *W. Hinds, Canford, Dorset.*

### Cucumbers.

There is no season of the year when Cucumbers as a crop are more profitable than during the present month. The plants fruit abundantly, and perhaps at less cost and with less difficulty to the cultivator than at any other period of the year. They enjoy a warm moist atmosphere, partial shade, and careful ventilation. The fact of their succeeding best under the two former conditions renders their tender foliage susceptible of injury from the slightest chill, or direct exposure to powerful sunshine. The former is obviated by admitting air moderately through scrim canvas; and the latter by shading from strong blinks of sun. It is very important to keep the leaves from coming into contact with the glass, where they are chilled and roasted alternately, and finally become a prey to insect pests, which are difficult to remove from such tender organs. Keep the roots well nourished by frequent top-dressings or tepid liquid-manure water, and endeavour as far as possible to keep an equable top and bottom-heat, and success will then be assured. Crop according to the vigour and growth of the plants; above all, do not allow heavy crops to drain the plants of their energies for the sake of a temporary show, unless there is some very special purpose in view. Plants that are moderately cropped, and regularly stopped and thinned of superfluous growths, are those that last longest, yield most fruit, and pay best in the end. Add fresh compost to succession plants, and keep the roots mulched as they approach to the surface. The figures recommended for Melons will also be suitable for Cucumbers, with, however, a considerable increase in the amount of atmospheric moisture, and syringings overhead twice daily. *W. Hinds, Canford, Dorset.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | April 18 | Spring Flower Show in the Town Hall, Birmingham (two days). |
| Tuesday, | April 19 | National Auricula Show in the Royal Horticultural Society's Garden, South Kensington. |
| Wednesday, | April 20 | Sale of Imported Orchids, Fruit Trees, &c., at Stevens' Rooms. |
| Thursday, | April 21 | Royal Horticultural Society of Ireland's Spring Show. Linnean Society's Meeting at 8 P.M. Sale of Imported Orchids, at Stevens' Rooms. |

THE origin and production of Double Flowers has been a fertile theme for inquiry and discussion for many years past. Botanists and practical gardeners have laid before us their observations and the result of their experiments, which have for the most part been duly chronicled in these pages. We do not purpose now entering on a general discussion of the subject, but intend simply to call attention to the circumstance that so long ago as 1843 Mr. Darwin suggested in these columns that the production of double flowers was to be sought for in some antecedent condition bringing about partial or complete sterility and consequent compensatory increase of the petaloid parts (*Gard. Chron.*, p. 628, 1843. This suggestion received further illustration in the same author's *Animals and Plants under Domestication*, ed. 2, chap. xvii., vol. ii., p. 152, and in his work on *The Effects of Cross and Self Fertilisation in the Vegetable Kingdom*, p. 41. It has lately been still further confirmed by the remarkable experiments of Dr. Heckel, of Marseilles, to which we have already alluded (*Gard. Chron.*, vol. xiv., 1880, p. 534). At that time we had before us only a brief abstract of the French observer's observations and experiments, but we have since received a copy of the author's paper from the *Bulletin de la Société Botanique et Horticole de Provence*, in which the writer gives the full results of his labour, and very interesting they are, both from a purely physiological point of view and from that of practical gardening. It will be remembered that in the wild state M. Heckel distinguishes three principal forms of Convolvulus arvensis—one in which the flowers are rose-coloured, with purplish stripes outside along the folds of the corolla; another in which the flowers are white, with similar purplish bands; and a third, in which the flowers are wholly white. There are various intermediate forms, but of all these the pure white form is the least abundant. Not only is it the least frequent, but it is the subject of different physiological conditions, as we shall hereafter show, and in connection with this peculiarity it manifested a greater tendency to become double by the replacement of the stamens by petals than the other more or less coloured varieties. Self-fertilisation, that is, the formation of the seed by the agency of a flower's own pollen, rather than by that of pollen derived from some other flower of the same species and brought to it by insects or other external agency, has, according to Mr. Darwin, the effect after a time of causing the disappearance, in other words of preventing the formation, of stripes and dots of colour in the petals, and thus of tending to the production of self-coloured or white flowers. As the necessity for attracting insects diminishes so does the colour which serves to attract them. Following Darwin, M. Heckel points out that prolonged self-fertilisation has a tendency to cause the flowers to become malformed, that is, double, and a certain degree of sterility is in consequence induced. Imbued with these ideas M. Heckel set himself to work to ascertain the cause of the appearance of the double flowers in the wild Convolvulus in question—in other words, he endeavoured to ascertain, first, what adaptations and what circumstances had brought about continued self-fertilisation; and, secondly, he tried by continuous self-fertilisation, artificially produced, to develope the double condition, and to bring about the production of white flowers. Under ordinary circumstances the flowers of Convolvulus arvensis are more or less coloured, and otherwise well adapted for insect fertilisation. Careful study enabled M. Heckel to discover a cause competent to give rise to the formation of white flowers of this plant. This first step gained and perpetuated in succeeding generations by continued self-fertilisation sufficed in time to bring about all the malformations of the flower observed. The cause which forms the starting point of these changes M. Heckel finds in a spider (Thomisus onustus), which, chameleon-like, changes the colour of its body under varying circumstances, so as to give the creature an advantage in its struggle for existence. The spider in question frequents the flowers of the Convolvulus arvensis, those of Antirrhinum majus, Dahlia, and others, with the object of preying upon the insects that visit those flowers. When it emerges from the egg the spider is white, and retains that hue so long as the requirements of its predatory existence may demand it, but afterwards red, green, or even yellow tints are assumed, according to the colour of the varieties of the Convolvulus or other flowers it inhabits. Spiders, it is well known, in the way in which they coil themselves up sometimes mimic or assume the guise of certain insects, and some, as pointed out by Mr. Bates, resemble flower-buds and remain motionless till the prey comes within reach. The influence which this spider may exert on the flower in the way of bringing about self, rather than cross-fertilisation, is thus obvious. The insects which visit the flowers of the Convolvulus in such variety and in such great numbers, necessarily bring about cross-fertilisation if all goes well; but if the insects in question become the prey of the spider lying in wait for them in the recesses of the flower, it is evident that cross-fertilisation will be prevented by the murder of the pollen-carriers, and that self-fertilisation is very likely to result. Let us suppose the huntsman at his post, watching for the first indications of the opening of the flower. Directly this occurs he makes his way to its inmost recesses, which constitute its lair. There his whole life is given up to the chase, the necessities of his life require him to move about from place to place with great rapidity, and thus he becomes necessarily the means of bringing about self-fertilisation. In fact, the creature becomes dusted over with pollen, which he wipes off upon the stigma of the flower. The white varieties being visited by a smaller number of insects, the chase is less productive, the sportsman does not get such a good bag, and the difficulty of getting any at all is increased. Self-fertilisation of the flower is thus rendered the more sure, first from the increased effort of the spider, and next from the fact that as fewer insects visit the flower a larger proportion fall a prey to their enemy and fewer in consequence escape to cross-fertilise other flowers. After a time, however, it stands to reason that the spider would be in danger of starvation, white flowers would be perpetuated by self-fertilisation, they would offer fewer and fewer attractions to insects and less and less prey for the spider. But the huntsman is a creature of resource, he is not obliged to confine himself to white flowers, but he can adapt himself to coloured ones also, entering which he assumes a tint such as shall serve to conceal him more or less effectually from the unsuspicious insects which as we have seen are likely to visit the coloured flowers in greater numbers than the uncoloured ones. The chances of life for the spider are therefore better in the coloured flowers, in the sense that he can get more food and at a less expenditure of time and energy, but then, as already pointed out, he gradually but surely kills the golden egg, and by his rapacity brings about self-fertilisation by killing off the insects, and thus ultimately, as it were, digs his own grave.

So much for M. Heckel's observation and reasonings. Such remarkable conclusions might well be received with some amount of scepticism. It was requisite that they should be put to the test of direct experiment. Accordingly, with all due precautions, M. Heckel proceeded to fertilise flowers of the various varieties of Convolvulus arvensis with their own pollen, taking care to exclude the access of all other. We have not space to give the detailed results; suffice it to say that in the first generation of the seedlings so produced little or no change was observed, but in subsequent generations a slight change in the colour of the seeds was observable, some being paler than others. This pale condition of the seeds became increased in successive generations, and they were selected for continued sowing. Passing over minor points, it was not till the fourth generation of seedlings raised by continued self-fertilisation of the white flowers that signs appeared of the production of the same monstrous condition of the flower which M. Heckel had observed in the wild state, and which gave rise to his inferences. M. Heckel, then, is justified when he asserts that he has designedly and of set purpose been able to bring about a monstrous condition of the flower by continued self-fertilisation, and has thus realised the suggestion of Mr. Darwin; further, he expects to be able, by persisting in his experiments, to be able to bring about ultimately by the same continuous self-fertilisation complete sterility in the flowers.

The practical bearing of these facts is obvious. Those who wish to produce double flowers or other monstrosities must pursue a similar course to M. Heckel; like him they must exercise careful observation, draw correct inferences, put those inferences to the direct test of experiment, exercise great patience, lie on the watch for the smallest evidence of deviation from the ordinary form, seize on it at once, and perpetuate it by reiterated selection and continuous self-fertilisation—in fact, they must do what the best and most careful "raisers" already do, and they must eschew the unsystematic, haphazard procedures which are pursued by some who call themselves "raisers," but who are not entitled to any such appellation. Everywhere in Nature we see the evidence of design with variety, order, method, and adaptation to circumstances in carrying it out. The more nearly we cultivators can imitate Nature's mode of working the greater will be our success.

—— Dr. Newington's Rock Garden. — The rock garden at Ticehurst, which Dr. Newington has made during the last three or four years, and of which we give one view on the opposite page (fig. 95), is one of the least formal and most pleasing examples of this style of gardening that we have seen for some time. Dr. Newington's estate is situated on the range of hills between Tunbridge Wells and Hastings, and on the Hastings sand formation, which is characterised not only by sand, but by the occurrence of harder masses of rock in more or less cubical forms, separated from one another by vertical and transverse fissures filled with sand, as may be well seen at the High Rocks, Tunbridge Wells. The stone at Ticehurst was quarried for the building of a large villa close by, and this being completed Dr. Newington, with the aid of a handy labourer employed in his garden, converted the quarry into a charming rock-garden, with bog beds and a serpentine lake in the centre. The stone was excavated till a stratum was reached showing ripple-marks of a former lake or sea in the clay, and this forms the paths. The garden is rapidly being furnished, and presently will be a delightful surprise for visitors to Ticehurst.

—— The Kew Museums.—Museum No. 1 in the Royal Gardens, Kew, will be re-opened to the public on Easter Monday, after having been closed during

the winter. It has been enlarged by the addition of a new wing, terminating in a wide staircase with ascending and descending flights (the latter with a separate exit). The expense has been defrayed by a grant from the India Office in consideration of the transference to Kew of the botanico-economical collections lately forming part of the India Museum. The whole contents of the Museum, reinforced by a selected series from these collections, has been entirely rearranged by the Curator, Mr. John R. Jackson, A.L.S. On the staircase has been placed a large painted window, presented to the Museum by Alderman W. J. R. Cotton, M.P. This window, which represents the successive stages of Cotton cultivation and manufacture, was originally placed in the Guildhall, London, but Alderman Cotton subsequently substituted for it glass of more conventional design. Some other important additions have also been recently made to the collections. Amongst these may be mentioned a new series of models of farm and garden products, which Messrs. Sutton of Reading have expressly prepared and very liberally presented. Colonel Pearson, who has charge of the Indian Forest-students at Nancy, has with much pains got together a large collection of objects manufactured in France from different kinds of native-grown woods. Dr. Aitchison has given a further series of vegetable products and manufactured articles from Afghanistan. The series of portraits of botanists has been entirely re-arranged, and has received an important addition in a fine half-length oil picture of the late Thomas Andrew Knight, long President of the Horticultural Society of London, well known for his classical researches in vegetable physiology. This was presented by his grandson, Sir Charles Rouse Boughton, Bart., of Downton Hall, in compliance with the wish of the late Mrs. Stackhouse Acton, Mr. Thos. Andrew Knight's daughter.

Fig. 95.—Dr. Newington's Rock-Garden. (see p. 504.)

—— Mahaleb Walking-sticks.—The Mahaleb (Prunus Mahaleb) is extensively cultivated at Baden, near Vienna, for walking-sticks, pipe-stems, &c., on account of the agreeable and enduring odour of its wood. This odour is developed, according to a writer in *Der Obstgarten*, independently of country.

—— German Roses.—For some time past there has been a strong movement in Germany to promote the development of a more extended cultivation of Roses, especially the production of a sufficient supply of forced Roses in winter to take the place of importations from France and Italy. Now it is proposed to offer substantial prizes for new Roses of German raising. A large massive gold medal is offered for the best new variety raised in Germany, and a silver one for the second best. It is urged that the English have of late successfully competed with the French in this lucrative branch of gardening, and there is no reason why the Germans should not have their share of the profits.

—— The Approach to Kew Gardens.—A great improvement is now in the course of execution in the approach to the grand entrance to Kew Gardens from the Green. Most persons who have visited Kew will have realised and remember the dangerous turn in the very narrow road where stands, or rather stood, the lodge at the entrance to the herbarium grounds. The building in which the herbarium is stored having been permanently acquired for that purpose, there was no longer any obstacle in the way of a great public improvement. Accordingly, the fence is being put back to within about 50 feet of the herbarium building, so that the new road will sweep round in a gentle curve to the main gates of the garden. This improvement not only makes the approach safe, it renders it much more effective, as the lodge and shrubberies in the herbarium grounds obstructed the view of the entrance to the gardens in the road leading from the bridge.

By the time this is in the hands of our readers, the work will probably be near completion.

—— Gardeners' Royal Benevolent Institution.—We are informed that the Worshipful Company of Grocers have just contributed the sum of 25 guineas to the funds of this Institution—a most opportune Easter offering.

—— Sarracenias as Flowering Plants.—It is surprising how seldom we meet with Sarracenias in blossom, and how little is known of them in that condition. This is the more to be wondered at, as they are exceedingly beautiful and full of interest. The display of them in one of Mr. Bull's long low span-roofed houses is very striking, and has been so for some few weeks past. Indeed, we suspect few of the many beautiful subjects there collected—and a house of Odontoglossums in particular is really charming—would more astonish nine-tenths of the visitors than the collection of Sarracenias now in bloom. As an example of the free manner in which these blossoms are developed we may mention a pair of plants of S. Drummondii—the Drummondii of gardens—growing in 12-inch pots, one of which has ten and the other thirteen of the large quaintly formed maroon-crimson blossoms on scapes about a couple of feet in height, and slightly overtopping the handsomely reticulated pitchers. Other sorts now in effective bloom are the large yellow S. flava picta, the white S. crispata, and the deep blood-red S. rubra. When grown for the pitchers alone one-half of their beauty is lost.

—— Bæa hygrometrica.—At Kew this pretty and peculiar Chinese plant is now in bloom. It is an outlying species—probably the only one at present in cultivation—of an interesting genus of Cyrtandreæ, whose headquarters are the hilly country of Eastern Bengal, Tenasserim, and Burmah. The seed from which the Kew plants were raised was sent from the neighbourhood of Peking by Dr. Bushell, the physician to the British Embassy. It is a stemless herb, with a rosette of silky ovate or obovate leaves and slender scapes, bearing a few nodding pale blue, yellow-throated blossoms.

—— The National Auricula Society's Exhibition.—We are requested to remind our readers that the exhibition of the National Auricula Society will be held in the conservatory of the Royal Horticultural Society on Tuesday next, the 19th instant. The exhibition will doubtless be the means of drawing the attention of many quiet but ardent lovers of Nature to a source of enjoyment peculiarly open to the dweller in the pent-up town—the Auricula, like the Carnation and Picotee, yielding results relatively highly satisfactory in atmospheres positively fatal to the great majority of the subjects of Flora; and on this occasion the visitors will have the additional gratification of listening, at 3 p.m., to a lecture by the Rev. F. D. Horner, Vicar of Kirkby Malzeard, who, alike in the books and on the exhibition-table, is *primus* with this lovely spring flower.

—— Cheap Seeds for the Million. — No greater evidence of a love for gardening amongst the mass of the population could be found than is seen in the almost universal catering on the part of seedsmen of all grades to meet the requirements of the amateur and cottager everywhere. The packet business has developed amazingly during the past few years, and if some of the seeds furnished are perhaps of no great value, others are much appreciated, and all are useful. It was thought a liberal act when the earlier caterers in this branch of the seed business offered twelve packets for as many pence; but the race in the competition soon became a warm one, and twelve has grown to twenty, to thirty, and even to fifty, and all free per post, for the small charge of one shilling. It by no means follows that the greatest number of kinds results in the best bargain, and fifty kinds of flower-seeds is too many for any small garden. Eighteen or twenty kinds, if a good selection, the seed good, and enough of it, can hardly prove other than a good bargain. Of course none other than common cheap things, hardy annuals especially, can be given for the money. The postage is usually 2*d.*, and when from the remainder is deducted the cost of packets, labour of packeting, &c., it is obvious that it is only when a very large trade is done that such a business can pay. Perhaps the best feature of the enterprise is found in the facility with which it enables even the poorest to become possessed of flower-seeds, and thus to beautify their humble gardens beyond conception. Whenever it shall please the Post-Office authorities to give us the blessing of a parcels-post—and the boon has been promised by Mr. Fawcett—then this cheap system of trading in seeds will no doubt be largely extended; indeed, there are few trades which a parcels-post is more likely to benefit than those relating to seeds and plants. As it is so largely an experiment, and if successful calculated greatly to increase the burthens of the letter-carriers everywhere, it is obvious that such a great change cannot be made in a moment.

—— Dietes Huttoni.—A few years ago this pretty Irid was sent from the Eastern Province of Cape Colony, by the gentleman whose name it bears, to Kew, and was described by Mr. Baker, and figured in the *Botanical Magazine*. It is a neater, smaller grower than the yellow Flag of our English river banks and marshes, and has smaller, darker yellow flowers, which, however, in form exhibit a considerable resemblance to those of the common Iris Pseud-Acorus. For cool conservatory decoration, in common with so many of its allies from the same botanical region, it is well worth growing, and but little care is required for its successful cultivation. It is now in bloom at Kew.

—— Perfume of Sarracenias.—It is interesting to note the varied odour of the different sorts of Sarracenias, a good opportunity for doing which was afforded by the plants flowering in Mr. Bull's nursery. We did not detect any peculiar smell in S. Drummondii, nor in S. crispata, but S. flava had the characteristic odour—ingrata—attributed to it in the books. The flowers of the variety called S. flava picta, which was here in bloom, had a strong feline odour, such as is given off by some Ferns—Pteris felosina and Adiantum Sanctæ Catharinæ, for example—and which is, to say the least, far from agreeable. On the other hand, the blossoms of S. rubra have the fragrance of Violets developed in a very pronounced manner.

—— Corylopsis pauciflora. — In Messrs. Veitch's Coombe Wood nursery this Japanese shrub is now in full bloom. It deserves special mention as one of the prettiest and most interesting of early spring-flowering shrubs. Like C. spicata, figured at p. 510, it produces its primrose-coloured flowers long before the leaves, but the drooping spikes in that species are made up of a good many flowers, whilst in those of the subject of the present note there are but two or three. To Messrs. Veitch belong the credit of first introducing to cultivation C. spicata, which, like C. pauciflora, is a perfectly hardy and very desirable shrub, with Cowslip-scented flowers.

—— Camellia La Pace.—This charming Italian Camellia was recently flowering nicely in Mr. Bull's establishment at Chelsea, where our notes were made. It bears flowers of about medium size, consisting of broad, smooth petals, which are not crowded together, but distinct enough to display the greater portion of their surface, while making up a flower sufficiently double. The colour is a blush-white, freely flaked in bold stripes with bright carmine-red. It is something in the way of Contessa Lavinia Maggi, but more highly coloured, from the bolder character of the markings. The variety is quite A 1.

—— Camellia Jose Marquis Loureiro.—Fine white Camellias are always welcome, though the Old Double White and Fimbriata alba are hard to beat. The variety here named is one of the desirable and meritorious whites. To begin with, it has good bold foliage, which is a great relief to the flowers, and which is just the one point in which the old variety falls off. The flowers are above medium size, and very full of broad, smooth-edged petals, the outer of which are reflexed, while the central ones retain the concave or cup-like form. It is a pure white.

—— Camellia Leon Leguay.—This fine variety was distributed some few years since by the late M. Meillez, but, like many other fine sorts, is yet but little known, the Camellia being comparatively slow of increase, and taking some few years under ordinary conditions to get fairly distributed. The present is a very handsome variety, with flowers of medium size and beautifully formed, the shell-like smooth-edged petals being ranged with perfect symmetry. The colour is crimson, more or less mottled with blotches of white, the two colours affording mutual relief. It is a very neat and pretty Camellia, and well worth obtaining. We noticed it in flower a few days since in Mr. Bull's nursery at Chelsea.

—— Camellia Don Pedro.—Here we have quite a novelty amongst these charming winter and spring flowers. In the first place the dark green leaves are very characteristic, being remarkably short and broad, with an acuminate point and strongly marked serratures. The flowers are of medium size, concavely imbricated, neatly and symmetrically formed, with broad petals, smooth at the edge. The colouring is peculiar and very pleasing, the marginal portion of the petals being white, while the inner or basal parts are of a rosy-carmine, which runs outwards in lines from the base of the petals, but does not reach the outer half, which remains of a pure white. This pretty rosy tint showing up from the inner depths of the flower is very pleasing. We saw it blooming a few days since in Mr. Bull's collection, and thought it a very desirable introduction.

—— The Meteorological Society.—At the ordinary meeting of this Society, to be held at 25, Great George Street, Westminster, on Wednesday, the 20th inst., at 7 p.m., the following papers will be read:—"On the Frequency and Duration of Rain," by Dr. Wladimir Köppen; "Results of Experiments made at the Kew Observatory, with Bogen's and George's Barometers," by G. M. Whipple, B.Sc., F.R.A.S., F.M.S.; "On a Discussion of Mr. Eaton's Table of the Barometric Height at London, with regard to Periodicity," by G. M. Whipple, B.Sc., F.R.A.S., F.M.S.

—— New Books.—Mr. B. D. Jackson's *Guide to the Literature of Botany* (Longmans), a very important work of reference, has just been issued, and will demand full notice at our hands. Messrs. Black & Co. have also just published an *Epitome of Gardening*, by Mr. T. Moore, with an introductory chapter on the Principles of Horticulture by Dr. Masters. The book is a reprint, with additions and modifications, of the article "Horticulture" in the new edition of the *Encyclopædia Britannica*.

—— The Weather.—General remarks on the weather during the week ending April 11, issued by the Meteorological Office, London:—The weather during the greater part of the week was again very cold, fine, and dry, but towards the close of the period it changed, becoming cloudy and milder, with some showers of rain. The temperature has again been below the mean for the season in all districts, the deficit being greatest (5° or 6°) in northern and central England. Several sharp frosts were experienced over the central and northern parts of the kingdom, the thermometer falling to 23° at Leith, 24° at York and Blackpool, and to between 25° and 30° at most other stations. On the 10th and 11th, however, the temperature was much higher, readings as high as 63° being reported from the Midland Counties, while at Hillington the maximum was 65°, and at Cambridge 67°. The rainfall was much less than the mean in all districts. Bright sunshine was much less prevalent in most places than it was during last week, but the percentages were still high over most parts of the kingdom, ranging from 63 or 62 in the north-west and east of England, to 28 and 29 in the south of England and east of Scotland. Depressions observed.—Until the 8th pressure continued highest to the northward, and lowest to the southward and south-west of our islands, causing a continuance of fresh or strong easterly winds on nearly all our coasts; on the 9th, however, a depression was seen to be approaching our south-western coasts, and causing the wind to shift to the south-eastward and southward, and at the close of the period moderate southerly breezes were blowing at all our stations.

—— Gardening Appointments.—Mr. J. Taylor, late Gardener at Isel Hall, Cockermouth, has been appointed Gardener to F. J. Reed, Esq., Hassness, Cockermouth, Cumberland.—Mr. C. Warden, late Foreman to Mr. Hill, at Tring Park, has been appointed Gardener to Sir F. H. Bathurst, Clarendon Park, Salisbury, in succession to Mr. Frisby, who is seeking another engagement.

## RAISING HARDY FLOWERS.

The right season for sowing seeds of hardy biennials and perennials is at hand. In the first place the seeds must be obtained, and those who are not able to save them from their own plants must do the next best—get them from a trustworthy source. From my own experience I would say that the quality of seeds sold by the principal members of the trade have been vastly improved during the last decade. These observations apply especially to florists' flowers, such as Carnations, Pansies, Auriculas, Polyanthus, &c.

Of course amateurs and others who have long cultivated garden flowers will make a point of selecting their own choicest plants to save seeds from, and in doing this it is well to keep two distinct objects in view. First, if the object is to perpetuate and improve a distinct form, then the best variety must be set aside and kept by itself, so that the pollen from inferior varieties may not contaminate the produce of the produce of the plant which is the seed-bearer. The second method of procedure is to select two varieties, each having distinct properties which it is desired to combine in one flower, and then carefully to cross the one with the other. I would rather have two score of plants the produce of seeds raised in this way than two thousand the produce of seeds saved indiscriminately from an ordinary collection of plants. Every one of our wild flowers may in process of time be improved by careful culture and selection from seeds.

Some of our horticultural writers have thought it worth while recently to ridicule the efforts of florists and others in their attempts to improve our hardy flowers: whether they are likely to have many adherents remains to be seen, but it seems to me that some persons are occasionally at their wits' end for matter; and the patient plodding florist is an easy mark for smart writers. But this is only by the way; we can well afford that our efforts should be judged by results.

Let us take the lowly Pansy as a sample of what has been done by crossing and selection. Most people know Viola tricolor, a common weed in some districts. Those who prefer this pretty little weed to our show and fancy Pansies which have sprung from it are welcome to do so, but they are sure to be in the minority; and are not likely to improve their case by boasting that they can make better flowers from tin by the aid of a pair of compasses. We try to get our Pansies round, of large size, and great substance, and within recent years we have added richness of colour and interminable variety. If seeds are sown now in a cold frame or gentle hotbed they will make a grand display of bloom by the end of summer, and continue to do so until stopped by the cold of winter. I like to sow the seeds on a gentle hotbed, not because they would not vegetate if placed in a cold frame, but because they appear more surely and quickly with a little moist heat.

About the end of March or the first week in April we also sow our Gladiolus seeds on a gentle hotbed, about two score seeds in a 7-inch pot. The plants appear above the ground in about two weeks, and grow rapidly. Every grower of the Gladiolus should be a seedling raiser. The named varieties, whether of French or English extraction, are very expensive, and very rapidly deteriorate; and a large proportion of the seedlings, whether the seeds have been saved from selected flowers or by intercrossing, are as good as the parents, and distinct from them.

The Hollyhock disease still lingers in our gardens, and when it appears it must be stamped out. This may be done by sowing seeds. Seedlings of this stately flower are so easily raised that no garden need be without it; but I would defer the sowing of the seeds until May, for if sown now they will attempt to flower, but will be cut down by the frost before the flowers open.

Pinks, Carnations, and Picotees should be sown in April. Mr. Dodwell sows his seeds in that month in a cold frame, using light sandy soil. The glass should be kept rather close, and shaded from hot sunshine until the young plants appear.

As so many hundreds of packets of Aquilegia seeds are sold during the year, it may be as well to state that this is the best time to sow them. I always sow in pots, and place them over a gentle hotbed to vegetate, and afterwards gradually inure to a cold frame, from which they are ultimately placed out-of-doors.

Auriculas, Primroses, and Polyanthuses, if sown now and grown on without any check, will form good flowering plants for next year. We generally sow our Auricula seeds when they ripen—that is, in July; but the result is that the greater portion of the seeds lie dormant in the ground until they feel the genial influence of the first breath of spring. They are now appearing above-ground. I am not sure that it is not just as well to keep the seeds of Auriculas in the pods, and then sow in a gentle heat in the spring. The trouble of attending to the dormant seeds in pots from July until March is rather serious to a busy man.

Seeds of the choicest species and varieties of herbaceous plants are now to be obtained in the trade; but I would warn intending purchasers that it is necessary to exercise considerable patience in this branch of horticulture. Some of the seeds remain long in the ground before they appear. I think the best way is to place a cold frame in a sheltered shady position, place the pots containing the seeds in the frame, and just keep the potting material moist, and wait patiently until the appearance of the plants. *J. Douglas, Loxford Hall, Ilford.*

## THE VINE LOUSE.

The ravages of what has now come to be more generally called *the* Phylloxera—though the term should always be qualified, since there are many other species besides that which attacks the Grape Vine—have attracted so much attention in foreign countries and caused so much fear in those countries not yet invaded by it, that the most stringent laws have been enacted to prevent such invasion. Some of these laws are injurious and unnecessary in so far as they prohibit the importation of all living plants, and at Cape Town more particularly they have been carried out with such zeal that a cargo of Potatos arriving from New Zealand was recently destroyed for fear that the pest might be imported therein. A great deal of controversy has grown out of this stringent legislation, and Dr. Maxime Cornu has lately submitted a report, in which, while confessing that Phylloxera vastatrix is confined to the Grape Vine and can flourish on no other plant, he yet recommends the following of the example set by Algeria, which is to forbid the introduction of all vegetable products whatever except those absolutely required for consumption.

I have been too busily engaged during the last few years with other injurious insects to give very much attention to the Grape Phylloxera in this country; yet I have made continuous observations which confirm all that I have in past years written on the subject, and from which I do not hesitate to declare that it is going beyond the bounds of reason to prohibit the importation of anything more than Grape Vines or Grape cuttings from countries or districts where the Grape Phylloxera is known to occur.

The life history of this interesting insect may be thus briefly stated:—Starting from a stem-mother, it multiplies agamically through an indefinite number of generations, either in galls on the leaf or in cavities or on swellings on the roots. Its spread is naturally slow in the unwinged condition, whether on the surface or beneath the ground. But winged, agamic females are produced during the late summer and autumn months, and these are the true migrants of the species, and disperse and spread from vineyard to vineyard through the atmosphere. They lay some half-dozen eggs only, in such situations as afford shade and moisture, and from these come the only true males and females, which are mouthless, feed not, and are born simply to procreate—the female laying, either below or above-ground, a single, and the only directly impregnated egg, which has been termed the "winter egg," and which in the spring following gives birth to the stem-mother, which may either found a colony in a gall on the leaf, or upon the root—the latter being the more common habit.

The prohibition of other products than Grape Vines is based upon the supposed possibility of winged females settling thereon and depositing the few eggs which give birth to the true males and females, which last produce the "winter egg." Now the experiments which I made in 1875 (recorded in the *Transactions* of the St. Louis Academy of Science, October, 1875), and which were the first recorded of their kind, show that the eggs from the winged females are most often laid in or on the ground near the base of the Vine, and that they are so delicate as to require specially favourable conditions of moisture and temperature to enable them to hatch. I do not hesitate to express my conviction that when deposited on anything else than the lower tomentose surface of the living leaf of the Grape Vine, where they can receive moisture by endosmosis, or in the crevices or irregularities of earth that receives from dew or other sources a due amount of moisture, they will infallibly perish. But even supposing that these eggs could hatch, and the resulting female should lay the impregnated egg upon any other living plant, and that this egg should in due time give birth to the stem-mother, she would inevitably perish without issue for want of appropriate food; while to suppose that all these operations could go on upon any other product or substance than living plants, or upon the dry parts of plants, is to exhibit crass ignorance of the peculiar conditions necessary to the perpetuation of the species at these particular stages. With the utmost care in endeavouring to supply the natural conditions, I have failed nine times in ten to obtain the sexual individuals, and still more frequently to get the impregnated egg, and such has been the experience of others in Europe. The danger of introducing this insect upon anything else than the Grape Vine, where a voyage has to be made in the tropics, is yet more remote, as even supposing the "winter egg" could be produced it would prematurely hatch on the voyage.

The only way, therefore, in which Phylloxera can be conveyed from one country to another widely separated therefrom, is upon Grape Vines. My recommendation to use certain resisting American Vines as stocks on which to graft the more susceptible European Vine has resulted in an immense traffic in American cuttings between this country and Europe, and nurserymen engaged in this business, however unbiassed they may desire to be, naturally lean toward that side of the question which furthers their own interest. The insect may be carried on the roots of Vines during the winter, either in the dormant larva state or in the "winter egg" state; and while later researches, here by myself and abroad by others, have confirmed my previous experience in this country, published five years ago, as to the rarity of the "winter egg" on the canes above-ground, and the more recent observations would seem to indicate that wherever it is thus found above-ground it is produced rather from the gall-inhabiting type than from the more dangerous root-inhabiting type, yet the fact that this "winter egg" does occur upon almost any part of the plant above-ground, and more particularly under the loose bark of the two-year-old cane, renders it quite possible that the insect may be carried upon cuttings in this "winter egg" state, and fully justifies the prohibition of the introduction of such, as well as of rooted plants, from any country where the insect is known to occur. Indeed, considering the rarity of shipment of rooted Vines, I strongly believe that the insect was originally introduced into Europe from America in the "winter egg" state upon cuttings. I would say, therefore, to those countries desirous of defending themselves from this scourge, that all danger is removed when Vines and all parts of Vines from infested countries are kept out. With such prohibition all requirements are met, and all legislation that goes beyond this must necessarily be hurtful to general industry; while the prohibition of traffic in American Vines in countries where the Grape Phylloxera is known to already occur, can have no useful end, and may be detrimental.

That the rarity with which the impregnated egg is found above-ground greatly reduces the chances of Phylloxera introduction by cuttings is true, but in a country desiring protection from such a scourge the remotest chance should not be risked. It is wrong to suppose, as some have done, that this egg may not occur on one-year cane. I have found it upon such, and it may even occur upon the dried leaf, where, in all probability, it is destined to perish.

While, therefore, I believe that the laws cannot be too stringent in preventing the introduction and use of Grape Vines in any living condition into a non-infected from an infected country, it is equally true that there is no danger in the mere passage through such a country of such Vines or cuttings. These are necessarily boxed, and can only be safely and properly shipped during the cold or non-growing season, when the egg is dormant, so that there is a practical impossibility in the introduction of the insect by the mere passage, whether of Vines or cuttings. *C. V. Riley, in "American Naturalist."* [We are glad to be able to adduce such testimony as that of Mr. Riley's in support of the position we have all along maintained on this point. Eds.]

## Home Correspondence.

**Tidal Floods.**—It may be safely assumed, I think, that tides in the ocean rise to no greater height than in olden times. Tides of more than usual height occur when moon, sun, and wind all act in conjunction to draw and force them up, and will undoubtedly continue occasionally to take place so long as sea, land, and atmosphere, moon and sun, continue to exist in the same relation to one another as at present. Why, then, are high tides continually increasing in the height to which they rise in the valleys of many of our rivers? The reasons are not far to seek and are very easy to be understood. In rivers having wide mouths, the impetus which the tidal wave moving in from the sea gains drives it up when a narrower channel is reached to a greater height than it had attained in the sea. When, however, our rivers, or, rather, the marshes by their banks were in a natural condition, the water thus driven up could spread itself out over a comparatively vast area, but now in most instances in this country this once frequently overflowed land is protected by banks, which confine the tides to the river itself. More and more land is continually being recovered from the action of the tides by embankments, so it follows that there is a continually decreasing area for the water to spread itself out over, and consequently it becomes more and more "heaped up," as it were, in the river itself, and banks which were formerly of quite sufficient height to protect low-lying lands are now occasionally quite insufficient for the purpose. Again, floods from rainfall are continually on the increase, owing to causes set forth in a previous note, and when it happens that a flood from rainfall in the upper reaches of a river meets in the tidal parts an extraordinary high tide from the sea, all the elements which tend to make a disastrous flood are present; districts hitherto considered safe are overflown, crops are destroyed, dwelling-houses and warehouses invaded by the water, and great loss of property, sometimes even great loss of life, and great damage to public health are occasioned. Now, as shown in the letter just referred to (p. 467), floods from rainfall are easy to prevent provided suitable and proper means be taken; so tidal floods may be just as easily dealt with, and may be prevented by a much less expensive method than that of continually raising higher and higher the embankments along the whole tidal course of the river. The evil requires to be arrested at, or as near to its source as possible. Putting the source of a rainfall flood at those points all over the face of the country, where raindrops begin to collect together after having fallen, we may put that of a tidal flood at that part where the river leaves off and the sea begins. It is this part then where a portion of the water which passes in requires to be arrested in its inland passage, and this is a much easier thing to do than at first sight it may appear to be. It must not, however, be arrested to such an extent as to seriously interfere with the ordinary tides, because navigation along the tidal course will have adapted itself to ordinary conditions, and to alter these would probably be to inconvenience to some extent wharf and other arrangements made to suit ordinarily existing circumstances. It is only the extraordinary tides which have to be dealt with. Solid piers or breakwaters should be placed at suitable spots to arrest a portion of the flow; they need not be carried far enough into deep water to seriously affect ordinary tides, but be carried over land which is uncovered, or nearly so, at low water, but over which at high tides a considerable body of water passes; and instead of building them exactly at right angles to the course of the river, a slight angle in the direction of the sea might be advisable. A short pier where there was a great rush of deep water would of course be much more effectual than a long pier in shallow water, but it would be more expensive to construct and would also interfere with ordinary tides, which is what would, as before stated, be necessary to avoid in most instances. By picking upon suitable spots on both sides of the river for placing a succession of these piers, some close to and some further from the sea, a sufficient amount of water may be arrested in its passage to "take the top off" what would otherwise be a disastrously high tide, but not to affect ordinary tides. Floods, tidal or otherwise, must not be dealt with in a parochial spirit. The man who by draining his land hurries the water to a river does so in most cases at the expense of his neighbours, and he who banks out river tidal floods from a piece of land does so often at the expense of his neighbours also. Neither can annihilate the water they rid themselves of, it simply goes to increase the burdens of their neighbours. Floods must be dealt with where they originate. Rain falls all over the face of the country, and should be dealt with then and there. The vitals of a river tidal flood are at and near to the mouth of the river, and there is the place where and where only they can be properly treated. *J. E. Ewing, Eaton, Norwich.*

**Nepenthes.**—These interesting plants are rapidly increasing in popularity, for not only are new species being obtained from their headquarters in Borneo, but a considerable number of hybrids have made their appearance within the last few years. These hybrids are, it would seem, of a hardier character than many of the imported sorts, and have the quality of producing pitchers in great abundance. The accompanying woodcut (fig. 96) illustrates this. It is a view of the interior of Mr. Williams' Nepenthes-house at the Victoria Nursery, Upper Holloway, whence several of these hybrid forms have been sent out, and of some of which illustrations have appeared in our pages. A house of this character, it will be seen, is perfectly well adapted for their cultivation; the plants show their appreciation of the conditions here provided by the abundant crop of pitchers they have produced, and which is in no way exaggerated in the sketch, from a photograph, here reproduced, for the use of which we are indebted to Mr. Williams.

Fig. 96.—Mr. B. S. Williams' Nepenthes House.

**Early Birds.**—The notes of the cheery little chiffchaff betrayed his presence here on March 31, and I saw a wryneck next day (April 1). This bird was very sluggish, allowing a near approach, and making short flights. I heard the willow wren (Phyllopneuste trochilus) April 7. Blackbirds are scarce in this neighbourhood this spring, and song thrushes have quite disappeared since the severe snowstorm of January. The skeletons of these birds and redwings are quite common hereabouts, showing their sad fate too clearly. *W. Wilson, Priory Lodge, Isle o Wight.*

**Scilla campanulata alba maxima.**—This is an enlarged form of our common white Squill, and is most suitably adapted for forcing in pots for early spring work. It is of pearly whiteness, and its spikes somewhat resemble, when in flower, the early white Roman Hyacinth, and might with advantage be used as a substitute for it, the single bells being most useful, if wired, for small button-hole bouquets. It

should be grown in pots constantly, as it will then force hard. Those who may wish to try this, may adopt the following plan :—Lift and select the largest bulbs as soon as they are matured, which will be about July, and pot the larger bulbs, say, six in a large 60-sized pot, and eight to ten in a 48-sized pot, according to the size of the bulbs ; when potted, they should be plunged in ashes or similar material, and introduced into warmth about Christmas, or even earlier, and be brought on gradually. The small bulbs should be replanted for another year. If this variety were more largely used, as I have recommended, it would be found of great service, and would furnish quite a desirable change among winter flowering subjects. *E. Jenkins.*

**Spring Flowers for Cutting.**—It is difficult to sympathise with the sorrows of a gardener who seems to want hardy spring flowers outdoors chiefly that they may be plucked ; but it is lawful and right that each one should do as he likes with his own, and therefore if "H. C." thinks his is a hard case it is not others' business. I would advise him to try Primula denticulata and its larger form, purpurea, as a useful hardy plant for his purpose. Mr. Dod writes of this earliest of hardy Primulas as suffering from the wind. I have many plants now in bloom in a spot where the wind has played over them without mercy, and yet the blooms have suffered nothing. But where the flowers are required for cutting I would advise their being planted under both shelter and shade, as the stems are thus slightly drawn, and more useful for the required purpose. *A. D.*

**The Tradescants' Tomb** (p. 472).—In Pettigrew's *Collection of Epitaphs* the second line runs thus :—

"Lye John Tradescant, grandsire, father, son."

This makes it more intelligible, and in a footnote is added the information that the "Lily Queen" designates Henrietta Maria, queen of Charles I. (p. 202, Pettigrew's *Epitaphs*). *H. M. E., April* 11.

**Fumigating.**—I do not know whether "J. S." has used Appleby's fumigating apparatus ; if not, I would advise him to procure one, and give it a trial. It is not an expensive affair, costing only a few shillings. Though a very simple contrivance, it is very effectual, and there is no need of the person using it to remain in the house after its being lighted. I have had two in use here for the last ten years, and find them very useful, and to answer every purpose for which they were intended. I have never used damp moss for the purpose suggested by "J. S.," but will do so when next I have occasion to fumigate. The thrips is one of the most troublesome pests I have to do battle with ; and after several ineffectual attempts I have not been successful in smoking them out. I am of opinion that it requires something stronger than Tobacco, or preparations of a similar nature, to do this. I quite agree with "J. S." in his observations as to the best time and manner of fumigating ; indeed, I think they are very important, especially as regards Peach-houses. I have for years past always subjected our orchard-house to a rather severe smoking just prior to the fruit-buds bursting into bloom, whether the appearance of aphis is discernible or not. I attach very great importance to the first operation, for the important reason that the insects begin to increase simultaneously with the swelling of the fruit-buds, and if allowed to make headway without some check being brought into operation the chances are that in the midst of the blooming period the trees get covered with these unwelcome pests ; and to eradicate them when they are so firmly established in almost every bloom is an operation most difficult to perform. The late Mr. Robert Fish attached—as also does "J. S.," I believe—very great importance to early fumigating fruit and plant-houses, on the principle, I presume, and that a wise one, that prevention is better than cure. After the fruit is well set, and sufficiently advanced, so as to allow of a second fumigation without injuring the tender foliage and fruit, it is advisable to do so. Afterwards the trees can be kept clean, and quite free from aphis and red-spider, by a liberal use of the syringe. I always keep our orchard-house moderately moist and close until the trees have advanced well into foliage before admitting cold currents of air. I very rarely fail in getting a good set of fruit, or in keeping the trees in the best possible health for the remainder of the season. *F. Everson, The Gardens, Ford Place, Thetford.*

—— I am much obliged to Mr. Woodford for letting me know how to treat tobacco to prevent it blazing when being used for fumigating purposes, and no doubt many others will be glad of the information, as to be in a house with it while burning is anything but pleasant, and I have known several young gardeners who have suffered much from its effects, although they may have reason since to congratulate themselves on the surfeit which has saved both their health and their pocket. The Government allow the sale of tobacco dust duty free for horticultural uses, and if they would do the same with tobacco it would be a great boon to nurserymen and plant growers, who have so much need for its use. It would of course be necessary to dress or steep in some way to render it noxious to smokers, but that I should think could be easily done. *J. S.*

**Hardiness of the Camellia.**—Mr. Hinds adds one more to the approvers of the Camellia for open air culture. There are few places in the kingdom where Camellias are more largely grown in the open air than at Glen Eyre, Southampton. I called there in February purposely to note how far the many plants growing there in very exposed positions had suffered, and found that the only injury done was the browning of a flower-bud here and there, or a leaf had been storm-beaten, but in no case were the plants more injured than Laurels or Rhododendrons. The Camellia makes its season's growth quite early, and therefore it is very hard and ripened before the winter comes. The complaint that wind and rain will damage the bloom is ridiculous. What outdoor flowers will not rain and wind damage ? Those who grow Camellias as hardy shrubs never make such complaints. *A. D.*

**Herbaceous Plants.**—"H. C." can hardly expect to find many herbaceous or other plants in flower outdoors at this early period, and especially after the cold we have experienced for months past ; but in spite of all that, Hellebores have, up till recently, been full of bloom, and for months have yielded a plentiful supply for cutting ; for which purpose there is nothing more useful and lasting. Then, again, there is the Dog's-tooth Violet, equal in beauty, form, and size, to some of the greenhouse Cyclamens, to say nothing of the lovely Scillas, the blue of some of which is quite unrivalled, excepting, perhaps, by Gentians, that are only wanting a little warmth and a shower to open. Iris reticulata is a perfect gem that has been in some time, and has yielded us many blossoms ; and soon there will be Daphne Cneorum, so chaste and sweet as to be quite an acquisition in any bouquet. Daisies are ablaze in all their variety of colour ; and what can be prettier than these in masses, or an edging of the red with common yellow Primroses in a bed, or red and white Daisies and Myosotis dissitiflora for the centre—a combination at once pleasing and beautiful. Not only may all these be had in flower now, but there are Narcissus, Hyacinths, Hepaticas (just over), Polyanthus, Aubrietias, Arabis, Violas, and the brilliant Anemone fulgens, than which a more showy thing in the plant way does not exist. Dielytra spectabilis, with its pendent blooms, is unsurpassed by any tender exotic, but this requires and deserves the best and most sheltered place in a garden. In a short time there will be the Spanish Irises, which are almost equal to Orchids in form and marking, and the gorgeous Flag Iris in endless variety. Milla or Triteleia uniflora is just unfolding, and T. laxa, with its miniature Agapanthus-like heads of flower, will not be long now, with the Alströmerias and hosts of other things that will shortly come on with a rush. *J. S.*

**The Past Winter and its Effects.**—Though the weather has been severe and continued so for a very lengthened period, vegetation has not suffered so severely as in 1879-80. In the kitchen garden, vegetables have suffered much. With the exception of some plants of the late kinds, Broccoli have all been killed, Brussels Sprouts and Borecole have stood pretty well, Spinach has stood well, Globe Artichokes suffered more than in 1879-80, Celery and Leeks were severely injured. Fruit trees of all kinds suffered much in 1879-80 ; during the past winter they have not suffered much. The young wood of the Peach trees has been injured a little. Fruit trees in general look well, but there will not be that abundance of blossom that one would have expected after the failing crops of the last two years. Apricots here—and I understand it is the same in other places—have very little blossom ; Peaches promise well ; Pears are very disappointing—neither on the wall trees, nor on the standards, nor on the pyramids, is there anything like that promise of an abundance of blossom that one would expect, especially after the complete failure of the crops last year. Some trees have a fair quantity, others very moderate, whilst there are some that have very little blossom. Should the weather prove favourable there will be a moderate crop, but not so abundant as one would have expected. Apples promise fairly well, and with fine weather there will be an average crop. Plums promise only a moderate bloom. Bush fruit being late will probably be a good crop. In some places Strawberries have suffered considerably. On the whole the prospects of good fruit crops in this neighbourhood are not so cheering as one would wish. With a few weeks nice genial weather there may be moderate crops. Many things have suffered severely in the flower garden. Among alpines and hardy perennials there are very many blanks. Dwarf hybrid perpetual Roses have stood the past winter well. The greater part of the standard Roses here were killed by the frost of 1879-80. The dwarfs were killed to the ground, but the greater part of them broke out afresh and made fine plants last year ; these have not been injured in the least by the frosts of the past winter. Most of the standard Gloire de Dijon here were killed in 1879-80. Some large old plants that were nailed to walls were killed to the ground ; these broke out afresh and made shoots 10 to 14 feet in length the past season : these shoots escaped the past winter without injury. The few standard Gloire de Dijon that survived 1879-80 have not been injured by the past winter. Many kinds of evergreens suffered in 1879-80. The common Laurels here were all killed to 1 or 2 feet of the ground. They broke out nicely from the bottom last season, but I fear the past winter has killed many of them. Portugal Laurels also suffered, but not so badly as the Common Laurels. Hollies suffered very much, many trees being very much disfigured where they were not quite killed ; common Yews also suffered in some places. In walking around Harrogate a short time since I was rather surprised to see that the evergreens there had suffered very little from the frost of 1879-80, or from that of the past winter—Hollies and Laurels (both the common and Portugal) being uninjured ; Aucubas, not a leaf injured on many of them ; a grand bush of Laurustinus full of buds, uninjured ; Araucarias, Deodars, Cypresses, and many other Conifers not the least injured—the dryness of the atmosphere no doubt saved them. The greater part of Harrogate, stands high and dry. Evergreens do not make such gross wood as they do in more sheltered situations, and the climate being dry they do not suffer much even from winters like 1879-80 and the past one. *M. Saul, Stourton, Yorkshire.*

**The Fruit Blossoms and Frost.**—Since the morning of March 27 (Sunday), when we registered 13° of frost, the weather was so bitterly keen as to cause the gravest anxiety for the safety of the fruit blossom. Upon the date above mentioned what few Apricot blooms there were expanded were totally destroyed, having the appearance of being dipped in boiling water, notwithstanding that the upper portion of the wall was covered with tiffany. The clusters of flowers upon standard Pears had also the appearance of being scorched—the outer scales, at least ; and it is to be hoped that a change in the weather will set in before the flowers open. The one great thing in our favour has been the drought, but with the uncertainty of recurring frosts all should be on the alert to give battle to the common enemy. On March 30 we had 8° of frost ; on the 31st, 8° ; on April 1, 6° ; and this morning (April 4), 7°—with the wind blowing from the north-east bitter enough to destroy everything in the way of tender vegetation. A simple and not expensive way of giving partial protection to standard fruit trees is to gather the branches as close together to the main stem as circumstances will permit, and then to drive four stout stakes round the tree, so as to encircle it. Run a few rows of strong string round the stakes at intervals of a foot or 18 inches apart, and then fasten Fir boughs to the upright stakes, leaving the branches to rest upon the hoops formed of string, which will prevent the branches from rubbing against the flowers. Too much shading, except for the purpose of retarding the opening of the blossoms, is just as bad as too little, and the hardier the flowers can be kept the better it will be for the chances of a crop, if our worst fears should be realised. *W. Hinds, Canford, Dorset.*

**Iris (Xiphion) colchicus.**—Amongst the bulbs and other plants kindly sent to me last autumn by Dr. Regel this plant has flowered in the open border, as also in pots in the greenhouse. It resembles I. persica, but is wholly of a soft yellow colour. Tulipa biflora, white variety, and the golden T. triphylla, have also been quite gay with blossoms ; and Corydalis Ledebouriana is both distinct and effective. Its broad, soft, glaucous pinnate foliage alone is ornamental, to make it welcome for a pot plant or a sheltered border. *F. W. Burbidge, Trinity College Gardens, Dublin.*

**Abutilon Sellowianum marmoratum.**—What I stated with reference to the hardiness of the above for bedding purposes was the result of two years' experience of it in the garden here, and the last season it was so unsatisfactory that I had to take it up and replace it with A. Thompsoni, as I had not a sufficient stock of A. Darwinii tessellatum, which I greatly prefer of the two. From what Mr. G. Westland says of A. Sellowianum, I shall give it another trial in a more favoured situation, and shall be glad to hear how it has behaved with others who may have planted it out. The way I think of using these spotted Abutilons this year is with Ricinus Gibsoni, as, the leaves and habit of the plants being of much the same form and character, they will associate well together and show up in very pleasing contrast the one with the other. *J. Sheppard.*

**Double Wild Daffodils.**—In the article on Daffodils last week it was said that the double form of the wild Daffodil is only double within the tube, or "trumpet." I recollect, however, a few years ago seeing a specimen of it figured in the *Gardeners' Chronicle* which was found wild in the Isle of Wight, which was entirely double, like a Rose, the tube being mixed up with the outer petals. [We alluded to the *true English wild double Daffodil*, figured at p. 500, vol. iii., 1875, where the whole matter is discussed. Eds.] Mr. Baker, in his monograph of the Narcissus, figures both forms (plate 10). The double form, which is found wild in more than one part of Devonshire, mixed up with the single, I believe is always of the semi-double kind. Twelve bulbs were sent to me in flower from that county about a week ago, and none of them could be seen to be double without looking into thetube. Mr. Harpur-Crewe tells me that this variation in the double flower is accidental, and not persistent or constant under changed circumstances. I believe it depends upon the accident of soil. On the cold clay in my garden and neighbourhood nearly all the flowers of the common garden Daffodil become semi-double, retaining the tube unbroken and cylindrical; some flowers of it even show stamens, and are all but single. Though I am now convinced that no soil or cultivation will make a Daffodil double, unless it is so from its birth, there are several varieties, especially amongst the incomparabilis and Tazetta groups, which revert to the single form after being double. I doubt, however, whether they become capable of producing seed, and probably favourable circumstances would make them double again. *C. Wolley Dod, Edge Hall, Malpas, April* 12.

**Fumigating Materials.**—"J. S." will find the tobacco-paper manufactured by Mr. Appleby, which is cut in long narrow slips, answer all his requirements. I have used it for Nepenthes and many of the tender stove plants, and never known it injure anything (if used with ordinary care) nor burst into a flame. From some ingredient used in its preparation it is impossible for a man to stay in the house, and printed directions to that effect are placed on each packet; it is especially destructive to thrips. *W. H. Divers, Burghley.*

**Victoria Nectarine.**—While the subject of Nectarines is before your readers allow me to mention the above variety as one deserving general cultivation for mid-season use; it belongs to the small-flowered section and is a good bearer. The fruit is pale green on the shady side and beautifully coloured where exposed to the sun: its flavour is first-rate. *W. H. Divers, Burghley.*

**Indian Azaleas.**—In a recent number of the *Gardeners' Chronicle* some remarks appeared relating to these, in which a correspondent stated how he had brought some plants round by piercing and scarifying the balls, and afterwards soaking them in water, and then potting afresh. No doubt there are many Azaleas that would be benefited by similar treatment, and more that would be all the better for measures of a further extreme nature being carried out with them, as it generally occurs that the soil in which they are growing loses much of its virtue by age and becomes inert and sour—a condition, it need hardly be said, that is adverse to the health and welfare of roots. To shift plants with large balls of earth in such a state hardly mends matters, and the best way is to remove a large portion of it, which can most readily be done by the aid of a large sharp knife to cut away a thick slice all round—a course that Azaleas will stand well, as they at once set to work in forming fresh fibres. To assist them in doing this the plants should be stood in a house where they can be kept close and warm and heavily syringed during the afternoons of sunny days, which will give an impetus to fresh growth. If the heads are large, they, too, may be considerably reduced at the same time, in doing which the pruning-in should be so carried out as to be more of a thinning of the shoots than a general cutting back, as it is important in an operation of that kind to leave as much foliage as possible, which will enable them to break again and quickly get over the check. Why many fail in growing Azaleas well is from want of good peat, which should be of a tough nature, full of minute roots and of a rusty-brown colour, such as can only be obtained from a heath or common, like that of Wimbledon, which is very different to the boggy black stuff many have to make shift with. Potted in peat like this, with a good sprinkling of sharp silver sand, old Azaleas may be quite rejuvenated, but the potting must be firm, or the water will pass through without wetting the old ball. To prevent this the soil should be well rammed down with a stick as the filling-in proceeds, so that when finished it may form a compact mass, and the same with young plants that may be in want of more room. The proper time to carry out the partial disrooting of Azaleas in the way alluded to above, is just before they start, which means a sacrifice of bloom for a year. *J. S.*

## Reports of Societies.

**Royal Horticultural**: *April* 12.—At the afternoon meeting the Rev. G. Henslow took the Narcissus as the subject of his lecture, there being a fine display from Messrs. Barr & Sugden's nurseries. He drew attention to the character of the family, Amaryllidaceæ, to which the genus belongs, and pointed out the sole distinction between it and the Lily family, Liliaceæ, that in the latter the ovary is free from the tube of the perianth, whereas the latter organ was adherent to it in Amaryllids. It thus becomes "inferior," or apparently below the perianth. Taking Narcissus as a typical genus, he described the five sections into which it is divided:—1. Ajax, which is exemplified by the Daffodil with its very long corona, and having the filaments of the stamens adherent very low down. 2. Ganymedes, with a drooping Cyclamen-like habit and reflexed limb, as N. triandrus. 3. Hermione, or Polyanthus, with its slender tube and shallow corona, such as N. Tazetta, which is naturalised at St. Michael's Mount, and flowers there three months earlier than near London. 4. Queltia, with a subcylindrical tube and short corona; and, lastly, the true form of Narcissus, as N. poeticus, with the tube widening at the mouth, &c. Several other genera, such as Pancratium and Ismene, have a corona, but it is not characteristic of the majority of the genera in the order. It has been regarded as an abortive whorl of stamens, inasmuch as it sometimes

Fig. 97.—Corylopsis spicata: flowers pale yellow.

bore supernumerary anthers. The family Amaryllidaceæ is represented by three genera in Great Britain—The Daffodil, the Snowflake, and Snowdrop. The two last have free segments to the perianth and no corona. In comparing Amaryllids with the Lily family, the Daffodil with coherent lobes may be paralleled with the Hyacinth and the Lily of the Valley; while the Snowdrop and Amaryllis with free lobes would compare with the Tulip and Star of Bethlehem. With regard to the distribution of the Amaryllids, Narcissus and Galanthus (Snowdrop) represent the family in temperate regions; Pancratium first appears on the borders of the Mediterranean Sea; Crinums and Pancratiums abound in the West and East Indies. Hippeastrum has numerous species in Brazil and South America; but the greatest number is at the Cape of Good Hope, such as Hæmanthus, Crinum, Clivia, Brunsvigia, Amaryllis, &c. With regard to the properties of the family, acrid, narcotic poisonous principles occur. The Daffodil is narcotic in small doses, while large doses of the petals are poisonous. Pancratium maritimum has the same properties as, and is substituted for the medicinal Squill, a bulbous plant of the Lily family, which also occurs by the Mediterranean; Hæmanthus toxicarius of South Africa is intensely poisonous. The Kaffirs use the juice mixed with the venom of serpents and the milky juice of Euphorbia as a poison for their arrows. Similarly Crinum Zeylanicum is violently poisonous. On the other hand an arrowroot or starch is extracted from the bulbs of Alströmeria pallida, &c., in Chile.

One of the most useful of the family is Agave americana of Mexico, miscalled the American Aloe; as the true Aloes, or rather Aloë, though much resembling the former, belongs to the Lily family. The American Aloe blossoms at rare intervals and then dies, producing a flowering-stem sometimes 40 feet high, and bearing 3000 blossoms. In Mexico the stem and leaves are tapped, or the flower-bud is cut out and the juice collected and then allowed to ferment. It forms a kind of beer called *pulqué* by the Spaniards. A very intoxicating spirit is also made from it by distillation. The juice contains both oil and an alkali, and so forms a substitute for soap. It is thus used in Portugal and Spain, as the American Aloe is much grown in South Europe. The flower-stem cut vertically makes a good razor-strop, in consequence of the silicious particles it contains; while the fibre of the leaves is of considerable value, and is called *pita*. Lastly, cattle are fed on the bruised leaves in very dry seasons.

Spring Show in the Conservatory.—The display on this occasion was a much smaller one than that of a fortnight ago, but very enjoyable nevertheless. Pot Roses, in what are called half specimens, were finely represented by groups from the nurseries of Messrs. James Veitch & Sons and Messrs. H. Lane & Son, of Berkhampstead, and the Council rewarded both exhibitors with a Gold Medal. The plants were well brought out, with fine clean foliage and an abundance of good blooms. It was a genuine pleasure to see a collection of plants that were a credit to the famed Berkhampstead growers, and still more so to see present, hale and hearty, Mr. John E. Lane, the father of English pot Rose growers, he having been the first to grow and show Roses in pots at Chiswick between thirty and forty years ago. The Messrs. Lane also sent up a fine group of forced Rhododendrons, a plant which they always do well and in great numbers. Mr. B. S. Williams contributed his usual group—a very showy and attractive assortment of flowering and fine-foliaged plants, in which were many conspicuous Orchids, and for which he was awarded a Silver-gilt Medal. Similarly rewarded were Messrs. Barr & Sugden, for a very extensive and most interesting collection of cut flowers of Narcissus, very tastefully grouped; and Mr. Aldous took a Silver Medal for a very nice mixed group of plants. The Messrs. Veitch also showed Corylopsis spicata (fig. 97), a species with pale-yellow Cowslip-scented flowers, also C. pauciflora more fully alluded to at p. 506. The contributions from Chiswick were both numerous and good.

Scientific Committee. — Dr. Maxwell T. Masters, F.R.S., in the chair.

*Canker on Apple Trees.*—Dr. Masters exhibited specimens, and described the changes in the structure of the bark and wood that occur in this disease, and alluded to a fungus which grows on the decaying tissue. Dr. Hogg expressed the opinion that the original cause of the disease was frost or icicles forming in the angles of the branches and killing the tissues. Some varieties were much more subject to it than others, and bad conditions of soil rendered trees especially prone to it.

*Malformed Sarracenia.*—Dr. Masters showed a flower of S. flava with supernumerary styles, the adventitious growths appearing in the form of narrow straps above the ordinary umbrella-shaped expansion. Some comments were made as to the mode in which the flowers of the Sarracenia are fertilised.

*Plants Exhibited.*—Mr. Elwes showed a flowering specimen of Nolina Georgina, a squill-like plant, with the habit of a Cordyline, from Carolina; also a Tulip from Persia, with lilac segments and a yellow eye. It resembled T. violacea of Boissier, while the colour was that of T. saxatilis. Tulipa iliensis was shown by the same gentleman. It has much the appearance of T. sylvestris. Mr. Elwes alluded to the great variability in character of Tulips, so that wild species grown in gardens soon lost their characteristics and became indeterminable. Fritillaria atropurpurea and the curious Arisæma speciosum, with its spadix prolonged into a long thread, tucked up in the first instance in the lobe of the leaf (see *Gardeners' Chronicle*, 1879, p. 585, vol. xii., fig. 96), were shown by the same exhibitor.

*Daphne Mezereum.*—From Mr. Bunyard, of Maidstone, came plants of this shrub, with a curious spongy outgrowth from the stem, the nature of which was not with certainty determinable until a fresh specimen could be examined.

*Resin from Alder.*—A quantity of blackish resinous exudation from the common Alder was shown.

*Sport of Boronia megastigma.*—Mr. Henslow called attention to the plant shown by Messrs. Veitch, one branch of which had pale yellowish flowers, while the blooms on the other were of the ordinary colour. The paler flowers were also said to be devoid of odour. It was suggested that the paler coloured flower devoid of odour was likely to be self-fertilising, and not requiring the aid of insects, a conclusion in which Mr. A. Bennett concurred.

*Potato Disease Under Glass.*—Dr. Masters exhibited leaves of forced Potatos affected with fungus-threads, probably those of the Peronospora.

*Musa Cavendishii and the Electric Light.*—Mr. Buchanan, gr. to Dr. Siemens, showed a bunch of the fruit of Musa Cavendishii, weighing 74 lb., which was produced on a plant started in March, 1880, when not more than 18 inches high. When first started it was subjected to the influence of the electric light at night for about two months; during the summer months no artificial light was employed, but for the last six weeks the electric light had also been employed at night also. Mr. Buchanan was of opinion that the efficacy of the light in ripening the fruit was not very marked, as indeed on physiological grounds it could hardly be expected to be, light being of more relative consequence in the earlier stages of growth, heat in the latter. A special vote of thanks was directed to be sent to Dr. Siemens.

*The Winters of* 1879-80, *and* 1880-81. — Rev. G. Henslow stated the measures he had taken to procure facts for a report on the injurious effects of the frost of the two past winters on plants. Out of 2000 forms sent out, only 250 had yet been returned. A discussion ensued in which the great importance of the subject and the desirability of drawing up a full report was insisted on, as also the advantage of co-operation with the officials of the Meteorological Society. In the course of the discussion it was mentioned authoritatively that the past winter had not only been exceptionally severe in this country, but also in Japan and in Northern India.

*Primroses.*— Col. Clarke showed specimens of umbellate Primroses, or so-called Oxlips, also Cowslips mimicking Primroses, and Primroses mimicking Cowslips.

Floral Committee.—J. McIntosh, Esq., in the chair. First-class Certificates were awarded at this meeting to Messrs. James Veitch & Sons, for Dioscorea retusa, the very elegant and almost hardy South African climber described in our columns in 1870, p. 1149, and of which we reproduce the illustration then given (fig. 98). It was introduced by the Messrs. Veitch through its discoverer, Mr. Thomas Cooper, and though many times shown during the last ten years was not until to-day recognised by the Floral Committee. To the same firm for Omphalodes Krameri, a pretty species with bluish-lilac flowers; for Adiantum monochlamys, an elegant glaucous Maidenhair, remarkable for its monosorous pinnules; and for the beautiful Gymnogramma schizophylla noticed last week. To Mr. William Bull for Cœlogyne cristata alba, the very fine, pure white variety certificated at Regent's Park last week, and which is destined to become a popular favourite; to Messrs. Sander & Co., St. Alban's, for Pinguicula Bakeriana, a lovely species, with large flowers at first sight resembling a Masdevallia, and of the same colour as M. Lindeni; to Mr. R. Dean, Ealing, for a fine new hardy Primrose named Amaranth, with large claret coloured blossoms and clear yellow eye; and to Messrs. H. Cannell & Sons, Swanley, for Ivy-leaved Pelargonium Anna Pfitzer, a remarkably fine double-flowered variety, with large pink, rose-shaded blossoms. Messrs. James Veitch & Sons also received a Cultural Commendation for a superb specimen of the fine Cattleya Mendelii superbissima with three spikes of two flowers each. From Mr. J. Guyett, gr. to Mrs. J. Perrett, Tynton House, Clapham Common, came three magnificent trusses of flowers of the noble white Rhododendron Nuttallii, the largest of which contained six flowers. Mr. James Douglas showed a well grown sample of Pinguicula valisnerifolia. In his Azalea balsamæflora Mr. Bull showed a plant of great merit, a free-growing and free-flowering dwarf bush with double, deep flesh-pink coloured blossoms in shape exactly resembling those of a good double Balsam, but which appeared to be the same as the plant known as Rollissoni. Mr. Bull also contributed beautiful flowering masses of Sarracenia Drummondii, and the white-flowered S. crispata; also specimens of a very handsome new Dracæna named Lindeni, with broad arching leaves longitudinally banded with green and gold. Mr. Speed sent from the Duke of Devonshire's garden at Chatsworth a couple of flowering sprays of the remarkable Amherstia nobilis; and Messrs. Cannell & Son showed a splendid collection of cut blooms of Zonal Pelargoniums, and some well-grown double-flowered Cinerarias. Mr. B. S. Williams also showed a fair strain of the latter and several other new plants. In a bunch of tuberous-rooted Begonia flowers shown by Messrs. Laing & Co. the most remarkable were some blossoms of a pretty double form of Moonlight. Mr. G. F. Wilson showed a number of seedling Primroses of various types and colours, and received a vote of thanks.

Fig. 98.—Dioscorea retusa.

Fruit Committee.—Mr. H. J. Veitch in the chair. The labours of this committee were light, as usual at this season. The most remarkable production brought before them was an exceedingly handsome bunch of fruits of Musa Cavendishi, weighing 74 lb., cut from a plant which twelve months ago was only 18 inches high, but which has since been stimulateded by the electric light, as further alluded to under the heading of the Scientific Committee. The exhibitor was Mr. Buchanan, gr. to Dr. Siemens, of Sherwood Park, Tunbridge Wells, and a Cultural Commendation was awarded to him. Mr. Wallis, gr. to Rev. W. Sneyd, Keele Hall, Staffordshire, sent a bunch each of Gros Colmar, Lady Downe's, and Alicante Grapes, in a high state of preservation, the berries being remarkably fresh and plump.

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**Newcastle-upon-Tyne Botanical and Horticultural:** *April 6 and* 7.—The first exhibition of this Society was held in the year 1824. Since that date exhibitions have been held with more or less success annually, and on this account its members claim for it that it is the oldest in England. The first spring show for this year was held in the Town Hall and Corn Exchange, Newcastle. In the lower hall were arranged the plants in pots, while the upper was devoted to the lighter productions—cut flowers, bouquets, flower stands, &c. As usual at this great northern exhibition spring flowers were plentiful and very well grown. There were considerably over 2000 plants, in pots, exhibited, of all sizes, many of them being well-grown hard-wooded plants, as Azaleas, Heaths, greenhouse Rhododendrons, &c. There were in all eighty-nine classes in the schedule, and eighty-five exhibitors came forward to claim the prizes, many of these exhibiting in a great number of classes. One exhibitor entered in twenty-five classes, another in twenty-two, two others in twenty-four, and many in from twelve to eighteen classes. It would scarcely be possible to give a full list of the awards under such circumstances, but it is only fair to state that many exhibitors who were not even placed in some of the classes well deserved a meed of praise for their contribution to the success of the exhibition from a horticultural point of view. Stove and greenhouse plants were a good feature of the exhibition. The numerous collections exhibited contained medium sized, healthy well flowered specimens. Various early flowering Orchids, such as Cymbidium eburneum, with a score of good flowers; Phaius Wallichii, Dendrobium nobile, &c., were amongst them. Good specimens of greenhouse Rhododendrons, Ericas, Chorozemas, &c.: the 1st in the class for four was awarded to Mr. W. Yule, gr. to H. Pease, Esq., Darlington; the 2d to Mr. John Crozier, gr. to J. W. W. Wilson, Esq.; 3d, Mr. James Noble, gr. to T. Fry, Esq., M.P., Darlington. There were numerous collections of Azaleas, healthy well grown plants, although in some instances one might find fault with the severe training; a few sprays hanging carelessly serve to break the humpty-dumpty appearance of a plant trained with a round head or the severity of a correctly formed pyramid. Mr. Yule gained the 1st prize with admirable specimens of the bush form; Mr. A. Methven, gr. to T. Lang, Esq., Heathfield House, was 2d, the 3d prize being awarded to Mr. Neil Black, gr. to the Misses Pease, Darlington. Greenhouse Rhododendrons comprised Countess of Haddington, Veitchii, and other fine sorts; Mr. Yule gained a 1st prize in this class. Hardy shrubs, Acacias, Genistas, &c., were shown in classes, but they call for no special mention. There was a large bank of Deutzia gracilis, and an equally large one of Spiræa japonica. The Deutzias were allowed to grow naturally, and the dangling sprays of snowy flowers were very pleasing. Dielytra spectabilis, too, was shown in great plenty. There were nearly forty plants in one row, and not a badly grown plant amongst them.

Messrs. John Thompson & Son, of Pilgrim Street, had the best Dielytras; Mr. James Noble, the best Spiræas, and Mr. T. Lawson, gr. to A. Hedley, Esq., the best Deutzias. Mr. Yule had half a dozen good Cyclamens; the other exhibits were poor. Lily of the Valley was shown by four or five exhibitors, the best came from Mr. Yule.

Primula sinensis, exhibited in considerable quantity, was better than it is usually seen here. The 1st prize was awarded to six plants of an excellent strain of fringed white flowers. Mr. T. Lawson was the exhibitor. Mr. W. Anderson, gr. to R. Brown, Esq., of Newcastle, and Mr. W. Yule also showed well.

Cinerarias were well grown and flowered, but the varieties call for no remark; they are much behind the London exhibitors in this respect. Mr. Pattison, gr. to G. Pyman, jun., Esq., West Hartlepool, had the best, followed by Mr. S. Bampton, gr. to J. Hartley, Esq., J.P., Ashbrook Hall, Sunderland, and Mr. J. G. Golightly, gr. to J. G. Fenwick, Esq.

Scillas, Hepaticas, and hardy Primulas were well grown, sweet and beautiful, deserving of much praise. Of Auriculas and Polyanthuses there were about 250 pots. Considering the backward season and the early date of the exhibition these were very creditable. Mr. Thos. Hay, of Killingworth Colliery, was the principal exhibitor of Auriculas. He gained the 1st prize for twelve and 1st for six. He had the best green and the best white edged in the classes, also the best white-edged seedling; and, lastly, he gained "premium" with Lancashire Hero (Lancashire). The best flowers shown by Mr. Hay were Frank (Simonite), Glory (Taylor), Pizarro (Campbell), George Lightbody (Headley), True Briton (Hepworth), Smiling Beauty (Heap), and seedlings. Mr. Ed. Adams, of Smalwell, exhibited the best alpine Auriculas, and Mr. Hy. Sanderson, of Whalton, was also a successful exhibitor. Mr. Wm. Jos. Watson, of Newcastle (nurseryman), also won a 1st prize for four Auriculas.

Polyanthuses were not quite so good as usual, the principal prize winner being Mr. Robt. Atkinson, Winlaton, who gained all the first prizes but one. George IV. (Buck), Cheshire Favourite, Exile, Black and Gold, were the principal varieties. Hyacinths, Tulips, and Polyanthus Narcissus, were represented by about 600 pots, the whole of them with very few exceptions being well grown, and in good condition. The principal class was for twenty-four Hyacinths, and the trade exhibitors put out their whole strength to gain the prizes offered. Mr. W. J. Watson was well ahead of the others, although Messrs. John Thompson & Son would have run him very closely if their flowers had not been past their best; as it was, these exhibitors were 1st and 2d respectively, followed by Messrs. S. Nairn & Sons, and Messrs. Hy. Dewar & Co., both of them Newcastle firms—the varieties being the most popular grown by the Southern exhibitors.

The next class was for twelve Hyacinths, and again the same exhibitors competed, Mr. Watson being 1st, and Messrs. Nairn beating Messrs. Thompson. Mr. Watson also exhibited excellent single Tulips, and large masses of Polyanthus Narcissus, for which he gained 1st prizes; Messrs. Thompson being 1st for double Tulips. There were a number of other classes for Hyacinths and Tulips, and amongst them many meritorious exhibits, but space forbids mentioning them in detail. There were also six excellent examples of German Wallflowers, and good collections of English Wallflowers. Cut flowers were shown in considerable numbers. Stands of Camellia blooms were very showy. Bunches of Azaleas and stands of single trusses of Rhododendrons were in good condition. Mr. W. Yule gained a 1st prize here for an excellent stand of greenhouse Rhododendrons. Mr. J. Pattinson had a good box of twelve Maréchal Niel Roses, for which he obtained the 1st prize. There were fine boxes of Roses, fresh and good.

Mr. W. Whiting, gr. to E. S. Walker, Esq., Newcastle, well deserved the 1st prize for a stand of flowers, Mr. M. D. Thompson and Mr. G. Rymer, of Sunderland, also obtained prizes, but many others were well deserving of notice. Bridal and other bouquets were numerously shown, the largest proportion of them being very creditable to the exhibitors. Mr. R. Pattinson, Miss J. Heyill, of Lowland Cottage, Sunderland, Mr. T. Battensby, Mr. C. W. Barnes, gr. to R. Dickenson, Esq., J. P., Shotley House, Mr. Alex. Whittie, of Newcastle, Mr. E. Pattinson, St. Ann's Hill, Carlisle, all gained 1st prizes for bouquets and epergnes. The system of furnishing the stands and making the bouquets have been often described—enough to say that very great taste was displayed, and that it was an honour to be amongst the list of losers.

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**Royal Caledonian Horticultural:** *April 6 and 7.*—The spring flower show of this Society was held in the Waverley Market, Edinburgh, and, considering the unusually unpropitious season, the show was a very creditable one. As usual, the west end of the market was occupied by the exhibits of the Lawson Seed and Nursery Company, which were much less numerous than usual, and consisted to a great extent of fine-foliaged plants, which served as a foil to the contiguous showy tables occupied by Messrs. Ireland & Thomson's exhibits. These were more than ordinarily attractive, and embraced several fine Azaleas and Orchids, with the not less showy Coleus, the gaudy colouring of which was relieved by the snowy blossoms of Deutzia gracilis, double white Hawthorn, and Gueldres Roses. In the centre of the market was a splendid group of Indian Rhododendrons, for the culture of which Messrs. Downie & Laird are so justly celebrated. Unfortunately, one of the finest plants in the group was less than half flowered. Contiguous to this table were the exhibits of Messrs. Thomas Methven & Son, which likewise consisted chiefly of Rhododendrons, intermingled with a number of fine Palms. The eastern part of the market was occupied by the exhibits of Messrs. Drummond Brothers, which embraced a number of plants suitable for table decoration, and those of Mr. Taylor, Lochend Road, consisting of Hyacinths, Tulips, Lily of the Valley, and Spiræas. In the same class of exhibitors were Messrs. Gordon & Sons, Mr. Robertson Munro, and Mr. Sinclair, Prestonkirk. A very interesting exhibition was a collection of 260 varieties of Saxifrages, sent by Mr. G. H. Potts from his garden at Lasswade. A novelty which attracted considerable attention consisted of two specimens of prettily marked Calvary Clover, exhibited by Miss Duncan, Foxhall. In the competitive class there was rather a poor show of Rhododendrons. The Azaleas were unquestionably one of the striking features of the show, and there was a keen competition for the Corporation's prize of £5 for the best four plants in this class. The 1st prize was taken by Mr. Paul, Gilmore Place. A most praiseworthy feature of the show was the tables of hardy spring plants, which show amateurs what can be done even in a season like the present by those interested in floriculture. Hyacinths, considering their popularity, were not so largely represented as one might have expected, but the plants shown were in very good condition. Cyclamens and Tulips were a good show, especially the latter. One of the most attractive tables was that occupied by the cut Roses, Camellia blooms, and bouquets. Fine-foliaged plants were not very numerous, but fairly creditable. *From the "Edinburgh Evening News."*

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**Glasgow and West of Scotland Horticultural:** *March 30.*—This was the grand Hyacinth and spring flower show, and took place in the City Hall. Notwithstanding the unpropitious weather, when a winter of almost unexampled severity has been succeeded by a bleak spring, with the earth still frost-bound, the show was quite equal to what could have been expected, the mass of splendid and rare blossoms fairly lighted up the dingy but venerable Hall. All this was in spite of a thermometer marking 14°, or in some places 22° of frost; indeed here and there the effects of the cruel frost could be seen in drooping blossoms and shrivelled leaves damaged in the transit. The front of the platform was transformed into a bank of flowers, tastefully intermixed with choice Ferns, graceful Palms, and Orange trees in front, by Messrs. Austin & M'Aslan, whose collection included Ghent Azaleas, greenhouse Rhododendrons, Camellias, Amaryllis, Cyclamens, and a splendid assortment of Orchids. Mr. Anderson, Meadowbank, Uddingston, was awarded the 1st prize for his splendid collection of stove and greenhouse plants, in which general excellence and rarity no less than for a happy arrangement of colour were conspicuous. Two beautiful Australian Tree Ferns crowned the table, and spread their drooping branches over three large pots of Azaleas in full bloom. Below them were the dark green leaves of Indian Palms, and all around an assortment of beautiful Orchids, which added immensely to the attraction of the table; conspicuous among the latter were a fine suspended specimen of the Moth Orchid, and a beautiful example of the Ivory Orchid, Cymbidium eburneum. A splendid table of Orchids was shown by the Vice-President, Mr. Daniel Tod, from the Eastwood Park Gardens. The collection, which embraced forty varieties, has seldom, if ever, been equalled in Glasgow at this season of the year; amongst the many rare specimens of this favourite plant were two very fine varieties of the white Tooth-tongue Orchid in full bloom. Mr. M'Kenzie's display of spring flowering plants and bulbs was universally admired, and secured for him the first place for the collection of bulbous plants. Messrs. J. & W. B. M'Neil, Union Street, had a select collection of plants; but the specialty of the firm appears to lie in the making-up and arrangement of bouquets. Besides gaining the 1st prize for the hand bouquet in the open competition, they also exhibited several exquisitely arranged bouquets. Mr. Hogg, gardener to Mr. Gordon, of Aitkenhead, had a fine selection of plants; and Mr. Beveridge, of Maryhill, was also a large exhibitor. The Tulips, in number and excellence, were an excellent show, but the Hyacinths in many cases appeared to have suffered from the frost. The quality of the hardy spring flowers and alpine plants was excellent, and there was also a good show of Chinese Primroses and Crocuses.

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**Sheffield Floral and Horticultural:** *April 4 and 5.*—A spring exhibition of plants and flowers was held by this Society in the Cutlers' Hall, Sheffield, and such a fine display of Azaleas and spring flowering plants generally has seldom if ever before been witnessed in that town. One of the finest and most attractive features of the show was the groups of plants (foliage or flowering) arranged for effect, in which there was a good competition, occupying the whole of one side of the large room. The 1st prize was taken by Mr. James Keeling, gr. to D. Ward, Esq., with a fine group tastefully arranged; Mr. James Udale, gr. to H. E. Watson, Esq., was 2d with a scarcely inferior group, containing some very fine specimen Azaleas; and Mr. J. Walker, gr. to B. P. Broomhead, Esq., came in 3d. The Azaleas shown were numerous and very fine. Mr. J. Udale was a good 1st in the class for six plants, with fine, densely flowered specimens of Reine des Pays Bas, Cedo Nulli, Mont Blanc, Stanleyana, Bernard Andreas and Jean Verschaffelt. The same exhibitor was also 1st for a single specimen with a grand plant of A. Stella, which was greatly admired. Orchids were fairly represented. Mr. J. Keeling was 1st in the class for three with Cœlogyne cristata, Odontoglossum Alexandræ, and Cattleya Trianæ; Mr. Udale 2d with Dendrobium densiflorum, Schröderi, and crystallinum. For a single specimen Orchid Mr. Keeling was 1st with a fine plant of Dendrobium Wardianum. For a single specimen Rose in pot Mr. Udale was 1st with a very fine pyramidal trained plant of Gloire de Dijon, 5 feet high, 4 feet through at the base, and loaded with well-opened blooms. Mr. J. Walker was 1st for Cinerarias, twelve plants dissimilar, for Mignonette, six pots; and for Hyacinths, twelve dissimilar. In the two first-named subjects his exhibits were very fine, and elicited much praise.

In the class for a group of hardy Ferns, not less than twelve plants, Mr. J. Eadon was first with a fine lot of Scolopendriums, and some good Polystichums and Blechnums. His collection of Scolopendriums contained upwards of twenty varieties of the finest grown; especially noticeable amongst them for their distinctness and beauty were S. Coolingi (very fine), coronatum, ramo-cristatum, marginato-multifidum, Stansfieldi, crispum cristatum, and ramo-palmatum. Mr. H. Davy exhibited a number of small plants which he had raised from spores collected from a frond of ramo-cristatum (a plant which Mr. Eadon collected in the neighbourhood of Sheffield). These seedlings were very different in form and character from each other, and from the parent plant which was shown by Mr. Eadon; several amongst them give promise of being valuable acquisitions. Filmy Ferns were well shown by Mr. H. Davy, Mr. J. G. Newsham, and Mr. J. Eadon, especially so by the first named.

Messrs. Fisher, Son & Sibray, of the Handsworth Nurseries, sent a grand lot of plants (not for competition), amongst them being very fine groups of Cyclamen persicum giganteum, Lily of the Valley, Azalea indica in large numbers and great variety; early flowering Clematis, in which the fine variety, Edith Jackman, was much admired; Azalea amœna Caldwellii, and its varieties, as Prime Minister, Princess Mary, and narcissiflora, the last named an especially attractive and valuable plant for furnishing a supply of the finest white flowers in early spring. Rhododendrons Taylori and Princess Alexandra were shown in fine condition. This type of Rhododendrons, introduced some years since by Messrs. Veitch, are made a speciality at Handsworth, where they are grown by thousands in the most vigorous and healthy condition.

Mr. B. Crossland, of the Richmond Nurseries, sent a nice group, containing a large number of finely grown Hyacinths, small well-flowered plants of Azalea indica in good variety, and fine specimen plants of Araucaria excelsa.

Mr. F. J. Anderson exhibited a great number of plants, and took a considerable number of prizes in the classes allotted to amateur growers not employing a gardener. There was a fine display of cut flowers, occupying one side of the central table, running the whole length of the room.

For twelve Camellias Mr. J. Udale was 1st with extra fine blooms; Mr. J. Keeling a good 2d, and 1st for six. Mr. Udale was also 1st for twelve and for six Roses, also for premier bloom of same with a grand Maréchal Niel, and for twenty-four varieties stove and greenhouse flowers, with a very fine lot. Mr. Keeling was placed 1st for twelve and for six varieties, also for a bouquet for the hand, and for a button-hole bouquet. His arrangement for the latter was very good and greatly admired: it consisted of a single bloom of Dendrobium crassinode over which were very small sprays of Euphorbia splendens and Hoteia japonica, the whole backed by one small Fern frond. *W. K. W.*

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## CUCURBITA MAXIMA.

Dr. C. O. Harz proposes (*Jahresbericht der K. Central-Thierarzneischule*) the following grouping of the principal cultivated varieties of Gourds:—

*Group* 1. C. maxima rubra, Red Turban or Turk's-cap.—The extreme form in this group is characterised by having the greatest vertical depression or shortening of the main axis, the greatest development of the turban, a hard woody bark about one-twelfth of an inch thick, rosy-red in colour except the grey turban, deep yellow, firm flesh, and dazzling white, rather broad seeds. Sometimes the fruit of this type is beset with warts, and there are wholly green and green and yellow variegated varieties. Naudin also refers the following sub-varieties hither:—C. constricta, having the fruit constricted in the middle and swollen out at the ends, giving it somewhat the shape of a dumb-bell; C. erythrocarpa, small red, and C. chlorocarpa small green Turban Gourds. These are small Gourds, about as large as a medium Apple, cultivated more as curiosities than for use.

C. maxima lignosa (woody Turban Gourd) comes near the type. Very much compressed vertically, about 4 inches high by 8 broad, scarcely umbilicate, and the stigma very little depressed. Turban shallowly domed, with four blunt protuberances separated from each other by radial furrows, bright grey-green, whilst the other part of the fruit is bright rose, and provided with numerous shallow longitudinal grey-green furrows. Rind woody, either quite smooth or more or less beset with spongy, corky warts. Flesh firm, dry, pale yellow outside, becoming intenser inwards and saffron in the centre. Seeds small, roundish, thick, 7 lines long,* 6 broad, smooth, shining, yellowish-white tinged with green.

*Group* 2. C. maxima brasiliensis, Brazilian Turban Gourd.—Fruit medium size, solid, without a woody rind, turban-like, somewhat compressed vertically, deeply (3—4 inches) umbilicate at the base; maximum depth, 10 inches. Turban cone-shaped, wholly smooth, with lighter stripes on a bright grey ground. The rest of the fruit smooth, without or with only very inconspicuous longitudinal furrows. Flesh firm, dense, dry, saffron-yellow. This race has the densest and most intensely yellow flesh associated with the thickest seeds. They are 1 inch long, 9 lines broad, and 4 lines thick, dirty brown in colour, with a beaded, winged margin. C. m. bras. reticulata differs

* Reckoning 12 lines to the inch.

from the type only in having a netted, warty surface to the fruit. C. maxima cercuraicensis, the Potiron de Corfou of Naudin, is referred here by Harz. The fruit is almost spherical, slate colour, with delicate tracery. Also C. m. Farinæ, Naud. This has a small, spherical or ovoid fruit, 7 to 10 inches long, blackish-green, streaked and marbled with greenish-white.

*Group* 3. C. maxima elliptica. — Fruit medium size, solid, without a woody rind, grey-green, smooth, neither ribbed nor furrowed, furnished with whitish streaks and spots, 1 foot long by 10 inches thick, the greatest thickness in the middle, tapering to both ends. Turban short. Flesh very dense, saffron-yellow as well as the placentas. Seeds rather thick with a narrow border, somewhat bottle-shaped and two-lobed at the base, about 9 lines long by 5 broad, and 3 thick; testa thick, spongy, snowy white. The peduncle is remarkably thick, almost as thick as long. This edible Gourd is a very good one for growing on a large scale. C. m. messanensis, Naudin, might be placed here. It has a thick, ovate, pale red fruit, with prominent, rounded, longitudinal ribs, alternated with furrows. Flesh very thick, dull brownish-yellow, very aromatic, and to many persons of an unpleasant flavour. This form is, moreover, remarkable for the size of its leaves and enormously thick peduncle, which is at least 2½ inches thick, and traversed by longitudinal blackish lines on a green ground. The very large, dirty-white seeds are strongly margined.

*Group* 4. C. maxima gigantea, Giant Gourd.—Differs from all the races known to Dr. Harz by its thin seeds, with a somewhat wrinkled uneven testa. Fruit large, with a thin rind, about 16 inches deep by 24 inches broad, furrowed and striped longitudinally with green and yellow. Turban-sheath small, flat. Seeds dirty-white, narrowly margined, surface remarkably uneven and slightly wrinkled.

*Group* 5. C. maxima cancroides, crab-coloured Gourd.—Distinguished by their dirty-white, smooth seeds. Fruit depressed, having a thin rind about 6 inches in depth from the deep-seated stigma to the umbilicus of the peduncle. Turban-sheath flat, funnel-shaped, radically channelled. Surface of the fruit exactly the colour of a boiled crab. Flesh saffron-yellow. Seeds greyish-white, large, thick. Here are referred C. leucoderma (white-skinned), C. castanina (orange-yellow), and C. virginica (grey).

*Group* 6. C. maxima platycycla.—Distinguished by whitish thin seeds, and a small flat turban-sheath. C. coronulata and C. malamocensis are associated with this. The type is often very large. C. coronulata is said to be of excellent flavour.

*Group* 7. C. maxima castanoides.—Characterised by dazzling white seeds, which readily separate from the placenta, and by a small funnel-shaped turban. Fruit cinnabar-red, somewhat depressed, smooth, slightly furrowed, about 1 foot deep and 18 inches broad. C. chlorophthalma, green-eyed Gourd, is allied to this. It has pure white seeds not easily separated from the placenta.

*Group* 8. C. maxima depressa.—Also characterised by dazzling white seeds and a shallow turban. Fruit large, of an intense red-yellow, smooth, furrowed, with a deeply sunk peduncle and stigma. Flesh and placenta orange-yellow. Seeds narrow, sharply margined.

*Group* 9. C. maxima hollandica.—This is the ordinary large Gourd, characterised by having no trace of a turban, and whitish seeds. Several varieties are referred to this group. C. lævis differs from the type in having a deeper yellow fruit with a smoother surface; C. castaneocarpa is usually rosy with lighter streaks; C. californica is similar to the last; C. grisea has a grey skin; C. neapolitana, C. byzantia, C. moschata, C. panis-pauperum, C. ohioensis, and B. Eslambouli, differ in size, coloration, &c. C. panis-pauperum is esteemed one of the best for eating.

*Group* 10. C. maxima valparaisensis.—Characterised by yellow seeds, and an elongated fruit, 12 inches long by 4 to 8 inches in cross diameter. Flesh orange-yellow, of very fine flavour, sugary and slightly musky-aromatic. The only race having yellow seeds.

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Bananas for New York. — *Der Obstgarten* is responsible for the following particulars: — A German has an enormous Banana plantation in Panama, on which he employs 400 persons, and he sends by rail some 250 tons of fruit weekly to Colon, whence it is shipped direct to New York.

## PLANT PORTRAITS.

Apple, Guelton, *Bulletin d'Arboriculture.*—A Belgian Apple, raised by M. Guelton, nurseryman, of Wez, near Tournai; a handsome Apple, very prolific, suitable for orchard culture. Fruit globose, depressed at both ends, scarlet speckled with yellow spots, flavour resembling that of the White Calville.

Arctotis aspera, var. arborescens, DC., *Bot. Mag.*, t. 6528.—A small Composite of shrubby habit, with linear-oblong pinnately cut leaves, the upper ones amplexicaul, the lower stalked, and large circular Daisy-like flower-heads surrounded by densely overlapping leafy scales; the ligulate florets are white above, pink beneath; the disc florets yellow. Native of the Cape. Cambridge Botanic Garden.

Caraguata lingulata, var. cardinalis, *Illust. Hort.*, t. 374.—A splendid Bromeliad with tufted leaves which are broad at the base, linear lanceolate, and recurved; flower-stalk erect with numerous large broadly lanceolate brilliant scarlet bracts encircling yellowish flowers. Introduced by M. André from the province of Cauca. It was exhibited at the recent Brussels Exhibition.

Coleus, *Illust. Hort.*, t. 377 :—1, M. Thibaut; 2, Magic; 3, Surprise; 4, Glow.

Delphinium caucasicum, C. A. M., var. dasyanthum, *Gartenflora*, t. 1027.—A handsome form with long-stalked, large blue flowers, the spur about half the length of the sepal.

Disa megaceras, Hook. f., *Bot. Mag.*, t. 6529.—This is the D. macrantha of gardens, wrongly so named. It is a tall-growing species, with lanceolate leaves and many-flowered racemes. The individual flowers are large (1½ inch across), white spotted with purple, and with a long (3 inches) extinguisher-shaped spur. Native of the Cape. Hort. Elwes.

Dracæna erecta alba, *Illust. Hort.*, t. 372.

Erigeron multiradiatus, Benth., *Bot. Mag.*, t. 6530.—A dwarf pubescent perennial Composite, with oblong-toothed leaves tapering into a long stalk. Flower-heads terminal, solitary, nearly 2 inches across, surrounded by numerous overlapping linear leaves; florets of the ray narrow, purplish, disc yellow. Central Himalayas, Kashmir to Sikkim.

Disa polygonoides, Lindl., *Bot. Mag.*, t. 6532.—With the same general habit as D. megaceras, this has a close dense spike of small orange flowers, very unlike the other Disas. The figure is anything but satisfactory. Natal. Hort. Kew.

Encephalartos cycadifolius var. Friderici Guilielmi, *Gartenflora*, t. 1026. — An illustration of a female cone.

Gentiana saponaria (L.) var. alba, *Gartenflora*, t. 1016.

Ixiolirion tataricum (Pall.) var. Ledebourii, *Gartenflora*, t. 1014.—A bulbous Amaryllid with linear grass-like leaves, and slender peduncles bearing a terminal umbel of blue flowers 1½ inch in diameter. It differs from the type principally in the curvature of the anthers after flowering.

Ixora crocata (L.) var. Prince of Orange, *Gartenflora*, t. 1015. — One of Messrs. Veitch's varieties.

Lælia Dayana, Rchb., *Belgique Horticole*, t. x., p. 185.

Maranta depressa, E. Morren, *Belgique Horticole*, 1880, t. 6.—Stem creeping, leaves broadly oblong acute, green with a silvery-white disc and regular lateral blotches of a purplish hue. Brasil. Liège.

Masdevallias :—1, Lindeni; 2, coccinea; 3, Harryana. *Floral Magazine*, t. 410.

Melia Azedarach (L.) var. floribunda, *Belgique Horticole*, 1880, t. 9.—A dwarf form of the species; flowering in a greenhouse when not more than 1 or 2 feet in height.

Musa sumatrana, Beccari, *Illust. Hort.*, t. 375.—Leaves oblong, elliptic acuminate, glaucous, mottled with purplish-brown spots. Sumatra.

Odontoglossum Rossii, Lindl., varieties, *Illust. Hortic.*, t. 371.

Picotees, *Florist*, t. 516.—The varieties figured are:—1, Lady Rosebery, pure yellow self; 2, Princess Beatrice, petals bright yellow, edged with crimson; 3, Ne Plus Ultra, deeper yellow, edged with crimson. Three fine varieties, raised by Mr. Turner.

Richardia hastata, *Garden*, Dec. 11, 1880.—An Aroid closely allied to the Arum Lily of the markets, but with primrose-yellow in place of white spathes. It was found to be hardy in the Exeter Nurseries, although a native of the Cape and of South-western Tropical Africa.

## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON*
For the Week ending Wednesday, April 13, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity Sat = 100. | Wind: Average Direction. | Rainfall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| April | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 7 | 29.86 | +0.13 | 51.2 | 33.5 | 17.7 | 41.6 | − 3.6 | 35.6 | 79 | E.N.E. | 0.00 |
| 8 | 29.88 | +0.14 | 52.6 | 32.8 | 19.8 | 42.5 | − 2.9 | 36.0 | 79 | E.N.E. | 0.00 |
| 9 | 29.87 | +0.14 | 58.0 | 37.5 | 20.5 | 45.5 | − 0.1 | 38.3 | 76 | E.N.E. | 0.00 |
| 10 | 29.80 | −0.06 | 61.0 | 37.0 | 24.0 | 47.5 | + 1.8 | 41.8 | 81 | N.E. | 0.00 |
| 11 | 29.68 | −0.06 | 59.6 | 40.5 | 19.1 | 50.7 | + 4.9 | 45.4 | 86 | S.E. : S.W. | 0.00 |
| 12 | 29.71 | −0.03 | 57.7 | 46.2 | 11.0 | 50.8 | + 4.9 | 47.5 | 91 | S. : S.S.W. | 0.13 |
| 13 | 29.63 | −0.05 | 56.2 | 48.0 | 18.2 | 55.5 | + 9.4 | 47.0 | 75 | E. | 0.00 |
| Mean | 29.78 | +0.05 | 58.0 | 39.4 | 18.6 | 47.7 | + 2.1 | 41.8 | 81 | N.E. | 0.13 |

April 7.—Fine day, but a strong cold wind. Fine night wind lulled.
— 8.—Fine and bright day; windy and cool. Night fine.
— 9.—Fine day, sun shining brightly; less wind. Fine night.
— 10.—Fine clear morning; upper clouds moving from south.
— 11.—Fine warm morning. A few drops of rain; some dark clouds moving from S.S.W. Fine warm night.
— 12.—Gentle rain falling till 10 A.M. A fine warm day and night.
— 13.—Very fine mild morning. A fine day.

London: *Atmospheric Pressure.*—During the week ending Saturday, April 9, in the neighbourhood of London, the reading of the barometer at the level of the sea increased from 29.98 inches at the beginning of the week to 30.03 inches by the morning of the 9th; decreased to 29.70 inches (the lowest in the week) by the morning of the 6th; increased to 30.11 inches (the highest in the week) by midnight of the 7th; it then decreased very slowly, and at the end of the week was 30.07 inches. The mean reading at the level of the sea was 29.96 inches, being 0.07 inches higher than last week, and 0.04 above the average of the week.

*Temperature.*—The highest reading of the week was 58°, on the 9th, the next highest being 52°.6, on the 8th; on the 3d the temperature never rose above 46°. The mean of the seven high day temperatures was 51°.5. The lowest reading in the week was 30°.4 on the 4th, the next lowest being 32°.3 on the 5th; on the 9th the temperature never fell below 37°.5.

The mean of the seven low night temperatures was 33°.5. The greatest range of temperature in one day was 20°.5 on the 9th, the next greatest being 19°.8, on the 8th; and the least range 12° on the 3d. The mean of the seven daily ranges was 18°.

The mean daily temperatures were 38°.6 on the 3d, 39° on the 4th, 40°.2 on the 5th, 40°.9 on the 6th, 41°.6 on the 7th, 42°.5 on the 8th, and 45°.5 on the 9th. They were respectively 6°, 5°.8, 4°.7, 4°.1, 3°.6, 2°.9, and 0°.1 below their averages.

The mean temperature for the week was 41°, being 1°.3 higher than last week, and 4° below the average for the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo placed in the full rays of the sun were 148°.1 on the 4th, 128° on the 6th, and 127° on the 3d. The least reading was 119°.5, on the 5th. The mean of the seven daily readings was 127°.6.

*Rain.*—No rain fell during the week. North-easterly winds were prevalent the whole week, so that, although the sun shone brightly nearly every day, the weather was very cold.

England: *Temperature.*—During the week ending Saturday, April 9, the highest temperatures were 61°.3 at Birmingham, 59°.2 at Leicester, and 58°.1 at Cambridge. The least of the high temperatures was 48°, at Hull. The mean from all stations was 54°.5.

The lowest temperatures were 23° at Cambridge, 23°.5 at Leicester, and 23°.7 at Wrottesley. The highest of the low temperatures was 32° at Truro. The mean from all stations was 27°.9.

The range of temperature during the week was greatest at Leicester, 35°.7, the next in order being Birmingham, 35°.3, and Cambridge, 35°.1. The least range was at Norwich, 20°. The mean from all stations was 26°.6.

The mean of the seven high day temperatures was

highest at Birmingham, 54°.4, the next in order being Bristol, 53°.1, and Cambridge, 52°.6. The mean was least at Sunderland, 43°. The mean from all stations was 48°.3.

The mean of the seven low night temperatures was lowest at Cambridge, 27°.7, the next in order being Wrottesley, 28°.6, Leidester, 29°.3, Hull, 29°.9, and Birmingham, 30°.3. The greatest means were Truro, 37°.4, Brighton, 35°.8, and Plymouth, 35°.3. The mean from all stations was 32°.1.

The mean daily range was greatest at Cambridge, 24°.9; the next in order being Birmingham 24°.1, Bristol 21°.8, and Leicester 21°.6. The lowest daily ranges were Sunderland 80°.3, Norwich 11°.6, Brighton 12°.1. The mean from all stations was 16°.2.

The mean temperature was greatest at Truro, 43°; the next in order being Plymouth, 41°.8; Blackheath, 41°; Birmingham, 40°.9; and Bristol, 40°.8 The lowest means were, Hull 35°.5, Wrottesley and Bradford 36°.8, and Nottingham 37°.1. The mean from all stations was 38°.7.

*Rain* fell at two stations only—viz., Brighton and Sunderland—in very small amounts. The weather has been fine, with strong north-easterly and easterly winds.

Scotland: *Temperature.*—During the week ending April 9 the highest temperatures were, Glasgow 56°, and Paisley 55°; at Leith, the highest temperature was only 47°.2. The general mean was 52°.

The lowest temperatures were, Glasgow 23°, and Aberdeen 23°.3; at Greenock the temperature never fell below 28°. The general mean was 24°.9.

The mean temperature for the week was highest at Edinburgh, 39°.1, the next in order being Aberdeen, 39°. The mean was least at Glasgow, 33°.6. The general mean was 37°.5.

*Rain.*—At Glasgow 0.02 inch fell; from no other station is rain reported to have fallen.

JAMES GLAISHER, F.R.S.

## Natural History.

Habits and Migrations of the Yellow-hammer.—During a day's angling last spring I was the cause of great temporary disturbance to a pair of yellow-hammers which were engaged in feeding their young ones upon the margin of a brook where I hoped to catch some trout. The nest was in a low bush near the water's edge, and only a few yards distant from the spot where I was standing. I was quite unconscious of the trespass I was committing till the hen yellow-hammer, with a green caterpillar in her bill, appeared on the scene and eyed me suspiciously, flitting from one point of vantage to another—from the boughs of a neighbouring Alder, from an Oak which stood a little way off in the meadow, from some Osiers close to the stream, and at last from the bush in which her callow young were hidden. After a good deal of hesitation she went into the bush, and in a little while flew off for another grub. "Now," I thought, "I will time you, madam. I will see how long you are absent, and how many green caterpillars you bring home in half-an-hour." She returned in exactly three minutes, and continued going and coming, remaining absent three minutes, and returning always with a green caterpillar in her beak. She had four young ones at the time, and the destruction of caterpillars at the rate the little cormorants were being fed was, speaking for the caterpillars, quite terrible. Think of the aggregate loss of life that lies at the door of this familiar little "harmless" bird, which is found in every hedge, and lane, and field—which is "diffused" throughout these islands from Cornwall to furthest Uist, and throughout the greatest part of Europe!

In the northern parts of Europe the yellow-hammer is a summer visitor only. Exceedingly the caterpillar should rejoice when, on the approach of winter, the little devastator departs for districts further south, where the caterpillar season is prolonged somewhat later. The movements of yellow-hammers and other birds, whether they migrate from county to county or from country to country, are as incessant as the ebb and flow of ocean's currents, and they are all governed by the mighty influence of stomach. Food is the first necessity, and to obtain it the yellow-hammer, after breeding in Scandinavia, in Finland, and in the most northern and inhospitable parts of Russia, flits to Central Europe, Great Britain, and regions further south still. That old observer, Marten, having meditated on the urgency of the food question, and not having much ear for music, says of this pleasing little singer, in his season, "I can tell nothing of its singing, only that it whistleth as birds use to do when they are hungry."

In its annual migrations it associates in flocks, like most of the migratory birds, and it is said to pursue its journey incessantly, without stopping day or night, and without rest or sleep. As the British islands are situated so happily that they rarely suffer from extremes of climate except occasionally from too much moisture, green caterpillars abound, as well as all the other living creatures which the yellowhammer feeds upon. Yellow-hammers, therefore, are both resident and migratory, and some remain with us throughout the year; others seek their food elsewhere. Their migrations have long been watched, but we still remain in ignorance of some of the details which regulate their flight, and we still meet with the words "it is said," or "it has been affirmed," even in works of the highest authority.

At the autumn gathering of birds the yellow-hammer joins the sparrows and the other familiar birds that draw towards the homesteads at that period of the year. In early autumn it is seen constantly in the fields and lanes about the village, foraging like the other small birds. As soon as frost sets in, it takes another step in friendship or familiarity, and enters the farmyard, where in long-continued severe weather it holds its own with the sparrows. In my part of the country there are still many of the old-fashioned strawyards which have given way elsewhere to homesteads of a far less hospitable kind so far as the birds are concerned; and when the heaps of straw, and the pigs beneath, are covered with snow, bunting, yellow and mottled, according to age, are among the most numerous of the busy birds that work for a living—mute amongst the snow and straw, more silent and subdued then, like the other birds, than at any other time of year. Out of a score of small birds shot in the farmyard, at one discharge, at the instigation of a sparrow club of former days, ten or eleven would probably be house-sparrows, five or six would be yellow-hammers, and the rest chaffinches, with an occasional greenfinch.

Seeds and grain are, of course, the object of the visits to farmyards in severe weather, and the tameness of the bird is in proportion to the severity of the season. In summer a large part of the food of this bird consists of insects, caterpillars, grubs, and larvæ; and during more than one half of the year it ranks high among the birds that do good by the destruction of injurious creatures. The yellow-hammer is about on a par with the chaffinch in his general estimate of the character of man, and in his confidence in himself. He is not so confident and familiar as the more robust house-sparrow, still he will trust man largely when accustomed to his neighbourhood, especially when hungry. He will perch on his threshold, and even cross his doorstep, and pick up the food which some bird friend may have scattered on the floor. He is easily tamed in confinement, and then becomes one of the most confiding of the feathered race. In a cage he soon learns to imitate the song of other birds. The words of his native song have been rendered into "Cherry, cherry cheep, h-e h-e-e," which schoolboys have interpreted, "A very little bit of bread and no ch-e-e-se." Or, perched upon a branch, it anathematises the robber of its nest in strains such as these: "Devil, devil take ye! Me to build a bonny nest and ye for to t-a-ke it!"

Superstitions on the subject of its song were common in many parts of England and Scotland; and in some places the bird is still known by the name of the "Devil's bird." The curious markings on the eggs, resembling blood-stains, have been regarded as the devil's work, arising from drops of blood administered to the yellow-hammer in the month of May. Other names for the bird are the gold-spink, or yellow-yite, or yellow-youllie.

Like the reed-bunting, it builds on or near the ground, in low bushes by streams, as aforesaid, or in hedges. It delights in thick hedges by roadsides, or around cultivated fields. I have seen it on the ground close to a hedge, and concealed by grass and nettles. The nest is woven of coarse dried grass without, and hair and moss within. The industrious pair build it by their united efforts, and they build it compactly, cup-shaped, and smooth and round inside, pressing the breast against the sides, and turning round and round inside, so as to mould the nest as the work of building it proceeds. About three broods are reared between the second week in May and the beginning of September, and during the whole of that period—and, in fact, from a much earlier period of the year—the yellow-hammer continues singing. He generally commences his pleasing little ditty about the end of January, and from that time forward you may hear him whenever the sun shines until the louder voices of other birds drown his voice. On clear days in hot weather he still makes drowsy yet harmonious music all day long; and on sultry days, when the general chorus ceases, his voice may be again detected by observers of such matters; and in solitary places, on still hot days, it will prove sometimes the only sound that can be heard louder than the chirping of the grasshoppers. *Y.*

## Obituary.

Sir Philip Egerton.—The death of Sir Philip de Malpas Grey Egerton, at a ripe old age, should not be allowed to pass without notice in the *Gardeners' Chronicle.* Sir Philip was well known as a geologist, and his collection of fossil fishes is one of the most extensive known. The deceased was one of the few members of Parliament who occupied seats in that assembly prior to the passing of the Reform Bill, and continued to do so nearly uninterruptedly till the time of his death. The deceased Baronet was one of the oldest Life Fellows of the Royal Horticultural Society, of which Society he was a member of Council for many years, becoming Vice-President in 1852. In former years the deceased Baronet was an occasional contributor to these columns, and to the last felt much interest in scientific matters.

—— J. F. Drege.—The *Deutsche Gärtner-Zeitung* announces the death, at the advanced age of eighty-seven, of this collector of objects of natural history. Drege was one of the earliest explorers of the flora of South Africa, where he made enormous collections of dried plants during the years 1826 to 1834. Lasègue states that he collected nearly 200,000 specimens, belonging to nearly 8000 species. The estimate of the number of species is doubtless too high, nevertheless the collection was exceedingly rich. Ecklon and Zeyher collected about the same period, and an enormous number of new genera and species were founded and described from specimens in their joint collections, whilst the equally rich herbarium made by Burchell between 1810 and 1815 was lying unused in that indefatigable but eccentric botanist's house. Our German contemporary has fallen into error, we believe, in stating that Drege collected in Mexico.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

Potato Disease. — Does this exist in India? *Enquirer.*

Joints in Hot-water Pipes.—How would plaster-of-Paris answer for making joints in hot-water pipes. Can any reader give information with reference to its use for this purpose? *G. E. C.*

## Answers to Correspondents.

Abutilons: *S. Refford.* Not equal to others already known.

Bentley's Spray-producer: *T. Laws & Son.* We believe Messrs. Cory, Soper, Fowler & Co., Finsbury Street, E.C., are the agents.

Books: *S. Hutchins. The Grape Vine,* by Wm. Thomson (Blackwood). — *W. H. S. Botany for Beginners* (Bradbury, Agnew & Co.).

Dari, etc.: *Columbarius.* Dari, we believe, is the Indian name for Millet (Sorghum vulgare). The Pigeon Pea of the East and West Indies is Cajanus indicus. We do not know what "Mollah" can be.

Golden Cupressus Lawsoniana: *S. & M.* So far as we can judge from the specimen sent, it is not so good as the var. lutea grown in this country.

Glou Morceau Pear: *R. Hopkins.* You should well thin the blossoms to throw increased strength into those left. Weakness is no doubt the cause of the flowers not setting.

Laurels: *T. Lloyd.* The common Laurel is certainly poisonous, the leaves containing prussic acid.

Names of Plants: *W. M., Ely.* Eucalyptus globulus, in the condition which it always assumes with age. —*Old Subscriber.* 1, Phlebodium aureum; 2, Adiantum Capillus-Veneris; 3, Adiantum cuneatum; 4, Polystichum angulare; 5, Gymnogramma tartarea; 6 and 7, Selaginella Kraussiana (often miscalled denticulata); the latter more vigorously grown; 8, Selaginella Martensii; 9, Panicum imbecile variegatum; 10, Begonia, probably Saundersii; 11, Aspidistra lurida variegata; 12, Eucalyptus globulus. — *F. Wilson.* Your Apple is not the true Hollandbury.

which is out of season now, but it is uncommonly like a spurious variety which is grown under the same name. — *J. Child.* Omphalodes verna. — *H. M. R.* Hebeclinium ianthinum in a weak state.—*W. Macdonald.* A very high-coloured variety of Dendrobium nobile Wallichianum.—*R. P.* 1, Libocedrus decurrens; 2, Thuja orientalis; 3, Juniperus virginiana; 4, Cryptomeria japonica; 5, Sequoia sempervirens; 6, we do not recognise.

Narcissus: *Messrs. Waite, Nash & Co.* Your French Narcissus is undoubtedly N. biflorus, a well-known species, reputedly wild in this country.

New Cotton Plant: *W. M., Ely.* We are unable to give you any clue to the name of "the new Cotton plant," a paragraph on which, from *Land and Water*, is going the round of the papers. It is probably only an American wonder.

Night-flowering Stock (Enquiry, p. 478). — If J. King writes to any respectable seedsman for a packet of Matthiola bicornis, enclosing 3*d.* or 6*d.* in stamps, he will get what he wants. *Jno. Gould.* [This, though a night-scented Stock, is not the plant asked for, which is Matthiola tristis. Eds.]

Potato Peeler: *J. B.* We have tried your knife, and have submitted it to an expert for trial, but we cannot report favourably on it: the loss of time outweighs the economy of material.

Scab in Potatos: *J. R. H.* Manuring with ashes, or town refuse containing ashes, has nothing whatever to do with the cause of scab in Potatos. The actual cause is not known, but there is a general belief that the mischief is caused by earthworms.

Tenants' Rights: *Market Gardener.* It is a difficult question to answer in the absence of any details as to the terms on which you held the land, and you would do well to consult a respectable solicitor.

## CATALOGUES RECEIVED.

Charles Turner, Slough—Florists' Flowers.
Ewing & Co., Eaton, near Norwich—List of Pot Roses.
H. Richardson & Co., Skeldergate, York—Artificial Manures.
James Backhouse & Son, York—Alpine Plants and Hardy Perennials.
Edward Gillett, Southwick, Massachusetts, U.S.A. —North American Perennial Plants, Orchids, Shrubs, &c.
James Cocker & Sons, Sunnypark Nursery, Aberdeen — Stove and Greenhouse Plants, Florists' Flowers, &c.
Edward Holmes, Lichfield—Seeds for the Farm.
William Paul & Son, Waltham Cross, N. — New Roses, Pelargoniums, Phloxes, Dahlias, &c.
Charles van Geert, Antwerp—General Plant Catalogue.

Communications Received:—H. Cannell & Sons—W. H.—W. B. H.—A. S. K.—W. Swan.—Cultivator.—J. O. B.—A. G.—F. W. M.—E. J.—E. I. T.—W. H. F.—R. D. B.—B. D.—N. E. B.—J. A. S.—C. E. B., Iowa.—G. N.—J. N. M.—J. B.—J. A. S. (with thanks).—G. R. S.—G. B.—Reynolds & Co.—J. C. T.—W. D.—G. P.—G. D.—H. M. E.—W. H.

# Markets.

*COVENT GARDEN, April* 13.

Almost all classes of goods have received a check this week owing to the holidays—Strawberries more particularly, the present fine weather sending them in sharp; as also Cucumbers and French Beans. *James Webber, Wholesale Apple Market.*

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 sprays .. | 1 0– 3 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Azalea, 12 sprays .. | 0 6– 1 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Bouvardias, per bun. | 1 0– 3 0 | Narcissus, in variety, 12 sprays .. | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Pelargoniums, 12 spr. | 1 0– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | — zonal, 12 sprays | 0 6– 1 0 |
| Cyclamen, 12 blms.. | 0 3– 0 6 | Primula, double, per bunch .. | 0 9– 1 6 |
| Daffodils, single, 12 bunches |.. | .. 2 0– 4 0 | Roses (indoor), doz. | 2 0– 9 0 |
| — double, 12 bun. | 3 0– 6 0 | — red French, per dozen .. | 3 0– 4 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Stephanotis, 12 spr... | 8 0–12 0 |
| Eucharis, per doz. .. | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Euphorbia, 12 sprays | 1 0– 3 0 | Tulips, 12 bunches.. | 10 0–12 0 |
| Gardenias, 12 blms.. | 3 0– 9 0 | Violets, 12 bunches.. | 9 0–12 0 |
| Heliotropes, 12 sp... | 0 6– 1 0 | — Neapolitan, Fr., per bunch .. | 3 0– 5 0 |
| Hyacinth, Roman, 12 sprays .. | 0 9– 1 0 | — Czar, Fr., bunch | 0 8– 1 0 |
| Lapageria, white, 12 blooms .. | 4 0– 6 0 | | |
| — red, 12 blooms.. | 1 0– 3 0 | | |
| Lilac, Fr., per bunch | 6 0– 8 0 | | |

Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Ficus elasticus, each | 1 6– 7 6 |
| Azalea, per doz. .. | 30 0–42 0 | Foliage Plants, various, each .. | 2 0–10 6 |
| Begonias, per doz. .. | 6 0–12 0 | Genista, per doz. .. | 9 0–18 0 |
| Cineraria, per doz... | 8 0–12 0 | Hyacinths, per doz.. | 8 0–12 0 |
| Cyclamen, per doz.. | 12 0–24 0 | Lily of the Valley, per pot .. | 1 6– 2 6 |
| Cyperus, per dozen | 6 0–12 0 | Myrtles, per doz. .. | 6 0–12 0 |
| Dielytra, per dozen | 9 0–12 0 | Palms in var., each | 2 6–21 0 |
| Dracæna terminalis | 30 0–60 0 | Pelargoniums, doz. | 18 0–30 0 |
| — viridis, per doz... | 12 0–24 0 | Primula, single, per dozen .. | 5 0– 6 0 |
| Erica, in variety, doz. | 18 0–30 0 | Roses, various, doz. | 12 0–30 0 |
| Euonymus, various, per dozen .. | 6 0–18 0 | Scillas, 12 pots .. | 9 0–12 0 |
| Evergreens, in var., per dozen .. | 4 0–18 0 | Solanums, per dozen | 6 0–18 0 |
| Ferns, in variety, per dozen .. | 4 0–18 0 | Tulips, 12 pots .. | 6 0– 8 0 |

Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 2 0– 3 0 |
| Grapes, per lb. | 12 0–20 0 | Strawberries, per lb. | 4 0– 6 0 |
| Lemons, per 100 | 4 0– 6 0 | | |

Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. .. | 3 0– 6 0 | Garlic, per lb. | 1 0– .. |
| Asparag., Fr., bndl. | 3 0–25 0 | Herbs, per bunch | 0 2– 0 4 |
| — English, bund.. | 8 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. .. | 0 6– 1 6 |
| Beans, French, p. lb. | 2 0– .. | — Cos, each | 0 4– 1 0 |
| — Broad, per lb. .. | 1 0– .. | Mint, green, bunch.. | 1 6– .. |
| Beet, per doz. .. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. .. | 1 0– 2 0 | Onions, per bushel.. | 6 0– .. |
| Carrots, per bunch.. | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 2 6– .. | Parsley, per bunch.. | 0 4– .. |
| Cauliflowers, English, each .. | 0 3– 0 6 | Radishes, per bun... | 0 2– 0 6 |
| Celery, per bundle .. | 1 6– 2 0 | Rhubarb, per bund. | 1 0– .. |
| Cbilis, per 100 | 3 0– .. | Seakale, per basket | 2 6– .. |
| Cucumbers, each .. | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. .. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| | | Tomatos, per lb. .. | 0 9– 1 0 |

Potatos:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 4*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

## SEEDS.

London: *April* 11.—A steady consumptive business is now taking place without change in values. For all varieties quotations continue moderate. Advices from Liverpool describe the stock of red Clover seed there as only half what it was at the corresponding period of last year. Of fine white seed the available supplies are getting into narrow compass. There is an improved sale for imported and perennial Rye-grasses. Some arrivals of Kœnigsburg spring Tares having just taken place, buyers can now satisfy their wants on reasonable terms. Hemp seed is cheaper. The Board of Trade Returns, just published, show the imports into the United Kingdom of Clover and Grass seeds for the past three months as 142,004 cwt., value £345,744, against 145,131 cwt., value £351,370, for the first quarter of 1880. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CORN.

At Mark Lane on Monday the tendency of prices was decidedly against sellers. The best samples of English Wheat were rather easier, and secondary sorts 1*s.* lower than on this day week. Foreign Wheats, where sold, were also in favour of the buyers. Flour met a dull sale at drooping prices, Barley was firm but quiet, Maize continued scarce, and at about last week's quotations. Oats were about the same as on Friday last, or, as compared with Monday last, 6*d.* dearer for prime heavy qualities, and 6*d.* cheaper for light Russian, other grades showing no material change.—On Wednesday Wheat moved quietly, both English and foreign, and quotations were weak. Flour was dull at about late rates. Barley was inactive, without attraction. For Oats the demand was heavy, and inferior corn was drooping in value. Maize was dull and less firm. Beans and Peas were in slower request at late currencies.—Average prices of corn for the week ending April 9:—Wheat, 44*s.* 4*d.*; Barley, 32*s.*; Oats, 22*s.* For the corresponding period last year:—Wheat, 48*s.* 2*d.*; Barley, 33*s.* 9*d.*; Oats, 23*s.* 5*d.*

## CATTLE.

At the Metropolitan Market on Monday trade throughout experienced increased business. Cattle supplies were good, and the demand exceedingly slack, with irregular and frequently lower prices. Sheep were difficult of sale, and generally lower. But few now come in the wool, and are no longer quotable. Prime calves support late value, but the general demand was limited. Lambs sold more readily than on Thursday se'nnight, not, however, at any better prices. Quotations:—Beasts, 4*s.* to 4*s.* 4*d.*, and 4*s.* 8*d.* to 5*s.* 4*d.*; calves, 5*s.* 4*d.* to 5*s.* 8*d.*, and 6*s.* 4*d.* to 6*s.* 8*d.*; sheep, 5*s.* to 5*s.* 4*d.*, and 5*s.* 6*d.* to 6*s.*; lambs, 8*s.* to 9*s.*; pigs, 4*s.* to 5*s.* 2*d.*

## POTATOS.

The Borough and Spitalfields markets reports state that from Scotland supplies are rather large; from Essex moderate; from abroad fair, principally German. Best qualities meet a fairly steady sale, but all other grades are dull, and prices in some cases easier. Scotch Regents, 80*s.* to 100*s.*; Victorias, 90*s.* to 110*s.*; flukes, 90*s.* to 120*s.*; rocks, 70*s.* to 80*s.*; Champions, 80*s.* to 90*s.*; Essex Regents, 80*s.* per ton; German, 4*s.* 6*d.* to 5*s.*; Belgian kidneys, 4*s.* to 4*s.* 6*d.* per bag.—The arrivals from abroad during the past week were:—31,659 bags Hamburgh, 1200 bags Bremen, 1052 bags Antwerp, 355 bags Malta, 253 bags Rouen, 708 bags Boulogne, 10 baskets St. Nazaire, 1196 bags Ghent, 12 tons 99 bags Rouen.

## COALS.

The following are the prices current at market during the week:—Bebside West Hartley, 14*s.* 9*d.*; Ravensworth West Hartley, 14*s.* 9*d.*; Walls End—Hetton, 18*s.* and 16*s.* 6*d.*; Hetton Lyons, 16*s.* and 15*s.*; Lambton, 17*s.* 6*d.*; Wear, 16*s.*; Tunstall, 16*s.*; Tees, 17*s.* 9*d.*; Radford Navigation, 17*s.*; East Wylam, 16*s.* 6*d.*

**Government Stock.**—The closing prices of Consols on Monday were, for delivery, 100½ to 100⅝, and 100 11/16 to 100 13/16 for the account. On Tuesday the final quotations were, for delivery, 100½ to 100⅝, and 100⅝ to 100¾ for the account; and at the close of Wednesday's record the figures were the same.

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Visitors to the late Paris Exhibition, and Others intending to purchase the 1st Prize Lawn Grass Seeds, should procure their supplies direct from JAS. CARTER & CO.

**CARTERS' GOLD MEDAL LAWN GRASS**

In sealed packets, price 1*s.* (post-free, 1*s.* 4*d*), 1*s.* 6*d.* and 2*s.* 6*d.* per packet.
(A 1*s.* 6*d.* packet will sow 1 rod of ground).
Price per Bushel .. .. 25*s.*
Price per Acre (of 4 bushels) .. 90*s.*

ORDINARY LAWN GRASS .. .. 20*s.* per Bushel.
20*s.* value Carriage Free.

LAWNS and HOW to MAKE THEM.—See CARTERS' PRACTICAL GARDENER. Price 1*s.*; post-free, 1*s.* 4*d.* (Winners of the only Gold Medal for Lawns, Paris, 1878.)

# BEAUTIFUL FLOWERS.

CARTERS' POPULAR BOXES of SEEDS of BEAUTIFUL FLOWERS.
Price, 2*s.* 6*d.*, 5*s.*, 10*s.* 6*d.*, 15*s.*, 21*s.*, 42*s.*, Post-free.

## CARTERS' NEW PRIMULAS.

**Vesuvius, New Scarlet**—This magnificent novelty is unquestionably the most brilliantly-coloured Primula in cultivation. The rich crimson-scarlet flowers are of immense size, elegantly fimbriated, and of great substance.
*Price, in sealed packets, 3s. 6d. and 5s. per packet, post-free.*

**"Royal Purple."**—A most distinct and novel variety, producing immense trusses of bloom of a royal purple colour, shading off to crimson-lake; most elegantly fringed; an undoubted acquisition both for exhibition and decorative purposes.
*Price, in sealed packets, 3s. 6d. and 5s. per packet, post-free.*

**"The Bride."**—Purest white, flowers borne in immense trusses, elegantly fimbriated, compact in habit; the snow-white blossoms, contrasting with the peculiar sea-green foliage, produce a most charming effect.
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## CARTERS' VICTORIA COMPACT CALCEOLARIA.

Comprising the most famous strains in cultivation, which have taken the highest awards at the Royal Horticultural Society's and other important Meetings. The trusses of bloom are of immense size, and perfect in form, embracing every range of self and spotted coloured flowers.
*Price, in sealed packets, 2s. 6d. and 3s. 6d. per packet, post-free.*

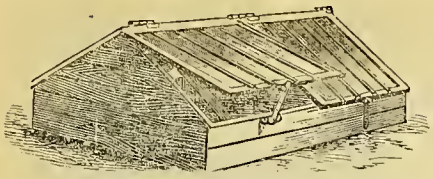
## CARTERS' BRILLIANT PRIZE CINERARIA.

We again offer a splendid collection in separate colours, saved with great care at our own nurseries from the most brilliant and best-formed flowers.
*Price, in sealed packets.—The Collection of twelve varieties, separate, post-free, 6s.; the collection of six varieties, separate, post-free, 3s. 6d.; finest mixed, all colours, 2s. 6d. and 3s. 6d. per packet, post-free.*

*Carters*

The Queen's Seedsmen, and by Royal Warrant to H.R.H. the Prince of Wales,

237/238, High Holborn, London, W.C.



**Portable Plant Frames.**

R. HALLIDAY AND CO. desire to draw special attention to their Plant Frames, of which they always have a large stock, ready glazed and painted. They are made of the best materials, and can be put together and taken apart in a few minutes by any one.

Prices, delivered to any station in England, also Dublin and Belfast:—

| | £ | s. | d. |
|---|---|---|---|
| 6 feet long, 4 feet wide .. .. .. .. | 2 | 15 | 0 |
| 12 feet long, 4 feet wide .. .. .. .. | 4 | 15 | 0 |
| 6 feet long, 5 feet wide .. .. .. .. | 3 | 15 | 0 |
| 12 feet long, 5 feet wide .. .. .. .. | 6 | 10 | 0 |

The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.

R. HALLIDAY AND CO., Hothouse Builders and Engineers, Royal Horticultural Works, Middleton, Manchester.

# PEACH WALL COVERS,

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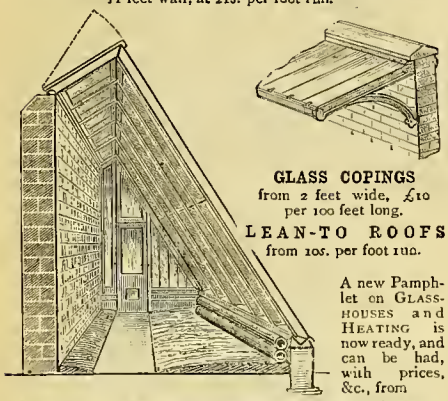

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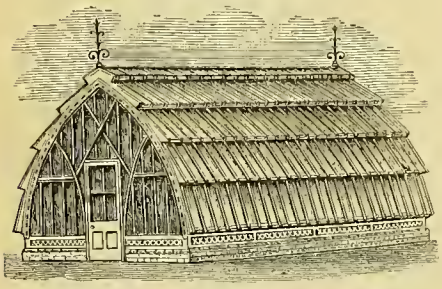

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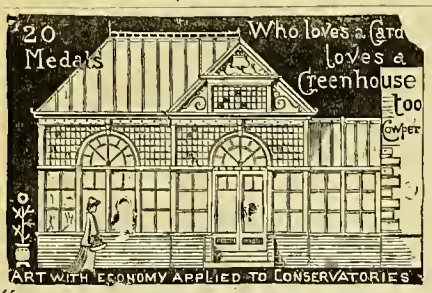


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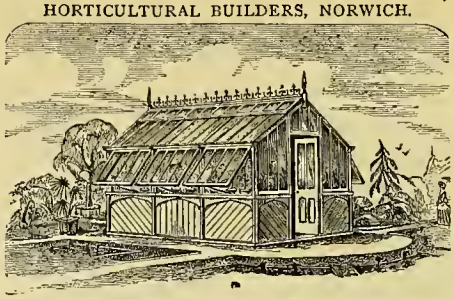

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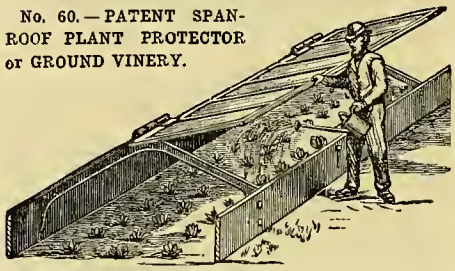

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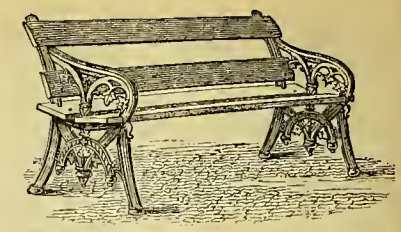

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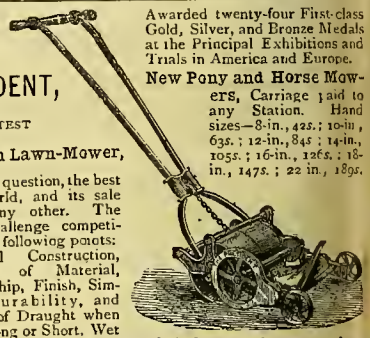

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| Syphons (No. 23)— ,, | 1 | 3 | .. ,, | 2 | 0 | .. ,, | 3 | 0 | ,, |

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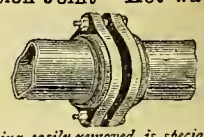

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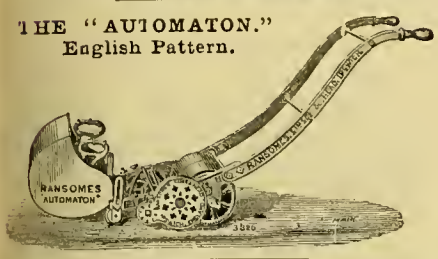


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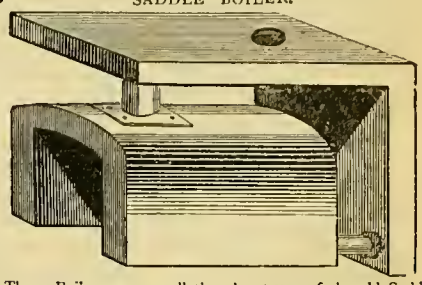

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| 20 ,, | 18 ,, | 24 ,, | 400 | 8 | 0 | 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 | 0 | 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 | 0 | 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 | 0 | 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 | 0 | 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 | 0 | 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 | 0 | 0 |

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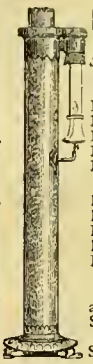


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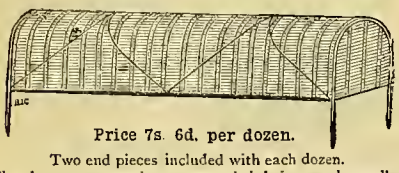

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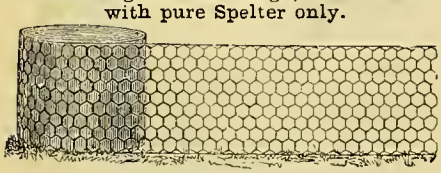

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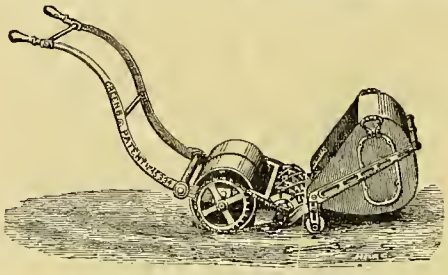

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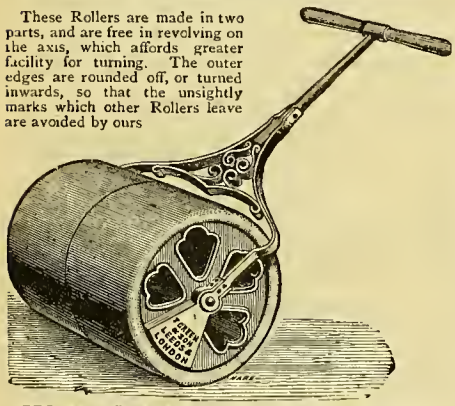

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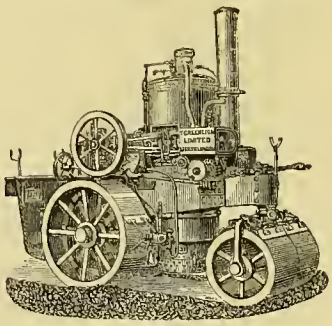
They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

## GREEN'S PATENT STEAM ROAD ROLLERS AND TRACTION ENGINES COMBINED,

Which are made in sizes of 6, 10, 12½, 15, and 20 Tons weight, and both the Driving and Steering of them are under the easy control of ONE Man.

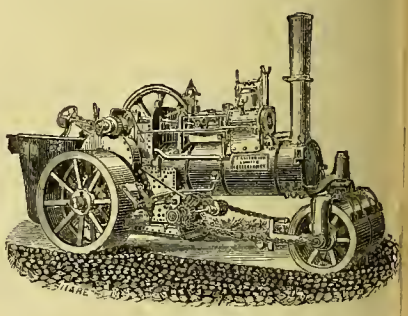
They are Suitable for Rolling Carriage Drives, Park Roads, Walks, Streets, Highways and for General Road Making ; Rolling Lawns, Cricket Flats, Parks, &c. They can also be used as Stationary Engines for Stone Breaking, Wood Sawing, Pumping, Farm Purposes, and other various work.

*They are specially recommended to Noblemen, Gentlemen, Borough and Road Surveyors, Corporations, Local Boards, Highway Trustees, Contractors, Road Makers, and others.*



Weight Empty :—
6 TONS. 7 TONS.

Weight in Working Trim with Water and Fuel :—
7 TONS. 8 TONS.



Weight Empty :—
10 TONS. 12½ TONS. 15 TONS.

Weight in Working Trim with Water and Fuel
12½ TONS. 15 TONS. 18 TONS.

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**THOMAS GREEN & SON (Limited), Smithfield Ironworks, Leeds ; and 54 and 55, Blackfriars Road, London.**

ILLUSTRATED PRICE LISTS FREE.


Editorial Communications should be addressed to "The Editors ;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.
Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, April 16, 1881.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 382.—Vol. XV. { New Series. } SATURDAY, APRIL 23, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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***IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not forwarded, but are sent at once to the Returned Letter Office.***

Now Ready, in cloth, 16s.,

*THE GARDENERS' CHRONICLE*,
Volume XIV., JULY to DECEMBER, 1880.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

ALEXANDRA PALACE, N.
(Lessees—Jones and Barber.)
FRIDAY and SATURDAY, May 20 and 21, GRAND FLORAL EXHIBITION of BOUQUETS, TABLE DECORATIONS, and POT ROSES. For Prize Lists and particulars apply to
JOS. FORSYTH JOHNSON, Horticultural Director.

BATH and WEST of ENGLAND SOCIETY.
TUNBRIDGE WELLS MEETING, 1881, commencing MONDAY, June 6, termining FRIDAY, June 10.
The Steward of the Horticultural Department begs to announce that a CUP of £10 10s. will be given on this occasion for the best GROUP of ORCHIDS. A CUP of £5 5s. (or money) for the best SPECIMEN.
For further information apply to the Hon. and Rev. J. T. BOSCAWEN, Lamorran, Probus, Cornwall.

BURTON-ON-TRENT FLORAL and HORTICULTURAL SOCIETY.—The First Exhibition of the Season of Plants, Flowers, Fruit, and Vegetables, will be held in the Hay, Burton-on-Trent, on WEDNESDAY, June 22. £20. £10, £5, for the best Twelve Stove or Greenhouse Plants, &c.
Schedules of Prizes and any information may be obtained from the Secretary, to whom Nurserymen and others wishing to Exhibit should apply. R. B. BARRATT, Secretary.
Abbey Cottage, Horninglow Street, Burton-on-Trent.

LEEDS FLOWER SHOW.
June 29, 30, and July 1, 1881.
The SCHEDULE of PRIZES is now ready, and may be had of the Secretary,
J. H. CLARK, Printer, Briggate, Leeds.

Lawns and How to Make Them.—See
CARTERS' PRACTICAL GARDENER.
Price 1s.; post-free, 1s. 4d. (Messrs. Carter were the winners of the only Gold Medal for Lawns, Paris, 1878.)
The Queen's Seedsmen, and Seedsmen by Royal Warrant to H.R.H. the Prince of Wales, 237 and 238, High Holborn, W.C.

SUNNINGDALE NURSERY,
Direction of, see *Gardeners' Chronicle*, April 16, 1881.

PLEASE SEND FOR CATALOGUE
of Cheap BEDDING PLANTS, &c.
W. WEED, Uppingham.

Pansies, &c.
DOWNIE AND LAIRD, Royal Winter Garden, Edinburgh, are now sending out the finest Show and Fancy PANSIES that money can buy. Also VIOLAS, at from 4s. to 30s. per dozen.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881. Extra strong SEAKALE, 2s. 6d. per dozen.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SUTTONS' PRIZE GRASS SEEDS.
Carriage Free.

SUTTONS' GRASS SEEDS
FOR LAWNS.

SUTTONS' GRASS SEEDS
FOR CROQUET GROUNDS.

SUTTONS' GRASS SEEDS
FOR LAWN TENNIS GROUNDS.

SUTTONS' GRASS SEEDS
FOR CRICKET GROUNDS.

SUTTONS' GRASS SEEDS
FOR BOWLING GREENS.

FOR FULL PARTICULARS
SEE

SUTTONS' PAMPHLET
ON LAWNS, &c.,
Gratis and post-free on application.

SUTTON AND SONS,
The Queen's Seedsmen, READING, BERKS.

H. P. ROSES, extra strong.—Very fine strong plants, in 9, 10, and 11-inch pots, of all the leading kinds, coming into bud; suitable for exhibition. For LIST of sorts and price, apply to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

Seedling Thorns and other Forest Trees, Hardy
CONIFERS and SHRUBS, CHEAP.
MESSRS. LEVAVASSEUR and SON, Nurserymen, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents,
Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

Tricolor Bedding Geraniums.
ALFRED FRYER offers a large stock of the best varieties. Priced LISTS post-free.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Pelargoniums—Pelargoniums.
JAS. HOLDER AND SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties, 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

Bedding Violas and Pansies.
T. L. MAYOS has REDUCED THE PRICE of his choice varieties to 10s. per 100.
LISTS of these and other hardy bedding plants post-free.
Highfield Nurseries, Hereford.

HOLLYHOCKS. — Strong plants now ready. List of varieties and price upon application.
L. WOODTHORPE, Glazenwood Nursery, Braintree.

SEEDLING HOLLIES.—Several thousands of the above, extra fine. Apply
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

FINEST GRASS SEEDS,
specially prepared for LAWNS, BOWLING GREENS, CRICKET GROUNDS, &c., comprising the very best dwarf evergreen kinds, quality not to be surpassed, 1s. per pound, 20s. per bushel; 3 to 4 bushels required per acre.
RICHARD SMITH AND CO., Seedsmen and Nurserymen, Worcester.

Fine Home-grown
ITALIAN RYE GRASS.
Samples and prices on application.
DICKSON, BROWN AND TAIT, Seed Merchants, 43 and 45, Corporation Street, Manchester.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS, are requested to communicate with
W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

Cut Flowers.
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of HOT-HOUSE and OUTDOOR FLOWERS. Cash by return of post if desired. Where money is objected to ORCHIDS, &c., MAY BE HAD in EXCHANGE.

GROWERS having Surplus Stocks of CUT FLOWERS, Choice FRUITS, &c., should communicate with WISE AND RIDES, 3, Tavistock Court, Covent Garden.

WANTED, in the Trade, a few dozens of the HYBRID TEA ROSES "Duke of Connaught," "Duchess of Connaught," "Duchess of Westminster," and "George Bancroft," and HYBRID PERPETUAL "Etienne Levet." All to be in pots. State size and price to
B. B., *Gardeners' Chronicle* Office, Strand, W.C.

WANTED, FRUITING CANES of the following VINES:—Buckland Sweetwater, Foster's Seedling, Black Hamburgh, Muscat of Alexandria, &c. State lowest trade price to
D. McFARLANE, The Gardens, Olive Mount, Wavertree, Liverpool.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes in the Trade. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

WILLIAMS' for ORCHIDS either for the Cool-house, Mexican, or East India-house, either in Specimens or small plants. The largest Collection of Specimens suitable for Exhibition in the Trade.

WILLIAMS' for CHEAP ORCHIDS.—B. S. W. having recently purchased several Collections of Orchids in this country, in addition to the large consignments he is constantly receiving from his collectors abroad, is thus enabled to offer a large assortment of these plants, at exceptionally low prices. Price List upon application.

WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSEYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

YOUNG'S GOLDEN CHINESE JUNIPER.—Fine specimens. See advertisement, *Gardeners' Chronicle*, March 26, 1881, p. 388.
MAURICE YOUNG, Milford Nurseries, near Godalming.

SPECIAL OFFER of NYMPHÆA ALBA.—Very strong roots for disposal in quantity. For price, apply to
ROBERTS BROS. AND ARNOLD, East Grinstead, Sussex.

FOR SALE (Cheap), Large, Double Red CAMELLIA, 6 feet by 7 feet, perfectly healthy and clean. Price upon application.
WM. SHEPPARD, Gardens, Brixworth Hall, Northampton.

GUNNERA SCABRA.—Fine strong Crowns, in 5-inch pots. Per dozen, 12s.
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

Orchids, &c.
THE NEW PLANT and BULB COMPANY'S SPECIAL LIST (No. 51) is just published. Post-free on application.
Lion Walk, Colchester.

Alpine Plants and Hardy Perennials.
JAS. BACKHOUSE AND SON'S CATALOGUE of the above, including Hardy Ferns and a selection of Florist Flowers, containing 40 pages, is now ready, and will be sent free to purchasers on application.
JAS. BACKHOUSE AND SON, York Nurseries.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

LAPAGERIAS.
WHITE, extra strong, 42s. each; do., 31s. 6d. each; smaller, 21s. each
RUBRUM, strong, 10s. 6d. each,
ROSEA, strong, 7s. 6d. each.
Price to the Trade on application.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

HOLLIES, 1-yr. Seedling. — Good rooted, well ripened stuff, 4s. 6d. per 1000, £17 10s. per 100,000.
MAURICE YOUNG, Milford Nurseries, Godalming.

A. M. C. JONGKINDT CONINCK begs to offer large quantities of HARDY PERENNIALS, at very low prices.
Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.

THOS. MILNER AND SON, Bradford, offer surplus Stock of good planting VINES, at 18s. per dozen out of pots for cash.

Very Advantageous Offer.
POTATOS.—International Kidney, £5 10s.; Covent Garden Perfection, £5 10s.; Suttons' Magnum Bonum, £5 per Ton, free on Rail, and other varieties equally cheap. Write for special prices to
C. FIDLER, Potato Grower, &c., Reading.

Special Offer.—Very Cheap.
POTATOS.—Myatt's Ashleaf, £4 10s.; Veitch's Improved Ashleaf, £5; Paterson's Victorias, £4 5s.; Scotch Champions, £3 10s. per ton. Free on rail. For further particulars, apply to
C. FIDLER, Potato Grower, Reading.

## SALES BY AUCTION.

**Monday Next.**
ODONTOGLOSSUM ALEXANDRÆ.
ODONTOGLOSSUM VEXILLARIUM.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Alban's, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, April 25, at half-past 12 o'Clock precisely, large and fine consignments of ODONTOGLOSSUM ALEXANDRÆ and ODONTOGLOSSUM VEXILLARIUM, in finest varieties, and many in large masses.
On view morning of Sale, and Catalogues had.

**Tuesday Next.**
FLOWERING and IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY NEXT, April 26, at half-past 12 o'Clock precisely, FLOWERING ORCHIDS, consisting of beautiful plants of Odontoglossums, Cattleyas, Oncidiums, Dendrobiums, Phalænopsis, &c.; also twenty cases of Odontoglossums and Masdevallias from Bogota, and four cases of ODONTOGLOSSUM ROEZLII, all in grand condition.
May be viewed the morning of Sale, and Catalogues had.

**Tuesday Next.**
Twenty Cases of ODONTOGLOSSUMS and MASDEVALLIAS from Bogota, in grand condition.

MR. J. C. STEVENS begs to announce that he will include in his Sale on TUESDAY NEXT, April 26, ODONTOGLOSSUM ALEXANDRÆ, O. TRIUMPHANS, MASDEVALLIA SHUTTLEWORTHI, M. HARRYANA, ANGULOA CLOWESII, MAXILLARIAS, &c., on boards and sticks as imported; also six cases of ODONTOGLOSSUM ROEZLII, in splendid condition.
On view morning of Sale, and Catalogues had at the Auction Rooms, and Offices, 38, King Street, Covent Garden, W.C.

**Wednesday Next.**
7000 LILIUM AURATUM, just received from Japan.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, April 27, at half-past 12 o'clock precisely, an importation of 7000 Bulbs of LILIUM AURATUM just received from Japan, a consignment of several thousand TIGRIDIA GRANDIFLORA, T. CONCHIFLORA, fine clumps of IRIS KÆMPFERI from New Jersey; choice named CAMELLIAS, PALMS, and other GREENHOUSE PLANTS from Ghent; some fine imported Bulbs of EUCHARIS CANDIDA, just received in fine condition; a consignment of PLANTS and BULBS from Germany; also a great variety of Hardy CONIFERS, HERBACEOUS PLANTS, &c.
May be viewed the morning of Sale, and Catalogues had.

**Wednesday Next.**
ODONTOGLOSSUM CRISPUM.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY next, April 27, at half-past 12 o'Clock precisely, by direction of Messrs. Shuttleworth, Carder & Co., 191, Park Road, Clapham, a fine importation of ODONTOGLOSSUM CRISPUM, ODONTOGLOSSUM PESCATOREI, ODONTOGLOSSUM TRIUMPHANS, ODONTOGLOSSUM GLORIOSUM, MASDEVALLIA HARRYANA (semi-established), and ANGULOA CLOWESII.
On view the morning of Sale, and Catalogues had.

**Thursday Next.**
VALUABLE IMPORTATIONS of ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, April 28, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, St. Alban's, a very extensive importation of CATTLEYA DOWIANA (AUREA), the dark yellow variety; the consignment is in splendid health, and the masses are freely set with leaves and breaks. Several ORCHIDS offered for the first time, and of value. A magnificent lot of MILTONIA REGNELLI PURPUREA, sepals and petals rose, edged white, lip large and flat, crimson-purple, edged white; see flowers. A grand lot of ONCIDIUMS from Brazil; PESCATOREA CERINA and LEHMANNI, LUDDEMANNIA LEHMANNI, a very gorgeous Orchid (see Drawing); the very rare CATTLEYA VELUTINA, STENIA CHESTERTONI, NOETIA SPECIES, a very extensive lot of ODONTOGLOSSUM PESCATOREI, O. ALEXANDRÆ, and O. VEXILLARIUM, and other ORCHIDS.
May be viewed the morning of Sale, and Catalogues had.

**The Third Portion of the Celebrated Collection of**
ORCHIDS, formed by J. DAY, Esq., of Tottenham.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, May 4 and 5, at half-past 12 o'Clock precisely each day, the third portion of this celebrated Collection, comprising amongst other fine things, splendid Plants of

| | |
|---|---|
| Cattleya labiata, autumn var. | Cypripedium Druryi |
| ,, Skinneri alba | ,, Stonei platytænium |
| Lælia harpophylla | Phalænopsis sumatrana |
| ,, anceps alba | Angræcum articulatum |
| ,, ,, rosea | ,, Elisii |
| Epidendrum bicornutum | Oncidium ornithorhyncum |
| ,, pseudepidendrum | album |
| Calanthe Textori | Vanda Lowii |
| ,, Dominaina | ,, tricolor, Dalkeith var. |
| Cymbidium Parishii | Saccolabium Turneri |
| Aerides Veitchianum | ,, Holfordianum |
| Lælia elegans Wolstenholmiæ | Masdevallia Chimæra |
| Cypripedium Spicerianum | ,, Veitchii grandiflora, &c. |

Also a small Collection of NEPENTHES, including sanguinea, lanata, and other fine varieties.
May be viewed the morning of Sale, and Catalogues had.

**Unreserved Sale of the well-selected Sample Stock** of best modern CHINA, being consignments from Limoges, Messrs. Ulysse of Blois; Gaillé, of Nancy; Messrs. Vion & Baury, of Paris and elsewhere.

MESSRS. PROTHEROE AND MORRIS have received instructions from a firm of French agents who are relinquishing the business to SELL the above at the Auction Mart, Tokenhouse Yard, near the Bank, E.C., on MONDAY, May 2, at 12 o'Clock precisely.
On view the Saturday prior to and morning of Sale. Catalogues had at the Mart; and of the Auctioneers, 8, New Broad Street, E.C.

**Orchids in Flower and in Bud.**

MESSRS. PROTHEROE AND MORRIS will hold a SALE of the above, at the Auction Mart, E.C., on MONDAY, May 9. Entries should be made not later than April 30.
Offices, 8, New Broad Street, E.C.

**Preliminary.—Ryde's Hill, near Guildford.**
CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by W. Whitley, Esq., who is leaving the neighbourhood, to SELL by AUCTION, on the Premises, on TUESDAY, May 10, the whole of the valuable collection of STOVE and GREENHOUSE PLANTS, 7000 Bedding Plants, 4 Half-bred Alderney COWS, capital LANDAU, well-made WAGGONETTE, CARTS, 100 Head of POULTRY, and numerous effects.
Catalogues (when ready) at 8, New Broad Street, E.C.

**Manchester.**
SALE of nearly Six Hundred very choice ORCHIDS, Filmy and Exotic FERNS, and rare STOVE PLANTS (duplicates), numbers of which are in bloom, and including many first-class specimens, the property of Fredk. Yates, Esq., of Pleasington, near Blackburn, Lancashire.

MESSRS. ARTINGSTALL AND HIND are favoured with instructions from F. Yates, Esq. (who is disposing of duplicate plants), to SELL by AUCTION, on FRIDAY, April 29, at their Spacious Rooms, 45, Princess Street, Manchester, a magnificent assortment of VALUABLE PLANTS.
ORCHIDS.—Aerides, Angræcums, Cœlogynes, Cypripediums, Dendrobiums, Lycaste Skinneri alba, Masdevallia Lindeni (Mendel's var.), Oncidiums, Odontoglossums Alexandræ, Pescatorei, Roezlii, and vexillarium, of which there are many fine specimens; Pleiones, Phalænopsis, Saccolabiums, Thunia Marshalli, Vandas, and numerous other choice sorts.
STOVE PLANTS.—Aralia Veitchii gracillima, Anthurium Scherzerianum, Cochliostema Jacobiana (in flower), Crotons Weismanni, Disraeli, Prince of Wales, and Victoria; Eucharis, Nepenthes, Sarracenias, Stephanotis, Ericas, Epacris, Bertolonias, Attacia cristata, and many other rare specimen and half specimen plants.
FERNS.—Adiantums gracillimum and farleyense, Gleichenias rupestris, rupestris glaucescens (Mendelii), dicarpa, and Mendelii; Todeas pellucida and superba, and a good variety of others.
Catalogues may now be obtained by applying to the Auctioneers, 45, Princess Street, Manchester.

**The Royal Nurseries, Merriott, near Crewkerne, and** the Hendford Hill Nurseries, Yeovil, Somerset.

MR. PALMER is instructed to SELL by AUCTION, at the "George" Hotel, Crewkerne, on TUESDAY, May 3 next, at 3 for 4 o'Clock P.M., precisely, the above valuable and long-established NURSERY GROUNDS and PROPERTIES, comprising, at Merriott, 28 acres of NURSERY STOCK, and 10 acres of Freehold or long Leasehold LAND, on which the same is growing, and which will be sold with the Stock. The other Lands on which the Stock stands are held, and have for nearly thirty years past been held, by the Vendor as yearly Tenant. The Ground is admirably suited for Nursery purposes, being easily worked, unusually even as regards moisture and dryness, and very well supplied with water. About 15 acres are planted with the choicest description of Fruit Trees, and the remaining 13 acres with Forest and Ornamental Trees and Shrubs, Flowering Plants, Roots, Thorns, &c.
The GREENHOUSES (of which there are six on the freehold portions) are 80 yards long and vary from 4 to 6 feet in width. There is also an adequate quantity of framing.
A suitable RESIDENCE for the proprietor stands on the Grounds, with Stabling and Offices. Also two good COTTAGES and OFFICES, PACKING SHEDS, a Room for Workmen, and extensive Seed Stores.
The rented portions of the Merriott property comprise a large Vinery, Packing Shed, and Spacious Workroom for men.
The Hendford Hill Nursery, which is held by lease at a fair rent, extends to about 2 Acres, is well planted with every description of Nursery Stock, and is provided with a large Conservatory of recent construction, and in excellent condition. There is a comfortable Residence with good Garden attached to this property.
In the town of Yeovil is a valuable SEED STORE. A lucrative Seed and Florist Business has been carried on by the vendor in Yeovil in connection with the Nurseries for twenty-eight years past. The connections of the Nursery Businesses embrace a district of upwards of 20 miles radius, without any important rival. The rates and taxes on the properties are moderate, and suitable labour is abundant. No reasonable offer will be refused.
For further particulars and conditions of Sale, apply to Messrs. SPARKS AND BLAKE, Solicitors, Crewkerne; or to the Auctioneer, Martock.—Dated April 13, 1881.

**Suffolk.—(5119.)**

FOR SALE, an Old-established SEED, NURSERY, and FLORISTS' BUSINESS. In present owner's hands twelve years. Occupying a central and prominent position in a busy market town. House and Shop, Four Greenhouses and 2 Acres of Ground. Incoming low.
Particulars of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, E.C.

FOR DISPOSAL, a SEED and FLORIST'S BUSINESS (or would take a Partner). A rare opportunity for an energetic Gentleman. The highest references given and required, with full particulars. Apply
SEED and FLORIST'S B., *Gardeners' Chronicle* Office, W.C. (no Agents).

**To Nurserymen, Market Gardeners and Others.**
12 Miles from London and near a Railway Station.

TO BE LET, from Michaelmas next, on Lease, about 85 ACRES of LAND with excellent RESIDENCE, spacious Barns, Stables, Orchards, and Eighteen Cottages, situate at Dawley Wall, near Harlington, Middlesex, and ¼ of a mile from the Hayes Station of the Great Western Railway. The premises adjoin the Grand Junction Canal, and are bounded on the east by about 1400 yards of brick wall, 10 feet high, with a south and south-west aspect, which is in part planted with Fruit Trees.
This Property presents an opportunity seldom offered within the radius of the Metropolitan District for establishing a Nursery or entering upon Market Garden Operations. Two Private Docks communicating with the Grand Junction Canal offer great facilities for bringing manure from London, or sending produce to Market.
Apply to Messrs. DUDLEY AND DE SALIS, 1, Westminster Chambers, Victoria Street, Westminster, S.W.; or to Mr. E. P. NEWMAN, Auctioneer and Estate Agent, Uxbridge.

FOR DISPOSAL, on the South Coast, a NURSERY, SEED, and FLORIST BUSINESS, comprising 2 Acres of Land, Two Vineries, Cucumber, Propagating, and two Span-roofed Greenhouses, Show House and Seed Shop, Pits, Frames, Potting Sheds, &c. Rent only £25 per annum. Goodwill, Stock, Greenhouses, and all Erections.
Price and particulars on application to
FLORIST, 96, Alexandra Street, St. Leonards-on-Sea.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are 8½ Acres of deep rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business. For particulars apply to
J. WATSON, 38, Crown Street, Bury St. Edmunds.

STRONG PLANTS.
100 Choice ZONAL GERANIUMS, all the best kinds, for 24*s.*
100 Choice BRONZE ditto, the best, 25*s.*
100 Choice SILVER-EDGED, Fancy flowering ditto, 16*s.*
100 Choice PHLOX, well rooted, 16*s.*
100 Pot Roots of the best DAHLIAS, 20*s.*
1000 CUTTINGS of the best GERANIUMS, Zonal, Bronze, Tricolor, and Silver-edged, for £5.
No charge for packing. Cash with order.
CHARLES BURLEY, Brentwood.

**Vines—Vines—Vines.**

JAMES DICKSON AND SONS can still supply FRUITING CANES of Black Hamburgh, also PLANTING CANES of Black Hamburgh, Alicante, Trentham Black, Lady Downe's, Buckland Sweetwater, and some other kinds.
The "NEWTON" Nurseries, Chester.

ZONALS, very large collection of the finest varieties for Pot Culture; also all the best Double GERANIUMS, by selection or by dozen. See New CATALOGUE for everything.
GLOXINIAS, ready for potting on, 4*s.* and 6*s.* per dozen.
White VESUVIUS, 12*s.* and 15*s.* per 100. Package free.
GEO. GUMMOW, 114, Loughborough Road, Brixton, S.W.

CYCLAMENS for Winter-flowering.—Nice young plants of the famous Covent Garden strain, 1*s.* 6*d.* per dozen; two dozen, 2*s.* 6*d.*; extra strong, 2*s.* per dozen; 10*s.* per 100; seed, 1*s.*
TELEGRAPH CUCUMBER, Rollisson's variety, 20 seeds, 1*s.*
Choice ANEMONE, 1*s.* All post-free for cash only.
G. CORNHILL, Byfleet, near Weybridge Station.

**Special Offer to the Trade.**

SEEDLINGS. — 2-yr. Scots FIR, native, 5*s.* 6*d.*; 2-yr. PINUS AUSTRIACA, 2*s.* 6*d.*; 2-yr. PINUS LARICIO, 2*s.* 6*d.*; 3-yr. Silver FIR, 4*s.* 6*d.*; 2-yr. BEECH, 5*s.*: 2-yr. HAZEL, 10*s.*; 3-yr. HAZEL, 12*s.* 6*d.*; 2-yr. English OAK, 7*s.*; 1-yr. SYCAMORE, 2*s.* 6*d.*; 1-yr. PEARS, 4*s.* 6*d.* per 1000.
W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

**To the Trade.—New Roses for 1881.**

LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,
Gratis and post-free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

FLOWER SEEDS in PENNY PACKETS. —One hundred of the most showy, popular, and beautiful varieties, including finest double ASTER and Ten-week STOCK, Scarlet LINUM, MIGNONETTE, NEMOPHILA, SWEET PEAS, CONVOLVULUS, Dwarf NASTURTIUMS, CLARKIA, COLLINSIA, CALLIOPSIS, &c., post-free, 8*s.* 50 packets, including as above, post-free, 4*s.* 2*d.*; 25 ditto, 2*s.* 2*d.*
Each packet contains sufficient seed for making two or three nice patches. Excellent for distribution amongst cottagers or children. All the varieties are easy of cultivation.
DANIELS BROS., The Queen's Seedsmen, Norwich.

**Notice.**

AUCUBA JAPONICA.—Splendid plants for immediate effect, 2½ to 3½ feet high, 24*s.*, 30*s.*, 36*s.*, and 42*s.* per dozen. A few extra large specimens, 5*s.* to 7*s.* 6*d.* each.
W. RUMSEY, Joyning's Nurseries, Waltham Cross, N.

SPECIAL OFFER OF PEAS.
LAXTON'S WILLIAM THE FIRST, 1*s.* 3*d.* per quart.
McLEAN'S ADVANCER, 1*s.* 3*d.* per quart.
TURNER'S DR. McLEAN, 1*s.* 6*d.* per quart.
CHAMPION of ENGLAND, 1*s.* 3*d.* per quart.
On receipt of Post-office Order or stamps.
CRANSTON'S NURSERY, and SEED COMPANY (Limited), King's Acre, Hereford.

NEW SEEDLING POTATOS.—Gordon's Royal Kidney Regent, and Gordon's Victoria Regent, were raised from Seedlings three years ago, and have hitherto resisted disease. The former is a Second Early, and this year yielded over 10 tons per acre. The latter is not unlike Paterson's, but rougher skinned; it boils equally well, and is a much heavier cropper, having yielded 13 tons per acre.
Further particulars, with price, may be had on application to Mr. JOHN GORDON, Balmuchy, Fearn, Ross-shire, N.B.
Messrs. DRUMMOND AND SONS, Stirling, have authority to take Orders.

CHRYSANTHEMUMS and FUCHSIAS.—We can now offer the above, in best named varieties, strong, well-rooted little plants; by post or rail as preferred.
FUCHSIAS or CHRYSANTHEMUMS.

| | | | |
|---|---|---|---|
| 12 Plants, in 12 sorts | .. | .. | 2*s.* 6*d.* |
| 25 ,, 25 ,, | .. | .. | 5 0 |
| 50 ,, 25 ,, | .. | .. | 8 0 |
| 100 ,, 50 ,, | .. | .. | 14 0 |

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

**To the Trade.—Seed Potatos.**

H. AND F. SHARPE have still to offer all the principal kinds of SEED POTATOS, at considerably reduced prices, in order to clear out. Special quotations on application.
Seed Growing Establishment, Wisbech.

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor Lincoln.

**The Chief Bundle of the Season is now Ready.**

FORTY SEPARATE PACKETS of NEW FLOWER SEEDS, all different, for 1s.; double quantity for 1s. 9d. We thus eclipse all other offers, hoping to secure patronage for our miscellaneous seeds.
AGENTS WANTED to Canvass in spare time; liberal commission: experience not necessary.
W. H. HOWELL, Flackwell Heath, High Wycombe.

**To the Trade.**

MANGEL WURZEL and TURNIP SEEDS.
H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.
Seed Growing Establishment, Wisbech.

**Spring Planting.**

SEEDLING and TRANSPLANTED FOREST TREES.
PLANTS for GAME COVERTS,
ORNAMENTAL TREES and SHRUBS,
FRUIT TREES, &c.—The immense stock of the above is in splendid condition, and special offers for large quantities will be made when desired.
CATALOGUES free on application.
The LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh.

**The Best New Pelargoniums of the Season.**

SALTMARSH AND SON, The Nurseries, Chelmsford, will be prepared to send out early in May the undermentioned Seedlings of their own raising, and which they can confidently recommend as being of first-class merit in their respective classes:—

**Double Zonal Pelargoniums.**

LORD E. CECIL. 7s. 6d. First-class Certificate.
MRS. ARTHUR LATTEY. 5s.
SULTAN. 3s. 6d.
The above were awarded the prize for the best three not in commerce in June last.
EARL BEACONSFIELD. 3s 6d.
EMPRESS OF INDIA. 3s. 6d.
The set of five, 21s.

**Decorative Pelargoniums.**

MRS. H. C WELLS. 7s. 6d.
LADY RAYLEIGH. 5s.
LADY SELWYN IBBETSON. 5s.
MARS. 5s.
The set of four, 21s.
For description and further particulars see Advertisement in this paper on April 2.
The usual discount to the Trade, and a further allowance when three sets are taken.

**Verbenas.—50,000 now ready for Sale.**

S. BIDE is now prepared to supply his numerous customers, as on previous seasons, really good, strong, spring-struck plants of Purple, Scarlet, White, and Pink Verbenas, at 6s. per 100; 50s. per 1000. Best Exhibition Varieties, 8s. per 100, package free. Cash must accompany each order.
Strong healthy Cuttings of the above at half price. Free by post.
S. BIDE, Alma Nursery, Farnham, Surrey.

**New Dahlias, New Roses, and New Verbenas.**

KEYNES AND CO. are now booking orders for their splendid new Sets, which will be ready the first week in May; also their general collection of DAHLIAS and VERBENAS. The latter may be had at once in fine bushy and well hardened plants, free from disease.
Fine strong plants of the new ROSES for 1881 now ready.
Price LISTS free on application.
The Nurseries, Salisbury, April 6, 1881.
Trade orders respectfully solicited.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" " ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 eet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

# ARTHUR VEITCH MEMORIAL

A Fund, to be called the "ARTHUR VEITCH MEMORIAL FUND," the proceeds to be dispensed through the GARDENERS' ROYAL BENEVOLENT INSTITUTION, for the benefit of aged and infirm GARDENERS, or their WIDOWS.

Subscriptions for the above object (not to exceed One Guinea from Head, or Half a Guinea from Under Gardeners) are respectfully solicited from all classes of Horticulturists.

Intending Subscribers are informed that the Fund will be CLOSED on SATURDAY, May 21, and the Committee hope the movement will continue to receive support from young Gardeners in all parts of the Kingdom, who lost in the deceased a sincere friend.

Subscriptions may be paid to any of the Collectors advertised in the *Gardeners' Chronicle* of February 5, or to either of the undersigned:

**Hon. Treasurer.** Mr. T. MANNING, Royal Exotic Nursery, King's Road, Chelsea, S.W.
J. ROBERTS, Gunnersbury Park, Acton, London, W.

**Hon. Secretaries.** W. WILDSMITH, Heckfield Gardens, Winchfield, Hants.
J. HUDSON, Gunnersbury House, Acton, London, W.
J. AUSTIN, Ashton Court, Bristol.

**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.
" TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.
" SILVER VARIEGATED—May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.
" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.
" BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.
" Forcing, Show and French vars., 30s. per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

J. H. BATH has the following SEED POTATOS for disposal:—

| | |
|---|---|
| Beauty of Hebron | Early Shaws |
| Myatt's Ashleaf | " Rose |
| White Elephant | Bresee's Prolific |
| Grand Mogul | Paterson's Victoria |
| Magnum Bonum | Scotch Champion |

And other leading varieties.
Apply at 1 and 3, York Street, Borough Market, S.E.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.
EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Greens—Greens—Greens.**

GREEN KALE.—2,000,000 fine plants (autumn sown), earliest spring supply of Greens, at 7s. per 2000; 60s. per 20,000; £6 6s. per 50,000; or £12 per 100,000.
Post-office Orders payable Godalming, or Cheques crossed London and County Bank, Guildford, with order.—Apply
EDWARD LEIGH, Wrotham Farm, Dunsfold, Godalming.

**Important to Market Gardeners, Farmers, and SEEDSMEN.**

ALL KINDS of AGRICULTURAL, GARDEN, and FLOWER SEEDS of best quality, particular attention being paid to all Stocks of Seeds suitable for Market Gardeners, Farmers, &c.
PRIMULA FIMBRIATA, Red and White, extra choice Covent Garden strain.
PRIMULA ALBA MAGNIFICA and CHISWICK RED.
CALCEOLARIA, extra choice, splendid colour and good habit.
CINERARIA, extra choice, Covent Garden strain, mixed, or in four separate colours, Crimson Self, Crimson with white eye, Blue Self, Blue with white eye.
CYCLAMEN PERSICUM, Covent Garden strain, best habit, and fine colours.
SOLANUM, Covent Garden hybrid; large berries, and good upright bushy habit.
CARMINE CANDYTUFT (True), a most striking colour, rich deep rosy-carmine.
CHRYSANTHEMUM FRUTESCENS, Comtesse de Chambord, and Etoile d'Or.
TORENIA FOURNIERI.
CENTAUREA CANDIDISSIMA.
BEGONIA, Tuberous-rooted, splendid strain, carefully hybridised: contains all shades of buff, rose, scarlet, &c.
DELPHINIUM HYBRIDUM, saved from Van Houtte's magnificent collection.
Wholesale SEED CATALOGUE free by post on application.
Special low prices for all leading varieties of Hardy Annual and Perennial Flower and Vegetable Seeds in quantity by arrangements.
WATKINS AND SIMPSON, Wholesale Seedsmen, 1, Savoy Hill, Strand, W.C.; Seed and Trial Grounds, Feltham, and Twickenham, Middlesex.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.
Near 6000 species and varieties of plants are included in this List of eighty to ninety pages. No illustrations are given, nor any exaggerated descriptions to induce purchasers to buy varieties, which on proving they generally find so woefully disappointing. Special attention is given to the undermentioned classes, and purchasers selecting from our Catalogue may feel assured that our firm possesses large collections of the finest sorts:—
CHRYSANTHEMUMS, GERANIUMS, FUCHSIAS, and other Soft-wooded Plants for Garden or Greenhouse.
DAHLIAS, PANSIES, PYRETHRUMS, CARNATIONS, and other Florists' Flowers.
HERBACEOUS and ALPINE PLANTS, many hundreds of the finest and most useful varieties.
BEDDING PLANTS, all the varieties required for any style of Bedding.
SPRING FLOWERING PLANTS, the most reliable sorts, in thousands of strong plants.
STOVE and GREENHOUSE PLANTS, Flowering and Ornamental Foliage varieties, various sizes, from quite young plants to quarter specimens, to suit various classes of purchasers.
The prices and plants need only to be compared with those of other firms, to prove that in no instance can buyers of plants who study both price and quality be supplied more advantageously than by ourselves.
The undernamed Collections are all of the finest sorts, and as varied in colour as possible, fine for exhibition or home decoration, and as certain to be satisfactory to purchasers as collections can be. All are our selection.

| | Per doz.—s. | d. |
|---|---|---|
| Abutilons, in variety .. | 3 | 0 |
| Achimenes, in variety .. | 3 | 0 |
| Ageratums, small plants, per 100, 5s. .. .. | 1 | 0 |
| Ageratums, in pots, per 100, 15s. .. .. | 2 | 6 |
| Antirrhinums .. .. | 3 | 6 |
| Begonias, Tuberous, from 4s. to .. .. | 18 | 0 |
| Other sorts .. .. | 3 | 0 |
| Bouvardias, 4s. to .. | 6 | 0 |
| Caladiums .. .. | 9 | 0 |
| Calceolaria Golden Gem (not in pots) per 100, 5s. .. .. .. | 1 | 0 |
| Carpet Bedding Plants (see Catalogue). | | |
| Carnations and Picotees, 12 plants .. .. | 7 | 0 |
| 12 pairs .. .. | 12 | 0 |
| Chrysanthemums, in great variety, per 100, 15s. .. .. | 3 | 0 |
| Clematis to name .. | 9 | 0 |
| Coleus .. .. .. | 3 | 0 |
| Dactylis elegantissima, per 100, 6s. .. .. | 1 | 0 |
| Dahlias, per 100, 20s. .. | 3 | 6 |
| Epiphyllum .. .. | 9 | 0 |
| Ferns, Stove and Greenhouse, 6s. to .. .. | 9 | 0 |
| Fuchsias, per 100, 15s. .. | 3 | 0 |
| Gardenia florida .. | 6 | 0 |
| Greenhouse Plants .. | 9 | 0 |
| Geranium, Variegated .. | 3 | 6 |
| Geranium, Double .. | 3 | 0 |
| Geraniums for Bedding | 3 | 0 |
| Geraniums for pot culture, 3s. to .. .. | 6 | 0 |
| Gladiolus, splendid seedlings, per 100, 20s. .. | 3 | 0 |
| Gladiolus Brenchleyensis, per 100, 6s. .. | 1 | 0 |
| Gloxinias, 6s. and .. | 9 | 0 |
| Hardy Climbing Plants, in great variety, 6s. .. | 9 | 0 |
| Hollyhocks, Seedlings .. | 4 | 0 |
| Helianthemums .. .. | 2 | 6 |
| Herbaceous Plants, per 100, 20s. .. .. | 3 | 0 |
| Heliotropes .. .. | 2 | 6 |
| Hepaticas .. .. | 4 | 0 |
| Iresine Lindeni, per 100, 10s. .. .. .. | 2 | 0 |

| | Per doz.—s. | d. |
|---|---|---|
| Iris, German .. .. | 3 | 0 |
| Ivies, in variety .. | 6 | 0 |
| Ivies, Irish .. .. | 3 | 0 |
| Lantanas .. .. .. | 2 | 6 |
| Lobelias, small, per 100, 4s. .. .. .. | 1 | 0 |
| Lobelias, in pots .. | 2 | 6 |
| Mesembryanthemum fol. var., per 100, 10s. | 2 | 0 |
| Mimulus, in variety .. | 3 | 0 |
| Myosotis, per 100, 6s. .. | 1 | 6 |
| Pæonies, white, blush crimson, and other shades .. .. .. | 6 | 0 |
| Pansies, show, per 100, 25s. .. .. .. | 3 | 6 |
| Pansies, Bedding, about 20,000 to select from, per 100, 12s. .. .. | 2 | 0 |
| Phloxes, per 100, 25s. .. | 3 | 6 |
| Pelargoniums, Show, Fancy, and French, 6s. to .. .. .. | 9 | 0 |
| Pinks, per 100, 25s. .. | 3 | 6 |
| Potentillas, Double .. | 6 | 0 |
| Polyanthus, Seedlings, per 100, 5s. .. .. | 1 | 0 |
| Polyanthus, named sorts (see Catalogue). | | |
| Primroses, Double, 4s. to .. .. .. | 9 | 0 |
| Primroses, old Double Velvet, 1s. 6d. each. | | |
| Primroses, Single, assorted colours .. | 2 | 0 |
| Pyrethrums, Double .. | 6 | 0 |
| Rock Plants, per 100, 15s. | 3 | 0 |
| Salvias .. .. .. | 3 | 0 |
| Saxifrages .. .. | 3 | 0 |
| Sedums .. .. .. | 3 | 0 |
| Sedum acre aurea, elegans, and glaucum, per 100, 8s. .. .. | 1 | 6 |
| Stove Plants, 6s. to .. | 9 | 0 |
| Succulents, 4s. to .. | 6 | 0 |
| Tropæolums .. .. | 3 | 0 |
| Violas (immense stock of best sorts), per 100, 8s. to 12s. .. .. .. | 2 | 0 |
| Violets, sweet .. .. | 3 | 0 |
| Strawberry Runners (our collection containing varieties), per 100, 2s. 6d. | | |

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.
W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties are now ready, 2s. 6d., 3s. 6d. and 5s. each. Full particulars and testimonials free on application to
Messrs. JONES AND NORTH, Hope Nursery, Lewisham, Kent

**Hardy Florists' Flowers, 1881.**

THOMAS S. WARE will have pleasure in posting the above CATALOGUE, gratis on application. It contains Hollyhocks, Antirrhinums, Chrysanthemums, Dianthus (Mule Pinks), Delphiniums, Pansies, Pentstemons, Picotees (Yellow), Phloxes, Single and Double Pyrethrums, &c.
Hale Farm Nurseries, Tottenham, London.

POT ROSES and CLEMATIS.—A large and very extensive Collection of the above, including the finest varieties, ready for delivery in June. Early orders solicited.
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

**Verbenas—Verbenas.**

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other varieties of good strong Spring-struck Cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included, for cash with order.
Queen's Road Nursery, Markhouse Common, Walthamstow.

**Cheap Special Offer.**

GREEN KALE.—Fine Autumn-sown Plants, in quantities, 20,000, £2; 50,000, £4; 100,000 for £7 10s. Cash with order.
EDWARD LEIGH, Dunsford, Godalming.
N.B.—This Advertisement will not be repeated.

NEW ROSES for 1881, in pots. TEA and NOISETTE ROSES, in pots. Price Lists free.
CLEMATISES, best new and old sorts. New List to be ready (D.V.) by end of May.
EWING AND CO., Eaton, Norwich.

**Notice.—A Bargain.**

SEED POTATOS.—For Sale, a quantity of Magnum Bonum and Myatt's. Also a quantity of Scotch Champions from Seed purchased in Scotland last year. For Prices apply to
F. R. BEART, Godmanchester, Huntingdon.

SURPLUS STOCK.—ASH, Mountain, 3 to 4 feet, and 4 to 5 feet; POPLAR, Black Italian, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet; BALM of GILEAD, 1½ to 2 feet, and 2 to 3 feet; WILLOW, Huntingdon, 2 to 3 feet, AZALEA, Pontica, 1½ to 2 feet, and 2 to 3 feet. STRAWBERRY PLANTS, in great variety. ABIES DOUGLASII SEED, Native. Special prices on application to
BEN. REID AND CO., Aberdeen.

**Verbenas—Verbenas.**

WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff, 6s. per 100, 50s. per 1000; strong plants from single pots, full of cuttings 12s. per 100; 100 rooted cuttings, in twelve best show kinds 8s, packing included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

**50,000 Pelargonium Vesuvius.**

WILLIAM BADMAN is sending out VESUVIUS, from store pots, 8s. per 100, 75s. per 1000, packing included. Send cash with order.
Cemetery Nursery, Gravesend, S.E.

**Now is the Best Time to Transplant Hollies.**

HOLLIES, STANDARD, GOLD and SILVER, perfect Specimens, from 10s. 6d. to 31s. 6d. each.
PYRAMIDS, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each.
GREEN HOLLIES, for Hedges, 12 to 15 inches, 21s. per 100; 15 to 18 inches, 30s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

FERNS from Devonshire, Cornwall, and Somerset. Instruction Book for Making Rockery, Planting Ferns, &c., with each 5s. order. 14 named varieties, 6s. per 100; small (post), 30, 2s.; fine Asplenium fontanum, Septentrionale and Holly Ferns, 1s. each. 1000 varieties of Ferns, British and Exotic. CATALOGUE, 2d. Established 25 years.
GILL, Lodging House Keeper, Lynton, Devon.

**To the Trade.**

PELARGONIUMS, Show, Fancy, and Decorative, best named sorts, good plants, to flower next month, in 48-pots, 8s. per dozen, 60s. per 100; in 32-pots, 12s. per dozen, 80s. per 100.
CHRYSANTHEMUMS, best sorts, large-flowered Japanese and Pompon, in thumb-pots, 25s. per 100.
DAHLIAS, best varieties, in small thumbs, 20s. per 100.
DOUBLE PYRETHRUMS, best named sorts in variety, 25s. per 100.
GARAWAY & Co. offer the above: their own selection.
GARAWAY & CO., Durdham Down Nurseries, Clifton, Bristol.

ILLUSTRATED CATALOGUE of PERENNIALS.—The present year's issue of this Catalogue, containing many rare and choice Hardy Perennials, also Selections of Hardy Terrestrial Orchids, Primula Sieboldii, Climbing and Trailing Plants, Aquatics and Bog Plants, Ornamental Grasses and Bamboos, Sarracenias, &c., may be had post-free upon application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

**Vines—Vines—Vines.**

E. WILSON SERPELL (late Pontey) can offer a few Fruiting and Planting Canes of the following VINES, all well ripened in pots. Price from 3s. 6d. to 5s. and 7s. 6d. each:—

| | |
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| Esperione | Madresfield Court |
| Royal Muscadine | Black Hamburgh |
| Foster's Seedling | Gros Colmar |
| Lady Downe's | Bowood Muscat |
| Muscat of Alexandria | Barbarossa |
| Trentham Black | Golden Hamburgh |
| Buckland Sweetwater | Black Alicante |
| Muscat Hamburgh | Mrs. Pince |

The Nurseries, Vinstone, Plymouth.

PETUNIAS (magnificent new double fringed). We beg to offer the above in good strong plants, 9s. and 12s. per dozen.
ROSES (Tea-scented), on own roots, 4½-in. pots, 10s. per doz.
PELARGONIUMS (show and fancy), 4½-in. pots, strong plants.
,, Zonal, single and double, Pearson's, of 1880.
PANSIES and VIOLAS, in large quantity, 2s. to 4s. per doz.
ERICA, best hard-wooded sorts, in half and quarter specimens, and smaller plants.
AZALEA INDICA, in choice variety.
CATALOGUES on application.
Executors of HENRY WALTON, Edge End Nursery, Brierfield, near Burnley.

TO THE TRADE.—
PRIMROSE, Double yellow, fine tufts full of buds, 14s. per 100.
,, Double white, 14s. per 100.
,, Double lilac, 12s 6d. per 100
PRIMULA ROSEA, the gem amongst the Primroses, 6s. per dozen.
,, CASHMERIANA, 6s. per dozen.
,, JAPONICA, 12s. per 100.
PANSY, Sunburst (nearly scarlet), 20s. per 100.
,, D. Cavan, fine crimson, 16s. per 100.
,, Pilrig Park, fine white, 14s. per 100.
,, Dean's White Bedder, 12s. per 100.
MYOSOTIS ELEGANTISSIMA, the new silver-edged blue flowered Forget-me-Not, most charming of spring flowers, 30s. per 100.
ANEMONE FULGENS, fine, strong, in 4-inch pots, 35s. per 100.
,, APENNINA, in pots, strong, 25s. per 100.
SAPONARIA OCYMOIDES, in pots, strong, 20s. per 100.
RODGER, McLELLAND AND CO, Hill Street, Newry.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

CALCEOLARIA BURBIDGEI.—We have much pleasure in announcing the distribution of this first-rate Plant; it is the result of a cross between C. fuchsiæfolia and C. Pavonii, and in growth is exactly intermediate between the two parents; it is of very free bushy habit, the flowers are golden-yellow, and produced during the autumn and winter months. Unlike C. fuchsiæfolia it is not liable to sun-scorch, and owing to its time of flowering, freedom of growth, and easy cultivation, must become a universal favourite. It was raised by Mr. Burbidge, of the College Botanic Gardens, Dublin. Each, 5s.
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

SPRING FLOWERS.
POLYANTHUS, choice varieties, including Gold and Silver Chain, Hose-in-hose, &c.
PRIMROSES, double white, lilac, yellow, crimson, and choice single varieties.
COWSLIPS, Giant and other sorts.
AURICULAS, Alpine and double dark varieties.
HEPATICAS, red, white, and blue.
CHRISTMAS ROSES, in variety.
SWEET WILLIAMS, very choice sorts.
WALLFLOWERS, yellow and dark.
MYOSOTIS DISSITIFLORA, spring Forget-me-not.
COLEUS, in first-class varieties.
Mr. COOPER, Calcot Gardens, Reading, Berks.

# MONDAY NEXT.

## ODONTOGLOSSUM ALEXANDRÆ.
## ODONTOGLOSSUM VEXILLARIUM.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER, St. Alban's, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, April 25, at half-past 12 o'Clock precisely, large and fine Consignments of ODONTOGLOSSUM ALEXANDRÆ and ODONTOGLOSSUM VEXILLARIUM, in finest varieties, and many in large masses.

*On view morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# WEDNESDAY NEXT.

## ODONTOGLOSSUM CRISPUM (ALEXANDRÆ).

## SHUTTLEWORTH, CARDER & CO.,

**ORCHID and NEW PLANT IMPORTERS, 191, PARK ROAD, CLAPHAM, LONDON, S.W.,**

BEG TO ANNOUNCE THAT

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, April 27, at half-past 12 o'Clock precisely, a fine Importation (per S.S. *Nile*) of ODONTOGLOSSUM CRISPUM, O. PESCATOREI, O. TRIUMPHAMS, O. GLORIOSUM, MASDEVALLIA HARRYANA (semi-established) and ANGULOA CLOWESII.

*On view the morning of Sale, and Catalogues had of Mr. J. C. Stevens, 38, King Street, Covent Garden, W.C.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# THURSDAY NEXT.

## VALUABLE IMPORTATIONS OF ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, April 28, at half-past 12 o'Clock precisely, by order of Mr. F. SANDER, St. Alban's, a very extensive Importation of CATTLEYA DOWIANA (AUREA), the dark yellow variety—the consignment is in splendid health and the masses are freely set with leaves and breaks; several ORCHIDS offered for the first time, and of value; a magnificent lot of MILTONIA REGNELLI PURPUREA, sepals and petals rose, edged white, lip large and flat, crimson-purple, edged white—see flowers; a grand lot of ONCIDIUMS from Brazils; PESCATOREA CERINA and LEHMANNI, LUDDEMANNIA LEHMANNI, a very gorgeous Orchid—see drawing; the very rare CATTLEYA VELUTINA, STENIA CHESTERTONI, NOETIA SPECIES; a very extensive lot of ODONTOGLOSSUM PESCATOREI, O. ALEXANDRÆ and VEXILLARIUM and other ORCHIDS. *May be viewed the morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# B. S. WILLIAMS' NEW PLANTS, 1881.

(*Continued from p.* 552.)

**DRACÆNA "MRS. TURNER."**—A bold and handsome variety, of the light variegated section. The leaves are from 15 to 18 inches long by 4 broad, the ground colour pale green, with a bright centre, in many instances spreading towards the margin in the matured leaves, having a margin of pink. Price 21*s.* each.

**ERYTHRINA SPECTABILE.**—A dense compact-growing variety, from the South Sea Islands, having fine bold variegation. The plant is of stout woody growth, well furnished with lateral branches; the markings of the leaves are chiefly yellow, but change with the different growth of the plant. This will make a fine sub-tropical bedding plant. Price 21*s.* each.

**HELIOTROPE "WHITE LADY."**—A pure white free-flowering variety, producing large corymbose heads of bloom; the plant is of fine growing and branching habit, consequently, under ordinary treatment, can be had in flower the greater part of the year. Price 7*s.* 6*d.* each.

**IXORA PILGRIMII.**—A hybrid produced from Ixora Williamsii, having the same fine constitution; the trusses of flowers are about 7 inches in diameter, perfectly round; the pips are large in proportion, the colour a bright orange-scarlet, shaded with crimson. This variety, like Williamsii, does not require so much heat, by 10° to 15°, as coccinea and other older kinds. It is named after the raiser, E. Pilgrim, Esq., Fern Lawn, Pittville, Cheltenham, a successful cultivator of this class of plants. Received First-class Certificate Royal Horticultural Society. Price 21*s.* each.

**JUSTICIA MARMORATA.**—A remarkably distinct Acanthaceous plant, with leaves about 10 inches long, by 4 broad; the ground colour light shining green, blotched and marbled with white, in some leaves the white markings largely prevail. Price 10*s.* 6*d.* and 21*s.* each.

**LÆLIA PERRINII NIVEA.**—This is a very distinct and pretty novelty, having pure white flowers, with the exception of the lip, which is pale pink; the habit of growth is in every respect the same as L. Perrinii. This flower is the purest white we have ever met with. Price upon application.

**NEPENTHES COMPACTA.**—This very distinct variety has pitchers about 5 inches long and 8 inches in circumference, the primary markings being reddish-purple sometimes shaded with violet, splashed and marbled with creamy-white, with margins and mouth same colour, the lid beautifully spotted; it is a compact-growing variety, with a profusion of pitchers. Price 63*s.* to 105*s.* each.

**NEPENTHES HENRYANA.**—This splendid variety is a cross between Hookerii and Sedenii, but far eclipsing either parent; the pitchers are about 7 inches in length and 9 inches in circumference, obovate in shape; the prevailing colour is reddish-purple, with flakes and specks of green, the throat lighter green with violet spots, with a rich crimson mouth shaded with violet; the lid, which is round, is suffused with rosy-lake; in well-grown plants the pitchers of this variety are the finest and richest colours of any variety that we have seen. Price 63*s.* and 105*s.* each.

**PHILODENDRON ELEGANS.**—The leaves of this plant, when medium size, are about 10 to 12 inches long by 4 to 6 broad, pinnatifid in character, making a pretty decorative plant, but when larger become sub-climbing; suitable for planting out in rockwork in the stove or intermediate-house, producing a number of aërial roots. Price 21*s.* each.

**PLEOPELTIS PICTA (Moore).**—This Fern has been recently introduced by me from the South Sea Islands, and proves to be distinct from any of the Ferns known, either in gardens or herbarium. It has been called *P. picta*, from the dark purplish-brown reticulations which decorate the under-surface of the fronds, and which represent the course of the principal veins. The plant has a freely creeping rhizome as thick as a goose-quill, from which spring the numerous evergreen fronds, which are subcoriaceous in texture, three-lobed or pinnatifid, tapering below into the mouth, altogether about 8 inches in height in the largest examples we have seen, but which, however, were not sufficiently mature to bear sori; they have an elongated terminal lobe, and two widely divergent side lobes, but little smaller, the lobes being all oblong obtuse, very bluntly rounded at the apex, and neatly undulated on the margin. The plant is an evident ally of *P. Billardieri*, but the name given is necessarily a provisional one, since the perfect state of the plant has not been seen. It is in the meantime to be commended as a fast-growing and pretty evergreen stove Fern, adapted for basket or block culture. Price 10*s.* 6*d.* each.

**SARRACENIA FILDESII.**—This fine and most striking of all Sarracenias is named in compliment to one of the best and most successful cultivators of this interesting class of plants. The pitchers, which are the largest we have seen, are produced in abundance, the mouth of which is trumpet-shaped and recurved at the margin, showing a well-defined reticulation or venation of deep purple flowers, large and interesting. Price 42*s.* each.

## NEW COLEUS.

**GENERAL ROBERTS.**—This most distinct and rich coloured variety has medium size cordate-shaped leaves, the centre of the leaf being crimson, shaded with purple, with a broad band of nearly black, and a narrow edge of deep gold.

**ALBA ILLUSTRATA.**—A nice free-branching habit plant, having light centre and cross veins on a very light sea-green ground, yellow margin.

**MRS. HARRY WILLIAMS.**—A very beautiful variety, quite distinct and much in advance of anything yet in commerce, the centre of the leaf being of a bright crimson-scarlet, with a violet midrib and a broad band of maroon, the broad green and yellow margin spotted with the same colour.

**DR. TANNER.**—A very bold striking variety, the centre of the leaf being of a rich crimson-lake, unevenly dispersed, filled, deep chocolate, with a very pale green margin freckled and dotted with the same colour.

**MIMIC.**—Rather a small but very neat growing variety, with a velvety-maroon centre, with a broad irregular hank of greenish-yellow, with dark spots at the base of the teeth, with numerous flakes and spots of the same, the base of the leaf white, extending some way up the leaf.

**CARICATURE.**—It is almost impossible to describe the fantastic forms of the leaves of this plant the irregular centre being of violet, surrounded with chocolate.

Price 5*s.* each.

NEW ILLUSTRATED PLANT CATALOGUE NOW READY, POST-FREE TO ALL APPLICANTS.

*Specimens of many of the above Plants can be supplied. Price upon application.*

## VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.

# NEW PATENT GRASS-CUTTERS.

(*PATRONISED BY THE BOARD OF WORKS.*)

**W. CLARK, 232, Oxford Street, London, W.,**

Begs to call public attention to a Patent Grass-Cutter he has just invented for use in the Garden and Farm, based upon the principle of the well-known "Clark's" Horse-clipping Machine, and which is, by its lightness of construction and rapidity of action, far preferable to the existing implements in use, and supplies a want long felt by every one who possesses a garden, namely, an instrument which will mow grass where inaccessible to the lawn mower, trim grass plot edges, clip Ivy and other creepers, also shrubs and trees, and keep in order Box borders and fancy Trees, &c.; all which this ingenious little instrument is capable of doing.

It is made in three sizes, to cut in breadth 8 inches, 12 inches, and 16 inches respectively; and is so easy in working, and at the same time so effective, that even ladies can work it without feeling fatigued, there being no occasion to stoop on account of the long wooden handles attached to the machine, and a greater quantity of work can be done in a given time than by any other method.

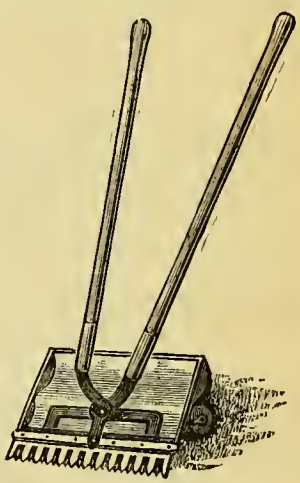
This invention is also applicable for Farm purposes—Reaping Corn and other Crops, Clover, Rye, &c., equally as well as accomplishing the objects for which it is required in the garden; and the cost being so small in proportion to the saving in time and quality of finish effected, it is placed within the reach of all, and needs but a trial to prove its superiority.

**PRICES.**

| | |
|---|---|
| The 8-inch Machine, complete with Rollers and Tray .. .. | 21*s.* |
| Ditto, without Rollers and Tray .. .. .. .. .. | 18*s.* |
| The 12-inch Machine, complete with Rollers and Tray .. .. | 28*s.* |
| Ditto, without Rollers and Tray .. .. .. .. .. | 24*s.* |
| The 16-inch Machine, complete with Rollers and Tray .. .. | 38*s.* |
| Ditto, without Rollers and Tray .. .. .. .. .. | 33*s.* |

**To be obtained of all Ironmongers, Horticultural and Agricultural Implement Manufacturers throughout the Kingdom, and of the Patentee,**

**W. CLARK, 232, OXFORD STREET, LONDON, W.**



# "ARCHIMEDEAN" AMERICAN LAWN MOWERS,

**Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.**

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

AWARDED
HIGHEST PRIZE AT
PARIS EXHIBITION, 1878;
and the Jury in their Report say:—
"The 'Archimedean' did the best work of any Lawn Mower exhibited."
Also
HIGHEST PRIZE AT
SYDNEY EXHIBITION, 1879-80.

**OPINIONS of the PRESS.**

"Far superior to any of ours."—*Vide* the *Field.*

"Remarkably easy to work."—*Vide* the *Gardeners' Magazine.*

"The quickest, most simple, and most efficient mower ever used."—*Vide* the *Gardeners' Chronicle.*

"We feel bound to recommend it to our readers as one of the best mowers we have as yet made acquaintance with."—*Vide* the *Floral World.*

PRICES from TWENTY-FIVE SHILLINGS.
*Warranted to give satisfaction.*
**Delivered Carriage Free to all Stations.**
Illustrated Catalogue post-free on application.

CAN BE USED EITHER WITH OR WITHOUT GRASS BOX.

**WILLIAMS & CO. (Limited),** Manufacturers and Patentees.

*Selling Agents:* **JOHN G. ROLLINS & CO.,** Old Swan Wharf, Upper Thames Street, London, E.C.; **WALTER CARSON & SONS,** La Belle Sauvage Yard, Ludgate Hill, London, E.C.; and 21, Bachelors' Walk, Dublin. *Selling Agents.*

## Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

# GREEN'S PATENT "SILENS MESSOR" AND "MONARCH" LAWN MOWERS

Over those of all other Makers is universally acknowledged.

**They will Cut**

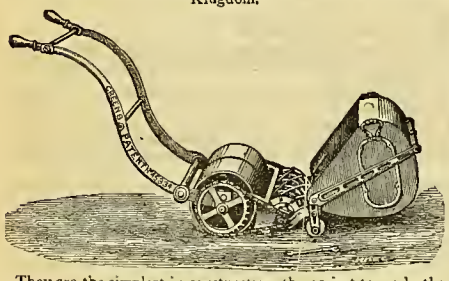
**Either Short or Long Grass, Bents, &c., Wet or Dry.**

These advantages no other Lawn Mowers possess.

They are the only Mowers which have been in CONSTANT use from 15 to 20 years in the Royal Gardens, Windsor,

| | |
|---|---|
| Buckingham Palace Gardens | The Hyde Park Gardens |
| Marlborough House Gardens | Hampton Court Gardens |
| Royal Horticultural Society's Gardens, South Kensington | The Zoological Gardens, Regent's Park |
| The Royal Botanic Gardens, Regent's Park | The Dublin Botanic Gardens, |
| The Crystal Palace Company's Gardens, Sydenham | The Liverpool Botanic Gardens |
| The Winter Palace Gardens, Dublin | The Botanic Gardens, Brussels |
| | The Hull Botanic Gardens |
| | The Leeds Horticultural Gardens |

And in most of the Principal Parks and Squares in the United Kingdom.



They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant. The above machines have proved to be the best, and and have carried off Every Prize in all cases of Competition. Every Lawn Mower is guaranteed to give entire satisfaction, otherwise they may be returned AT ONCE, free of cost to the purchaser.

The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 & 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

| | | | £ | s. | d. |
|---|---|---|---|---|---|
| To cut 6 inches. | | Can be worked by a lady .. .. | 1 | 15 | 0 |
| ,, 8 | ,, | ,, .. .. .. | 2 | 10 | 0 |
| ,, 10 | ,, | Can be worked by one person .. | 3 | 10 | 0 |
| ,, 12 | ,, | ,, ,, .. .. | 4 | 10 | 0 |
| ,, 14 | ,, | ,, ,, .. .. | 5 | 10 | 0 |
| ,, 16 | ,, | This can be worked by one man on an even lawn .. .. | 6 | 10 | 0 |
| ,, 18 | ,, | By man and boy .. .. .. | 7 | 10 | 0 |
| ,, 20 | ,, | ,, ,, .. .. .. | 8 | 0 | 0 |
| *,, 22 | ,, | Two men .. .. .. .. | 8 | 10 | 0 |
| *,, 24 | ,, | ,, .. .. .. .. | 9 | 0 | 0 |

* If made stronger, suitable for donkeys, 30s. extra.

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

Carriage paid to all the Principal Railway Stations in the United Kingdom. Illustrated Price LISTS free on application.

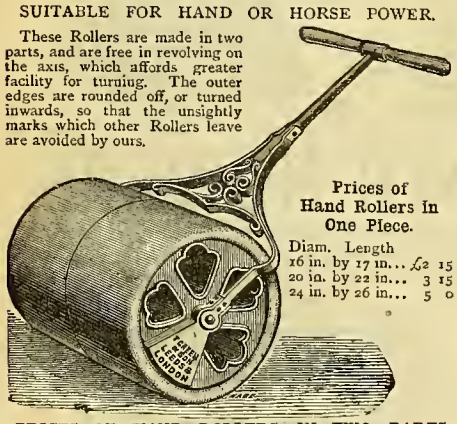
N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

# GREEN'S PATENT ROLLERS

**For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.**

SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks which other Rollers leave are avoided by ours.



**Prices of Hand Rollers in One Piece.**

| Diam. | Length | £ | s. |
|---|---|---|---|
| 16 in. by | 17 in... | £2 | 15 |
| 20 in. by | 22 in... | 3 | 15 |
| 24 in. by | 26 in... | 5 | 0 |

**PRICES OF HAND ROLLERS IN TWO PARTS.**

| Diam. | Length. | £ | s. | d. | Diam. | Length. | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|
| 16 in. by | 17 in. .. | 2 | 15 | 0 | 24 in. by | 26 in. .. | 5 | 0 | 0 |
| 20 in. by | 22 in. .. | 4 | 0 | 0 | 30 in. by | 32 in. .. | 9 | 0 | 0 |

Prices of Rollers fitted with Shafts suitable for Horse and Pony, on application, and special quotations for Rollers 3 feet, 3½ feet and 4 feet diameter.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

**THOMAS GREEN AND SON (Limited),**

SMITHFIELD IRONWORKS, LEEDS;

And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

Carriage of Rollers Paid to all the Principal Railway Stations in Great Britain.

**USED in the ROYAL GARDENS** AND IN THE **Principal Nurseries and Gardens throughout the United Kingdom, with the most successful results.**

# FOWLER'S HORTICULTURAL PREPARATIONS.

**LAWN SAND,** for destroying Daisies, Dandelions, Plantains, Ribbed Grass, Thistles, and other weeds, on Lawns, Croquet Grounds, Bowling Greens, Parks, &c.; at the same time acting as a fertiliser, and improving the growth and colour of the grass. Price in tins, 1s., 2s. 6d., and 5s.; kegs, 28 lb., 10s.; 56 lb. 19s.; 112 lb., 36s.

**GARDENER'S INSECTICIDE,** for destroying all the various Insects, Blights, and Mildews infesting plants and trees. It is easily applied either by dipping, syringing, sponging, or as a winter dressing; does not require cleansing off with water; will not stain or injure, any more than plain water, the most delicate flower, fruit, foliage, or root; gives the foliage a bright, clean, and healthy appearance, and promotes the growth of the plant. In jars, 1s. 6d., 3s., 5s. 6d., and 10s. each; and in kegs, 28 lb., 21s.; 56 lb., 42s.; 112 lb., 84s. each.

**STANDEN'S MANURE,** for promoting a rapid, healthy, robust growth, an early maturity, improving the quality of vegetables, flavour of fruits, and heightening the colour and increasing the size of flowers. It is specially invaluable to exhibitors and others whose aim is to excel. It is always of the same strength, certain and safe in all operations, and is applied with but little time or labour. In tins, 1s., 2s. 6d., 5s. 6d., 10s. 6d., and 21s. each; and in kegs, 56 lb., 21s.; 112 lb., 56s. each.

**MEALY BUG DESTROYER,** for the special eradication of this most troublesome of stovehouse plant pests. It is easily applied either with a small brush or vaporiser, is instant destruction to both insect and ova, and does not stain or injure the foliage. In bottles, 1s., 2s. 6d., 5s., and 10s.; ½ gallon, 21s.; 1 gallon, 42s. each.

**FLOWER CEMENT,** for fixing the petals of flowers for bouquets, head-dresses, vases, church, table, or ball decorations. It dries quickly, and preserves the flowers without staining or injuring them. In bottles, 1s. 6d.; quarts, 8s. each.

**WORM DESTROYER,** for eradicating every kind of Worm from the roots of large specimen plants, pots, lawns, &c. It is easily and cheaply applied, and will not harm the most delicate plant. In bottles, 1s., 2s. 6d., 7s., and 12s. 6d. each.

**VINE STYPTIC,** for preventing the Bleeding of Vines. It is invaluable to Vine Growers. In bottles, 3s.; quarts, 12s. each.

**HORTICULTURAL SUNDRIES,** of every description in stock.

*Sole Manufacturers:—*

**CORRY, SOPER, FOWLER & CO.**

(LIMITED).

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,, INSIGNIS
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THE

# Gardeners' Chronicle.

*SATURDAY, APRIL* 23, 1881.


## THE AURICULA.*

I PROPOSE to divide my subject into three sections:—1. The first shall be upon the derivation and history of the flower. 2. The next, the Auricula from a florist's point of view. 3. The last, a very brief touch upon its culture—not that I have any secrets which brevity should conceal.

### Derivation.

In the botanical census, by which plants are grouped according to natural orders, the Auricula is classed with the Primulaceæ. Besides the Primula Auricula of the Alps, the remote ancestor of our cultured flower, and one given by Paxton as hortensis, a European plant, with name suggestive of some degree of cultivation, and flowers described as variegated, there are several Primulas of Switzerland and Southern Europe interesting, as bearing a resemblance to the Auricula on a small wild scale. There is P. marginata, with serrated mealed foliage and lilac flowers, with rudiments of that meal in the centre which is intensely developed in the Auricula. Also P. Balbisii, with a habit of foliage in white and green quite that of the Auricula, and half-pendent flowers, "like Cowslips wan that hang the pensive head," and also slightly mealed in the eye. Again, P. intermedia, pubescens, viscosa, villosa, and others, with pink and purplish flowers, have the habit of diminutive Auriculas. Still, all primitive and allied forms are a far remove from the derived flowers of so long a period of culture as extends over 300 years, for Gerard states that prior to 1597 there were Auriculas in English gardens.

These early varieties were yellows, browns and purples, and as you look upon the beautiful flower to-day, in its jewellery of emerald and pearl, and its velvet textures of many lovely colours, you will wonder how all this investiture of different orders of beauty descended upon a pale wild flower of the Alps.

The first advances from the purely wild type were the results of carefully seeding this sportive flower, which, in its attribute of infinite variability from seed, has the fundamental qualification for being what is known as a florist's flower. But more full and rich illustration of this than written history well could be, are the interesting revelations which the Auricula makes to the raiser of seedlings. In them the history of the past will repeat itself in varied retrospect, and among those that must be discarded as missing the standards they were meant to equal or excel, are many whose faults are but tracings of their derivation towards its distant sources. They show how petals, now substantial, round, and flat, were preceded by others flimsy, frilled, and pointed; with the white meal thin and ill-defined, and the curious edge of green a slight and broken rim.

### History.

In a glance at the history of the Auricula there comes, of course, the interesting question of its first introduction into England. *When* is

* Extracts from a lecture by the Rev. F. D. Horner, delivered at the show held by the Southern Section of the National Auricula Society, in the Royal Horticultural Society's Gardens, South Kensington, on April 19.

perhaps not so exactly known as where, on which point there is the evidence of well-kept, unshaken tradition, corroborated by local evidence, that its early English home was especially Lancashire. It is known that Flemish weavers in woollens, driven from their country by persecution for their faith's sake, settled about 1570 at Norwich, Ipswich, and in Lancashire villages in the neighbourhood of Rochdale and Middleton. As things of home too dear to leave behind them these refugees brought with them their favourite flowers, the Tulip and Auricula. It is no matter of surprise that for about fifty years after this we have no record in Auricula culture. These early growers would doubtless, for a time, be shyly looked upon as aliens, and it would lead them to keep their occupations and interests a great deal within the bounds of their own communities; but in 1725 we have evident proof that the culture of Auriculas was established in Lancashire. Parkinson, in his *Theatre of Plants*, 1640, names twenty-five varieties of Auricula Ursi, or Beares Eares, or French Cowslips. They are described by colours such as heaven's "blew," striped and double purple, blood-red, sundry blushes, paper-white, and yellowish-white, &c. In an old manuscript of 1732, and which was published in the *Florist* many years ago, Beares Eares or Auriculas were quaintly classed as pures, probably what we should call selfs; "flakes or stripes"—which I confess I do not recognise by the description; and also "bizarrs," spoken of as admirably variegated with meal and colours, and raised in England or brought from thence.

Auriculas were grown abundantly in the Lancashire districts until about 1830, when a great change in the habits of the people, who were handloom weavers, began to take place. Steam power and the factory system were being developed about 1825, and during the transition from hand to power-loom weaving those whose bread "came through the shuttle-eye" felt the change severely, and numbers of them were for a time in great distress. From the handloom that filled the long window they could now and again in the day break their time, and work longer at night, and in this way their favourite flowers received the most constant attention, which at the same time refreshed the toiler himself with a healthful and winsome recreation. But the long peremptory hours of a factory day rendered all this impossible. The great hard-featured mills grew up over green fields and garden grounds, mammoth organisms in brick and mortar, stone and iron, seeming in their high chimney-stalks to send up a mighty, hideous sort of flower-stem, blossoming with black wreaths of smoke and sulphurous perfume! Then the scattered villages grew and conglomerated into towns, the light of the old hand-weavers' windows died out, and seemed to be concentrated in the gaslight glare from the long storeys of windows in the mills; the familiar clatter of the old handloom ceased, and the click of the shuttle that wove the silk or wool, as the tick of the old clock spun out the time. Under the changes of those days many ceased to grow their old favourites, for lack of time or space, and because they would not see them languish under any unwonted neglect.

Their little shows had nothing of the grand accessories that are here, but the very spirit of vitality was in them—sincerity, patience, and love. They were held in the upper room of some old inn, and made a very lively sensation for miles around, a stir like a village wake or fair. What excitement it was for the anxious exhibitors, assembled in the room below, to wait for the winning plants being sent down from the "upper element," where the judges were deciding fates. In the latter part of the day followed songs and anecdotes and florist gossip; and at going-home time the assembly dispersed, the 1st-prizeman conspicuous by a gleaming copper kettle in hand. Always kettles for the best flower in the room, and for the first in every class. Perhaps none was a prouder man that day than he who, as a new beginner, carried the "Colts' kettle" home!

I have spoken of the Auricula in Lancashire, for that is such a representative county in the history of the flower, but fifty years ago we find by old records that almost every district in Yorkshire, Staffordshire, Cheshire, as well as Lancashire, had its circle of Auricula growers. So, too, had many other counties. In Cambridgeshire lived Richard Headly, a renowned florist, and the raiser of one of our best Auriculas—George Lightbody. There were also shows and societies in the home counties, and many growers about London, where Page's Champion and many other sorts of lesser fame were raised.

But the Auricula is the oldest florist flower in precedence of excellence. There were good Auriculas when there were no Roses such as there are now—when the Pelargonium was a thin imperfect thing—the Cineraria a star far from her present magnitude; the Calceolaria had little of that fine inflation in which it now appears, a floral exposition of the ambitious frog in the fable, who perished miserably in the attempt to enlarge himself to something much above his sphere; when Fuchsias were almost as they had been found, and the Gladiolus was yet but a botanical accuracy.

The very names are largely suggestive of the estimation and good report in which the flowers were held by their raisers. Hence they are expressive of greatness and supremacy, and we have, *e.g.*, Champion, Hero, Conqueror of Europe, Rule-all, Revenge, Bang-up, Glory, Incomparable, Freedom, Imperator, Ringleader, Complete, True Blue, and so forth.

Three-fourths of the old growers were also Gooseberry growers; and here, too, are names of like great import: Conquering Hero, Overall, Leader, Thumper, Crown Bob, London, Wonderful, and, not last, Roaring Lion. No one had the diffidence to name his new pet berry Second Fiddle or Knock-under. If he were a bird-fancier, he did not select Tom-tit or Humming-bird for its name, but chose instead Ostrich, Eagle, or Peacock. It is quite time that our newspaper Press, from the large dailies down to small provincial weeklies, had their seeming ignorance of what the big Gooseberry really is revealed to themselves. It might be that no dish of the genuine berry had ever smiled on editorial tables, or we should not have the big Gooseberry a gibe and proverb, a synonym for that which is vapid and inflated. From the florist, however, the desire for great names has spread to the producers of excelling fruits and improved vegetables, and it is now indulged in alike by the knights of Flora and Pomona, and of the presiding deity of the kitchen garden, Chloris, the goddess of greens.

The earliest-known varieties of Auriculas were Rule Arbiter, a green-edge, and Hortaine, a white-edge; these can be traced back to 1757, Pott's Eclipse following ten years later. As years rolled on there were other Eclipses, notably Cockup's, and from this some better flowers were raised. All the green-edges of that early period were of a pale colour, and often bare in the dust or farina. Taylor's Victory was a highly-prized green in 1776; but of all the principal varieties of that time only Jingling Johnny, a green of inordinately broad edge, Lord Lee, a lovely carmine flower, but without meal, and Pillar of Beauty, a stiff and starched old white, are in existence now. Improvements were patiently carried on, until in 1821 we begin to find some flowers that are good or familiar names. Colonel Taylor and Booth's Freedom appear upon the scene, two green-edges of which a grower with good specimens would not be ashamed to-day. In grey-edges Kenyon's Ringleader appears, the ancestral flower of that grand family in the greys in which Lancashire Hero, George Lightbody, and Richard Headly, are flowers of such high mark. At that time Taylor's Glory, no doubt in the show to-day, was a 1st prize flower, along with Lee's Bright Venus, and others; and the best selfs were Whitaker's True Blue, still extant, Grime's Flora's Flag, and Redmayne's Metropolitan. I remember this last being sold for 24*s.* a plant, but half a century ago it grew in garden borders, and might be had for 2*d.* a head.

Ten years later (1831) the green-edges were a stronger class by several flowers, still to be found in old collections. Such were Pollitt's Highland Laddie and Standard of England, but nearly all the 1st prizes fell to Colonel Taylor. To the greys were added Sykes' Complete, a good flower grown at present, and Grime's Privateer. White-edges were augmented by Favourite and Incomparable from Taylor, the raiser of Glory, and by flowers of less note. The selfs have additions, but the best is Othello, a round-petalled black flower that was much thought of. Another ten years (1841) and the most notable green-edge is Page's Champion, once very plentiful, especially with the raiser, who was wont to throw surplus offsets into the Thames, but now exceedingly scarce, and one of the very few Auriculas difficult to grow in an impure air. At this period came Conqueror of Europe among the greys, with Sensation, and Ashworth's Regular, a small correct white-edge, still valued by some old growers in the North.

By 1851 some of Lightbody's flowers appear, such as Star of Bethlehem, but that and all others were outshone by the first appearance, in 1846, of Lancashire Hero, Robin Lancashire's magnificent grey. Like many other light-mealed greys, it has the power of blooming in a green-edged form, and that generally occurs either on a truss from a young plant, or one formed very early on an old one. The bloom of its middle-life at mid-season is rich silvery-grey. This surprising flower is worth a word by the way. When first shown, in 1846, it was placed second to a flower inferior to it in character, Grime's Privateer. Lancashire had then eight or ten plants of his seedling, and in his grief hastily sold all for a trifling amount. He offered a good deal more to have them back, but could not get them. From their first purchaser they passed to Mr. James Cheetham, by whom it was eventually sent out. But it is truly Lancashire's Hero, and no name but that of Robin Lancashire should ever have been associated with this flower. It is the noblest type of an Auricula, and at its best there is no grey better. Our opinions are, however, divided, and some of us hold by Headly's George Lightbody as the model. This is a grand flower, that was sent out in 1861, and the two greys will probably never pass out of cultivation while Auriculas are grown. They will meet immense competition, and have worthy companions, but they are Auriculas right properly, and no florist wishes to see them discarded, but he will not rest till he has their equals. By 1861 we also had Campbell's Pizarro, then our brightest, roundest self, of soft brown, together with more of Lightbody's flowers; and Campbell was busy for years at this time, trying to give us a crimson self of standard properties. His work at that time extended over many years, and is a good example of a florist's patience. He started with a cross between the old carmine flower, Lord Lee, and a puce-coloured self of Martin's. At once he got the colour, but he lost the paste, Lord Lee having none; and when Mr. Lightbody reported to me his neighbour's success in two crimson selfs, Duke of Argyll and Lord Lorne, there had been failures past all count.

### The Points of an Auricula.

I pass on now to speak of the Auricula from a florist's point of view, and I cannot better lay the subject before you in the abstract than in the words of a brother florist, the Rev. F. Tymons, who would have gladly been with us to-day, and before whom the Auriculas here have often stood for judgment. He says, "The points of a good flower are not arbitrary, as the uninitiated sometimes say, but really appeal to canons of beauty, recognised and allowed by all who have made a study of the plant. Thus, as in other matters of beauty or taste, the verdict of those most skilled in the subject is that which is entitled to weight."

Auriculas are divided, first, into two distinct groups, separated from each other by the marked feature of mealed or unmealed centres. Those destitute of meal are termed alpines, and their essential qualities are the unmealed centre and the heavily-shaded petal. The highest form in the alpine is the shaded petal and the golden centre, which last is not difficult to obtain, except in such as have lilac, or any shade containing blue. To admit shaded flowers of these tints, it has been found necessary to allow a pale, almost white centre, unmealed of course. This section is the hardiest and most prolific of all Auriculas, and those that are grown in garden borders are alpine blood of more or less inferior strain.

The other group is the Auricula Royal, containing all the edged classes, which constitute the highest and most wonderful development of this flower. The green-edges hold the highest rank of all, and are the only class in which a mealy habit of foliage never occurs. The contrast of their zones of emerald, black, and white, in a setting of silver leaves, would be very beautiful; but Nature denies this combination, though often granting the converse in white edges with green leaves. The green-edges have required the most winning, for the edge must be absolutely pure from meal, and that has been found a very trying test. Now, however, this splendid property is

becoming more brilliant and more fixed, but that it has proved one of difficult attainment is shown by the very few true greens among the old varieties.

The grey-edges, a strong class, are those in which a sprinkling of meal, like hoar frost upon springing grass, lies delicately over a green-edge, without hiding it further than to give a pearly effect, as of a silver dew crystallised and secured upon it.

The white-edges are exquisitely fair and lovely—a very favourite class. The whole face of the flower, except the dark velvet rim of ground colour, must lie deep under a snowy meal, usually of finer grain on the edge than on the middle of the flower. Good, true whites have been very few indeed among the old flowers.

Then follows that beautiful consort of the edged classes, the self. This, with its pure, densely-mealed white centre, and colour of one velvety, unshaded, and decided hue, is a very different flower from the alpine, and not the least approach of the one to the properties of the other can be tolerated.

Such are the differences that form the class distinctions in the Auricula; we must look a little closer to see what those properties are that give expression and harmony to all. The perfection of a whole lies in the perfection of its parts. I take a single flower to pieces part by part. In the centre, the tube, with its contents, stamens and pistil, is a little member, but one of mighty import. So is the tongue in human kind, so is the tail of the dog among beasts. In power and variety of expression, these two extremes meet. Their equivalent in the Auricula is its tube. No outer brilliancy compensates for a central failure here. The whole truth of the flower lies in this little well! It should be circular, sharply cut, and bright yellow. A rich gold tube bathes the flower in a sunshine of its own, and lights up into life and radiance features that in themselves may be dull and commonplace. But the tube that is pale green casts a moonlight effect around it that strikes all brightness dim and cold. Not only do we dislike, but we distrust a pale tube in the Auricula. One thus weak is never otherwise strong. Watery colours are associated with their textures, and thus a flower so constituted cannot live out half its days. Like a noble ship with all her canvas set, but a rotten timber at her keel, the beautiful flower goes down, all standing. Florists are called punctilious and severe—so they are, but it is with reason that they are particular to a point and exacting to a shade.

The Primulas being dimorphic in the relative length of their stamens and pistil, it has been thought a fanciful and narrow choice that we should adhere to that form only wherein the anthers are set round the mouth of the golden tube and the pistil at the bottom, rejecting the long-styled or pin-eyed arrangement. With what comparison shall I illustrate the reason of our choice? I will take, for example, the difference between the eye of sculpture and of life. You know the vacant stare of the one, the vivacity and soul that speak and sparkle in the other. The stony lifeless eye in an Auricula is the pin-eyed tube, with the set, expressionless pistil its one hard-set feature. But where the delicately gold dusted anthers are set round the eye of the flower, and the unobtrusive stigma is all but sessile on its ovary below, we have the fulness, softness, and play of what is happily termed the "mossy eye." It is the counterpart in the flower of the living eye that is so much in the character of a face.

But I pass on to the next feature on the coloured disc, and that is the white circle we term the paste. This is a dry, snowy meal, and it must be round and broad, and bright and dense. Where these properties are wanting, the flower has, according as the faultiness may be, a sleepy, unwashed, ill-tempered, mean, cramped, crabbed, miserly look. Thus a lively paste

Fig. 99.—Euphorbia punicea: bracts rosy-purple. (see p. 530.)

and a golden tube, each sharply cut and circular, are supreme points in a good Auricula.

Now we come to a zone or circle further outwards on the corolla. What contrast to snowy meal, lovelier and more rare, could a flower give us than a sudden change to the softest velvet? Such is the texture of the ring of colour known as the ground or body. Black has been the most usual, largely because black was the favourite colour with so many of the old growers. There have been strange local antipathies to anything but black, a prejudice which we hope to see overcome by the winning argument of equally true and beautiful edged flowers with blue and crimson grounds. It is true that the best of the old flowers are those with black body colours; but the reason is that the Auricula, as if unwilling to cast her pearls before the unappreciative, has made few offers of gifts that were not sought and would not be valued at their worth. But in whatever colour this velvet zone exists, it is imperative that it be pure—unspotted, that is to say, with any of the meal that may lie on the edge beyond it, or on the paste within. Colours also should remain true and fast—not fading into weaker shades before the other parts of the flower grow old.

The last remaining portion of colouring on the flower is that wonderful circle of green, or grey, or white, that bounds the blossoms, and determines by its nature the class to which a variety belongs. I will gather into one word that important point, the share which the flowers of all the classes should apportion to all their zones, and that single word is *balance*. Taking the pistil as the centre, then across the half-flower as a radius-line, the tube, paste, body, and edge, should be in the proportion of equal breadths. The tube should be bold, with highly-developed anthers, and the paste quite its full breadth; and, indeed, in the case of the selfs, rather over that, for in them the body colour really represents two zones, and therefore for good balance the paste should represent rather more than one, or the flower will look heavy. Body colours flash towards the edge, but are not to run out at the petal-corners, or an angular look is the result. However, the body should not consist of only flashes, but have a solid foundation-ring, the more solid the better. Where this is not so, the pencilled work has a thin and scratchy appearance.

### Culture.

As to the culture of the florist's Auricula, it is not within the province of this lecture to give you a complete calendar of cultural operations. But it is amusing for a moment to peep into the potting-sheds of the old masters. It was a school of cookery for the Auricula, in which the plants themselves were often victimised. The compost-heaps were not so much an honest provision-shop for the flower, as its confectioner's or druggist's, where it was forced either to make itself ill with sickly sweets, or was overdosed with dire stimulants, till after a flash of burning, wasteful life, it died. One professor of long ago, writing in dialogue, conducts a horrified neophyte round his compost-yard, where the young beginner is completely upset by an inspection of horrible effects from the slaughter-house, sugar-refinery, and other sources of refuse. "Our compost," says the master, over a vile compound, "is now in fine killing order; it would poison an Oak tree!" No; cut for your plants a few sods from a pasture which the buttercups will tell you is sound and rich; ramble in the woods, and instead of a cornucopia of wild flowers, bring back what you can carry of mellow leaf-mould; ask the gardener for a slice of the hot-beds that grew last year's Melons or Cucumbers; make about equal parts of all you have, with, say, charcoal to keep it open, and you have all the Auriculas will care to ask for. As for the rest, keep their feet warm—*i.e.*, their roots well drained; their clothes dry in winter—*i.e.*, the leaves from wet. Remember that while the plant itself is hardy beyond limit, yet its refined blossoms are inexpressibly tender; that it belongs to the pretty family that loves a partial shade. Think how the bare trees and hedges let in all the winter sun upon the sleeping Primroses; how the young leaves on the boughs temper the sunshine over them in spring; the full leafage hides them from it all the summer.

And if you wish to grow seedlings—which you should—be as much like Nature to them as you can; sow them when she does, as soon as ripe; cover them as she does, which will be not at all, except by something that may represent the agencies of shade and moisture under which the young seeds grow, say, a piece of glass over their cradle-pot, and when they bloom they will be a great reward.

## EUPHORBIA PUNICEA.

We are indebted to Mr. Lynch, of the Cambridge Botanic Garden, for the specimen from which the figure (fig. 99, p. 529) of this remarkable plant was taken. It is a very old inhabitant of our gardens, having been introduced from the West Indies so long since as 1778. Its "sticky" habit will not recommend it to those who like elegance of form, but the rich deep crimson or puce of the involucral bracts commend it to those who have an eye for rich colour. It is the more acceptable from being produced, as in the case of some other Euphorbias, such as splendens and jacquiniæflora, in the dull season. The leaves, which are crowded at the ends of the branches, are oblanceolate and glaucous, leaving prominent scars on the stem when they fall off. The stem attains a height of 2—3 feet.

## New Garden Plants.

### Miltonia Lamarcheana, *n. hyb.**

This was published and figured in 1876 as Miltonia Clowesii (Lindl.) Lamarcheana, in the *Belgique Horticole*, by Professor E. Morren, p. 174, pl. xiii. I have at hand a beautiful inflorescence coming from the excellent collection of Mons. Massange de Louvrex, Château de St. Gilles, Liège, grown by M. Kramer, the Japanese and Costa Rican traveller. The general habit of the inflorescence is that of Miltonia candida. The sepals and petals are broader and less acuminate than in M. Clowesii, light yellow, with broad cinnamon bars. The lip is cordate at the base, abruptly broader from the middle, forming a semiovate, a little wavy body, with an apiculus. At the base of the lip is an obscure globular tumour, as in M. candida, Lindl., yet not so well developed. Seven keels stand on the forepart of the lip, the central one being bifid in front. The lip is whitish-ochre, with a broad pandurate blotch before the keels. The column would be that of M. candida if the androclinium (anther bed) had a membranous border and cucullus. This is not the case. The tabula infrastigmatica is quite as projecting at the top as in Miltonia candida, not so constricted as in Miltonia Clowesii. The narrow wings are violet, the middle of the tabula infrastigmatica orange, all other parts whitish ochre. My opinion is, that the plant may be a mule between M. candida and M. Clowesii.

According to Professor E. Morren, this curiosity flowered in August, 1874, in the garden of M. Oscar Lamarche de Rossius, Prèsident de la Société Royale d'Horticulture de Liège. It was grown by M. Francois Rosier. *H. G. Rchb. f.*

### Kefersteinia mystacina, *n. sp.*†

This is a very curious new Kefersteinia, having the general habit of the common K. graminea. The flowers are yellowish-green, as also is the blade of the lip. The callus and stalk of the lip are white, with purple dots, as well as the column. The chief and very curious feature lies in the blade of the lip, which is broken up into numerous fringes, which are quite peculiar. It was discovered at St. Alban's, Hertfordshire, at Mr. Sander's, under masses of Columbian Orchids sent thither by late poor Falkenberg, taken over to Zürich, and carefully brought to flower by Herr Consul Kienast-Zölly, who is inferior to nobody in enthusiasm for Orchid species, and even more so for their varieties. *H. G. Rchb. f.*

### Cymbidium eburneum (*Lindl.*) Williamsianum.

Is not Mr. B. S. Williams particularly lucky in this group of Cymbids? I have from the Victoria and Paradise Nurseries a lovely variety I never saw before, with a fine tip, showing the anterior lobe and lips of the side lobes light purple, the front bar of the three keels of the lip light brown and a little disk before it. The front of column is light rose. Would that many individuals of this stamp might be found. *H. G. Rchb. f.*

* *Miltonia Lamarcheana*, n. hyb. — Racemo plurifloro, bracteis triangulis parvis; sepalis tepalisque ligulatis breviter acutis, labello a basi subcordato oblongo, medio abrupte dilatato semiovato denticulato crispulo cum apiculo in medio, gibbere rotundato obsoleto in ima basi, carinulis septenis antepositis, media carinula antice bifurcata; columnæ tabulæ projecta, alis quadratis angustis. Omnino ex Miltonia candida ac Clowesii hybrida visa.—Miltonia Clowesii var. Lamarcheana, E. Morren, *Belg. Hort.* 1876, p. 174, pl. xiii. *H. G. Rchb. f.*

† *Kefersteinia mystacina*, n. sp. — Omnino Kefersteinia graminea, sed labelli callo transverse utrinque obtusangulo multo latiori, medio antice minutissime obtusangulo, ima umbone supersidente, cruribus lateralibus assurgentibus; lamina triangula obtusa in lacinias, longe laceras soluta; columna sine carina sub fovea.—Zygopetalum mystacinum. Columbia. Leg. beat. Falkenberg. Obt. ab egregio Kienast-Zölly, Zürich.

## SCHOOL GARDENING.

In the leading article upon the proposed School of Gardening at p. 470, one short sentence merits some reference. You say, in regard to the introduction of elementary scientific subjects that bear upon horticultural and agricultural pursuits into our rural schools, that to the clergy and the school authorities we must look for this needed reform. I would advise little waste of time in looking for help in that direction, because all these bodies and persons are so conservative of old and stereotyped methods of teaching, and especially are so jealous of teaching children anything calculated to improve their position in life, that recommendations in the spirit of the article from that direction may, I fear, be looked for in vain. But even liberal-minded school authorities are so much in the hands of the Education Department that it is difficult for them to move, even if desirous of so doing. The Department arranges the Code, with, of course, the sanction of Parliament, and by the Code, when approved, all school authorities are bound. All schools of an elementary kind are contingent for existence almost as much upon the grant earned, as upon rates or other means of income. This grant is given for results obtained by attendance through the year, and by passes in reading, writing, and arithmetic. It is therefore of the first importance that these subjects should have full prominence. There remain, in the way of securing additions to the grant, certain special subjects, of which more are taught in towns, where the average intelligence is higher, and fewer in the rural districts, where it is always lower. The most common of special subjects are grammar, geography, and history—all dry and somewhat monotonous topics—whilst, under the Science and Art Department, drawing may be added. In addition to these, girls have needlework as a special subject, and very considerable is the amount of time taken from intellectual training in this work and pottering with knitting, samplers, &c., much to the mental detriment of the children. So much, therefore, has to be compressed into the few hours daily that the school is open that there is no time for other subjects; and it is obvious that until some pressure is put upon the Department to change the Code so far as relates to the subjects taught, very little can be done in teaching elementary science, or simple subjects such as are indicated in your leader.

In respect to teachers, so much is demanded from them in knowledge of ordinary subjects that it is only in towns, where there are provided special teachers and centres for science learning, they can acquire any knowledge concerning them. A pupil-teacher must pass severe examinations in reading and memory exercises, in English grammar and composition, in arithmetic and mathematics, in geography, history, and music, and, where possible, drawing, and also show great proficiency in class teaching. He may also go in for some foreign language. When it is understood that all this knowledge has to be acquired before or after school hours, and the drudgery of several hours' teaching has exhausted the vital energies, it can be easily realised that teachers in training have little spare time, or disposition, to work up in scientific topics. To compress more subjects into the ordinary school hours of children is impossible; and therefore what is wanted is a re-arrangement of the Code, so that subjects likely to prove of real value to learners in after life may be substituted for others that are less important. But recently I endeavoured to impress my own school manager colleagues with the advantages drawing presented over history, but was met with the stolid objection that history—for school history consists of little else than a knowledge of dates—is good training for the memory. But equally good training for the memory might be obtained in the learning of things really worth remembering, and class drawing is a most valuable educational subject, because it trains the eye and the hand; it is eminently useful in all trades, and most certainly to the gardener; and, not least in value, it presents a lesson so far removed from the customary formula that it becomes to the children almost recreation. Perhaps the greatest, and certainly the real objection, to teaching drawing is the dislike on the part of many school managers to teach children something that is so much regarded as a luxury rather than as an educational necessity.

Much has been said from time to time with reference to the teaching of practical horticulture in

schools. Both gardening and farming are taught in our large pauper and industrial schools, as a rule, as also are other vocations. What is possible there, however, is not possible in ordinary elementary schools. Neither time nor means will permit of it; still less have the teachers any opportunity to acquire special knowledge of the nature required; the strictly scholastic training seems to absorb all their time and energies. I should much like to see boys instructed in elementary chemistry and natural history, special attention being given to those parts of these wide subjects which bear upon the chief vocations in the school district. Added to these music and drawing and school work would become far more tolerable. Girls might put aside the knitting-needles largely for the sewing-machine, and learn the elements of sound domestic economy with some science. For all such reforms, however, we must look to the Education Minister. *A. D.*

## CLIMATE OF THE CHESTER DISTRICT.*

The question has frequently been asked why we in England import so much fruit and grow comparatively so little, and the problem at first sight appears the more difficult from the fact that most of the countries which send us at all events our Apples and Pears, have a severer climate in winter than ours. I propose in this paper to consider one at least of the causes that lead to this result, and at the same time to compare the climate of those parts of England where orchards abound with those where they are comparatively rare. Let me, however, say at the outset that climate is probably not the only cause of one district or county producing more fruit than another. It is always difficult to say whether it is the love of cider that causes the natives of Herefordshire, Worcester, Somerset and Devon to grow Apples, or whether it is the suitability of the soil or climate for growing Apples that has caused this to become the favourite drink. No doubt cause and effect re-act upon each other. Cider is brewed because Apples are abundant, and the increasing taste for cider causes more Apples to be grown. At the same time a good deal must be allowed for that unaccountable thing "custom" or "fashion." On the whole, however, I incline to the belief that it is the suitability of the climate that has originally caused the trees to be grown, inasmuch as the natives are of the same stock as we are, and there is no reason to believe that cider was drunk in very ancient times; † while as regards soil there are very great differences in the geological formations of the above-named counties (which with Middlesex are, as will be seen from the table, the five great orchard counties), and there is undoubtedly abundance of good soil in almost all English counties suitable for orchards. Possibly the system of land tenure may have something to do with the question, as orchard trees are many years before they become profitable, and are therefore likely to be planted only by freeholders. Still I am not aware that there are more small freeholders in the above-named counties than elsewhere, or that there is anything except the greater suitability of the district for fruit growing that should incline landlords to plant fruit trees more there than elsewhere. It might be thought that more fruit would be grown where the population is densest, but Table I. shows that Hereford, where there are most orchards, has almost the smallest population in proportion to cultivated land, while Middlesex, the third largest fruit grower, has the largest population.

In Table I., compiled from the last Blue Book, showing the proportion of orchard land to the rest of the cultivated land (including permanent pasture, but not mountain or heath land), it will be seen at once that, with the exception of Middlesex and Kent (both of which have an artificial stimulant to the production of fruit in the close proximity of the great consumer, London), the principal orchard counties are grouped round the Bristol Channel. From the table of temperatures (Table II.), it will be seen that Liverpool—*i.e.*, Bidston Observatory, on this side the Mersey (which may be taken as fairly typical of our district with the exception of the more mountainous parts of Flint and Denbigh, and the interior of Cheshire)—shows on an average of three years a very high mean minimum temperature in April, and a low mean maximum temperature in August. Compared with Cheltenham, which is the most central station for the cider counties of which continuous records are obtainable, we have the following results:—

| | Mean Min. in April. | Mean of Lowest in April—Three Years. | Mean Max. in August. |
|---|---|---|---|
| Liverpool .. .. | 40°.4 | 33°.1 | 66°.4 |
| Cheltenham .. | 37°.8 | 25.°5 | 69°.1 |
| Difference .. | 2°.6 | 7°.6 | 2°.9 |

From the above we see that while the mean minimum temperature at Liverpool in April is 2°.6 higher than that of Cheltenham, the mean maximum temperature in July is 4°, and August 2°.9 lower at Liverpool than at Cheltenham. And if we take the average of the lowest temperatures recorded in April for three years at each place, we find that the difference is much greater, Liverpool being 7°.6 higher than Cheltenham.*

*Table I.*

| County. | No. of Acres per Head of Population. | Proportion of Orchards to 100 Acres of Cultivated Land. |
|---|---|---|
| Hereford .. .. .. | 4.2 | 6 |
| Worcester .. .. .. | 1.4 | 4 |
| Middlesex .. .. .. | 0.07 | 2 8 |
| Somerset .. .. .. | 2.2 | 2.7 |
| Devon .. .. .. | 2.7 | 2.24 |
| Gloucester .. .. .. | 1.5 | 2.17 |
| Kent .. .. .. .. | 1.2 | 2 |
| Monmouth .. .. .. | 1.9 | 1.5 |
| Cornwall .. .. .. | 2.4 | 0.85 |
| Dorset .. .. .. | 3.2 | 0.76 |
| Surrey .. .. .. | 0.4 | 0 59 |
| Notts .. .. .. | 1.6 | 0.38 |
| Wilts.. .. .. .. | 3.3 | 0.37 |
| Cambridge .. .. .. | 2.8 | 0 33 |
| Cheshire .. .. .. | 1.2 | 0.32 |
| Lancashire .. .. .. | 0.4 | 0.31 |
| Sussex .. .. .. | 2.2 | 0.29 |
| Warwick .. .. .. | 0.9 | 0.24 |
| Lincoln .. .. .. | 4 | 0.10 |
| Denbigh .. .. .. | 3.7 | 0.07 |
| Cumberland .. .. | 4.4 | 0.05 |

There is a very widespread belief that the principal factor in determining the crop of tree fruit—viz., Pears, Apples, Cherries, and Plums, with which alone I am at present concerned, is the amount of frost in spring when the trees are in blossom. If this were the case, then the west coasts of England, Wales, Scotland, and, still more, of Ireland, would be the most favourable climate, not only in our own islands, but of all Europe, north of, say, the 45th parallel of latitude, for growing fruit, and North America, except the Southern States, would not have a chance against us with their rigorous winters. Yet as a matter of fact we find that precisely those countries that have the coldest winters are the greatest producers of the above tree fruits, and that those, like our own west coasts, that have a mild and equable climate, produce the least. This clearly points to some other cause than the above as determining the suitability of any given area for the production of fruit, and there can be little doubt that this will be found to be the summer temperature, and that the higher this is the better for this purpose. And inasmuch as a country having a dry atmosphere, which offers less resistance to the radiation of heat from the sun to the earth on the one hand, and from the earth into space on the other, than a moist one, will have at once hotter summers and colder winters than a moist country, it follows that the further we go from the breezes which reach our western coasts laden with moisture from their long sweep over the Atlantic, the more profitable will it be found to plant fruit trees, other conditions of course being equal; hence it comes that we find ourselves supplied with Apples from America and Pears from the interior of France, in both of which countries the heat in summer and the cold in winter are much greater than in this country.

The summer temperature acts on the fruit crop in a twofold manner, affecting both the quantity and the quality: the first by the extent to which it ripens the wood of the trees, and the second by the more or less perfect ripening of the fruit. This has been well exemplified in the last two years in my own garden at Colwyn Bay. The summer of 1878 being a fairly hot one, and the wood of the trees well ripened, pyramid Pear trees bore remarkably well in the summer of 1879, but this last being extraordinarily wet and cold the fruit barely ripened, and was very inferior in quality; and in consequence of this weather not ripening the wood in 1879 the crop in 1880 was simply *nil*. It is worth while remarking that the hot month in 1878 was July (mean maximum, 67°.3, at Liverpool in August, 67°.2), and that the Pears bore abundantly, requiring much thinning, while Apples bore but indifferently; and as there was no frost there when the trees were in blossom, which was three weeks later than in the previous year (Pears only beginning to open their blossoms on April 29), this difference in production can only be accounted for by the fact that Pears make their growth earlier than Apples, and are consequently more favourably affected by an early heat. Last summer (1880) both August and September were hot months, the highest temperature being on September 4 or 5, and we have consequently every reason to expect a fine crop both of Apples and Pears.

Table II.

| | | Barnstaple. Devon. | Brighton. Sussex. | Cheltenham. Gloucestershire. | Cambridge. | Liverpool. | Truro. | Chester. |
|---|---|---|---|---|---|---|---|---|
| Average Mean Minimum Temperature, 1878 to 1880 .. | April. | 42°.8 | 40°.4 | 37°.8 | 38°.1 | 40°.4 | 41°.3 | 38°.5 |
| | May. | 47.9 | 44.9 | 41.7 | 45.4 | 45.2 | .... | .... |
| | June. | 54.0 | 51.5 | 49.0 | 49.3 | 51.4 | .... | .... |
| Lowest Temperature in April .. .. | 1878 | 35.0 | 28.2 | 22.4 | 23.6 | 32.5 | 28.0 | .... |
| | 1879 | 27.0 | 26.5 | 26.5 | 28 0 | 29.8 | 24 0 | .... |
| | 1880 | 36.0 | 36 4 | 27.5 | 30.0 | 36.9 | 31 0 | .... |
| Average .. | .... | 33 0 | 30.4 | 25.5 | 27.2 | 33.1 | 27.7 | .... |
| Average Mean Maximum Temperature, 1878 to 1880 .. | July. | 70.9 | 70.2 | 68.4 | 72.0 | 64.4 | 68.9 | 68.2 |
| | August. | 72.2 | 70.0 | 69 1 | 73.2 | 66.4 | 69 9 | 69.4 |
| | September. | 66.8 | 65.6 | 64.1 | 68.3 | 62.2 | 65 8 | 64.9 |

| | | 1878. | 1879. | 1880. | | Liverpool. | Colwyn. |
|---|---|---|---|---|---|---|---|
| Mean Maximum at Liverpool .. .. | July. | 67°.3 | 61°.6 | 64°.4 | Mean Minimum in April, 1880 .. | 41°.5 | 41°.0 |
| | August. | 67.2 | 63 6 | 68 3 | | | |
| Mean Maximum at Colwyn .. .. | July. | .. | .. | 65 9 | | | |
| | August. | .. | .. | 69.2 | | | |

To return to the question of the climate of different parts of England, it will be seen from Table II. that the highest mean maximum temperature is at Cambridge, and the question arises why more fruit is not grown in what may be called the south central and south-eastern parts of England, where no doubt the summer temperature is highest? The only answer I can suggest to this is that these counties are for the most part flat, and that, according to my friend, Mr.

* "The Climate of the Chester District (including Denbighshire and Flintshire) considered in relation to Fruit Growing." Read before the Chester Society of Natural Science, April 7, 1881, by Alfred O. Walker, F.M.S.

† Although the counties where cider is drunk remained Celtic long after the occupation of the eastern side of the island by Teutonic races, yet there is no Welsh word for cider. As it is largely made in Normandy it was probably introduced by the Normans.

* This is important, as a single night's severe frost when fruit trees are in full blossom would be fatal to a good crop. It may be mentioned here that the temperatures are taken from the *Quarterly Journal of the Meteorological Society*, except Chester, which are from my own observations, with verified instruments in a Stevenson case. To illustrate the value of a difference of a very few degrees of temperature, the difference between mean maxima of the miserable August of 1879, and the unusually fine and hot August of 1880 was only 4°.7 at Liverpool.

W. H. Ashwin, who lives in the Vale of Evesham, one of the largest fruit-growing districts in the kingdom, orchards are found to answer best when planted on the slope of a hill. This is due partly to the temperature being lower, on a dead level, or at the foot of a hill, than on a slope, from the tendency of the denser cold air to fall to the lowest level, and partly, I venture to think, to the shelter from wind afforded in an undulating as compared with a flat country, inasmuch as it is obviously fatal to profitable fruit growing on large standard trees if they are constantly liable to have the fruit blown off before it is ripe. And though the mean minimum temperature in April on an average of the last three years is shown in Table II. as slightly higher than that at Cheltenham, yet there is no doubt that, as a rule, the central counties are subject to severe frosts in spring, and this, though of less importance than summer temperature, does yet at times seriously affect the fruit crop.

With reference to the practical question of the best kind of fruit to grow to a profit in our district, and the best mode of growing it, a few words will suffice. The treatment of tree fruits may be summed up in two or three words—give them all the sun you can. This is best attained by growing them against walls in the case of the more tender, and on espaliers in the case of the hardier kinds. Grapes may be grown, and will no doubt ripen after a fashion, against a south wall; but I have no experience of them, and can only say that I doubt whether they would ever be worth the space they would occupy. I would only say in passing, that the locality which was lately chosen for an experimental vineyard—viz., near the coast of South Wales—was one of the worst that could have been selected. The centre of Yorkshire would probably have been better! The only part of England where such an experiment is likely to succeed is in the south, south-east, or south central districts, and even there I fear the result would only be the production of what the Germans call "three-man wine," *i.e.*, wine that it requires three men to take—one to sit on a chair, another to hold him fast there, and a third to pour the wine down the throat of the first! The greater part of the countries where wine is made (*e.g.*, the interior of France, Germany, Hungary, &c.) are subject to great extremes of heat and cold, or at any rate to great heat in summer.

Peaches, Nectarines, and Apricots, which are always grown on the warmest walls, blossom very early, and unless protected are very liable to have the bloom destroyed by frost. From the mode of training they have a better chance of ripening their wood than trees not so grown, and near the coast they have a better chance of escaping frost than they have inland. My experience of these fruits at Colwyn Bay is, that they much oftener bear good crops (without any protection) than do bush and pyramid Pears and Apples. The fruit, however, is small, poor in flavour, and addicted to mildew in the case of Peaches.

Plums require to be grown on warm walls, or they rarely bear at all. Cherries also, except some of the hardiest kinds, do little good as pyramids, and though the choicer sorts often bear freely yet they do not ripen their fruit. There is a fatal objection to growing this fruit on large standard trees, that unless the number of trees be enough to make it worth while to keep a "tenter" to look after them from daybreak to dusk, the birds will eat the fruit before it is ripe. On a wall they can be protected with nets.

Apples and Pears should be grown on espaliers, which are best made of galvanised wire with iron supports. By this means every shoot gets thoroughly exposed to the sun, and the growth is more easily kept in check. The value of pyramid and bush trees may be judged of by the fact, that in 1868 I planted a considerable number of various kinds of Pears in my garden at Colwyn, which has a dry warm soil and a warm aspect, yet I have never had anything like a crop except in the summer of 1879, as already mentioned. There are, however, two varieties of Pears which are honourable exceptions—the one a little known kind called Beurré Goubault, which ripens in September or October, and requires to be eaten at once, and the other, what I believe to be Louise Bonne, though it was sold to me as Beurré Hardy, a delicious Pear, but not a late keeper. On the other hand, Pears on a south-east wall of all kinds that I have tried bear well. I have not sufficient experience of them on espaliers.

Much the same may be said of Apples, though some varieties of these will bear in almost any situation, and others in no situation. Among the former may be named Lord Suffield, which would be the finest kitchen Apple ever grown if it only kept longer, and among the latter an American variety called Northern Spy, which has not borne a single fruit in twelve years though trained on a south-east wall. But as the soil has no doubt much effect on different varieties this is not the place to enumerate those that bear well. I will only say that most kinds bear well when trained on espaliers and that scarcely any can be relied upon to bear a crop even in a favourable situation when not so trained. And some idea of the utter futility of planting fruit trees in an unfavourable situation may be formed from the fact that in 1870 I planted an orchard of Apple, Pear, Plum, and Cherry trees (standards and pyramids) at the bottom of the slope on which the garden lies and where the ground is somewhat shaded by trees, though not to the south-west, and during the whole ten years I can safely say that I have not had a total of three bushels of fruit of all kinds! There was probably six times as much as this from the pyramid Pear trees in the higher part of the garden in 1879, though the fruit was heavily thinned. And this deficiency was not due to the destruction of the blossom by frost, as might be supposed from its lying low, because there has never been much blossom to be destroyed; which leads me to the further remark that in the spring following a cold summer, a considerable amount of blossom may be seen, which, however, leads to no corresponding quantity of fruit, and such fruit as there is is generally poor and small. This is without reference to the frost in April, 1880; there was a considerable amount of blossom both on Apple and Pear trees at Colwyn Bay, and the lowest temperature during the month was 32°.2, yet there was scarcely any fruit, which, in my opinion, was solely due to the inability of the imperfectly ripened wood to bear fruit.

Of the small fruits, by which I mean Strawberries, Raspberries, Gooseberries and Currants, I need say little. Being natives of this country, or of countries having a similar climate or inhabiting woods, they do not require so much sun, and are consequently dependent probably on soil rather than climate for profitable cultivation.

In conclusion, it seems doubtful whether, with the present facilities of communication and carriage between one country and another, it will pay to grow the hardier and less perishable fruits, such as Apples and Pears, except as a luxury for the rich. And the more perishable labour under the disadvantage that they require to be consumed immediately, so that the market is glutted when they come in. At the same time the small fruits require so little attention, come so soon into bearing, and are generally so certain in cropping, that (especially in the neighbourhood of large towns) they are probably much more profitable to grow in this district than what I have called tree fruit.

## THE KEW ARBORETUM.

### The Maples.—X.

Acer oblongum, Wall.; Hiern in *Flora of British India*, i., p. 693; Brandis, *Forest Flora of N.W. and Central India*, p. 110; Loudon, *Encyclop. of Trees and Shrubs*, pp. 75, 95. *A. laurifolium*, D. Don. *A. nepalense*, Hort. *A. sempervirens*, Hort.—Temperate Himalaya from Kashmir, alt. 2000—3000 feet, to Sikkim, alt. 3000—5000 feet; Bhotan and the Mishmi Hills, Hong Kong, Lochow Islands.

In its native countries this species forms a tree 30—50 feet high, with a trunk 1—2 feet in diameter. The oblong-lanceolate or ovate-acuminate, quite entire, somewhat coriaceous leaves are deep glossy green above, and silvery glaucous beneath. It was introduced to this country in 1824. Although not succeeding in the open air, except against a wall or in the most favoured and thoroughly sheltered positions, it is worth some care on account of its fine bold evergreen foliage. In the Winter Garden here there is a specimen which is kept cut-in to a height of about 15 feet; during the spring months the deep rosy-red colouring of the young growths is particularly handsome.

*Var.* microcarpum, Hiern, in *Flora of British India*, vol. i., p. 693.

Samaræ rather less than half the size of those of the type.

Acer diabolicum, Bl., Miquel, *Ann. Mus. Bot. Lugd.*, vol. ii., p. 88; Franchet et Savatier, *Enumeratio Plantarum Japonicarum*, vol. i., p. 87; vol. ii., p. 320; Maximowicz, *Mélanges Biologiques*, tome x., p. 593.—Province of Senano, Niphon.

This noble Maple is one of the new species introduced from Japan by Messrs. Veitch & Sons, through Mr. C. Maries. No figure of it has hitherto appeared; the present illustration was prepared from a specimen supplied by Messrs. Veitch (fig. 100, p. 533). The large yellowish flowers are produced from below the termination of the shoots, and at first are in rather short clustered racemes; these however lengthen somewhat in fruit. *Geo. Nicholson, Kew.*

## Orchid Notes.

Work in the Houses.—It is a pleasure to find activity and growth again asserting themselves in the plants, and showing that the rest they have experienced was only rest in appearance. The conditions for renewed activity are such a blending of heat and moisture, light and fresh air, that the temperature may have that enjoyable feeling on entering that we by experience know to be such that vegetation delights in. Neither of these conditions should be in excess, for if heat is given so abundantly that moisture cannot make itself apparent, or, again, if moisture is abundantly diffused whilst fresh air is excluded—we get in one case a dry arid atmosphere, with yellow and shrivelled leaves, and a good stock of thrips and red-spider, and in the other rank growth of such a soft, fleshy, sappy nature that spot—that Orchid enemy, one, too, that is almost impossible to cure—will soon appear. If, again, light be given in too great proportion—and even this can happen in our dull and humid climate unless abundance of air be given—scald and blistered leaves will certainly result. Let light and shade be used with judgment. At times we must shade, as much for the benefit of the plants directly in sheltering them from the direct rays of the sun, as well as to keep the atmosphere moist.

Now is the time when these conditions must be supplied, and as the growths advance and increase they must be given with no stinted hand. Where heat and light are needed, these must be given; and in the East India-house, that department that many of us years ago were taught to consider the central hall of culture, these too will now be in request. These, coupled with moisture both at the roots and about the paths and stages, will cause the aërial roots to start away and the centre of the plants to push up into leaf. In the Odontoglossum-house the needs will be of a somewhat different character—air, moisture, and subdued light, but so little fire-heat will be required that it will be safer now to err on the side of no fire-heat at all, or at least only during the night, or when the day is unusually cold. We have but now had the first of spring, as far as spring growing weather is concerned, and have been able to give air freely top and bottom to all our houses. For many days past we have had such a dry, biting north-east wind that air could scarcely be given, though we had a clear sky and bright sunshine. With these more favourable outside conditions, air in all the houses may more freely be admitted. In the Odontoglossum-house some air should be left on, in fact, all night—not so that it rushes among the plants, but a little on the lower ventilators, so that a sweet fresh air may be always present. The night temperatures should now be a little advanced, and this can more easily and safely be done when the glass outside stands at 40° to 45° than could be done for the last three weeks, when we registered 8°, 10°, and 12° of frost on many mornings. At 6 A.M. let the East India-house stand at 65°, the Dendrobium-house, 62°, Cattleya-house 58° to 60°, and the Odontoglossum-house at about 55°; these figures will be found quite high enough, and quite safe also; the divisions, too, of the houses are such as come perhaps most handy and easiest to remember. There may be houses intermediate between any two of those mentioned, and these, of course, will be regulated accordingly. It does not necessarily imply that only the plants should be grown in the houses that give to them their names, for many genera will grow in each house, and require very similar treatment to those that form the majority. It will be one purpose of these notes to indicate where a change and alteration may be necessary, and to give hints for the successful carrying out of the same. *W. Swan, Fallowfield.*

Sir Trevor Lawrence's Orchids.

In the collection at Burford Lodge there are at present in flower many magnificent plants of very rare or exceptionally well grown kinds. In the cool Odontoglossum-house, which is well furnished with innumerable flower-spikes of the best varieties of O. Alexandræ, O. triumphans, &c., the eye immediately singles out one as the gem of Odontoglots. This plant, called Odontoglossum prionopetalon, has a spike about 2 feet in length, and bears sixteen flowers, each nearly 4 inches across, in shape like a fine broad-petaled O. Alexandræ, in colour intermediate between O. Alexandræ and O. triumphans. The flat form, the saw-like edge to the petals, and the wax-like appearance of the flowers widely distinguish it from any other Odontoglot at present in cultivation. The next in point of beauty is O. Ruckerianum with its beautifully-spotted rose-tinted flowers. In another house may be found several fine examples of Oncidium sarcodes, one of which bears about 150 flowers on a spike; so flowered it is indeed a splendid object. The rare and ever-flowering Epidendrum Wallisii is still in perfection. Many fine varieties of Trichopilia are in bloom, T. lepida being particularly fine, the variety of it at present in flower at Burford being a decided improvement on the old T. crispa marginata. On the side devoted to Cœlogynes are some splendid specimens of C. ocellata and C. corymbosa, a single plant of the latter bearing over 150 snow-white blooms, each bloom decorated with the yellow and orange spot as in C. ocellata. In the Dendrobium-house is a plant of D. chrysotoxum superbum which is worth a journey to see; it is on a large block suspended from the roof, the plant growing naturally all over it and bearing fifty long spikes of its beautiful yellow-fringed lipped flowers: those who have only seen small plants of it can hardly conceive the beauty of the plant when well grown. In the same house is a

Fig. 100.—Acer diabolicum. (see p. 532.)

beautiful mass of D. pulchellum, the densely set rosy flowers hiding the whole plant and by their numbers seeming to defy any one to count them. Here, too, is the new Lycaste Lawrenceana, a beautiful little plant, bearing flowers with greyish petals and a mauve stained lip. Under Mr. Spyers' able management the collection is in splendid order—the Cattleyas, Lælias, Masdevallias, &c., by their countless flower-spikes promising plenty of beauty and interest for a long time to come. It is also pleasing to note that under Mr. Bain's skilful management the Cape bulbs, such as Freesia, Gladiolus, &c., are thriving well, as also are a great number of other rare bulbous plants. *James O'Brien.*

Orchids in Flower.

We are informed that the following Orchids are now in flower in Messrs. Ireland & Thomson's nursery, at Edinburgh :—

Cattleya citrina
Cœlogyne cristata
Cypripedium Boxallii
,, Sedeni
Dendrobium Bensoniæ
,, chrysotoxum
,, crystallinum
,, densiflorum
,, Jamesianum
,, luteolum
,, nobile
,, ,, Wallichii
,, ,, elegans
,, Pierardi
,, primulinum
,, ,, giganteum
,, tortile
,, crepidatum
,, Wardianum [jus
Epidendrum vitellinum ma-
Lycaste Skinneri, fine varieties
Masdevallia Lindeni
,, ignea
Mesospinidium sanguineum
Odontoglossum Alexandræ, many fine varieties
,, cirrhosum (fine)
,, roseum
,, Pescatorei, fine varieties
,, pulchellum majus
,, Roezlii album
Oncidium concolor
,, cucullatum
,, sarcodes
Phalænopsis Schilleriana
,, grandiflora
Sophronites grandiflora, very fine varieties
Zygopetalum Mackayi
,, intermedium

# Notices of Books.

**Improved Pruning and Training of Fruit Trees; *or, Extension* versus *Restriction*. By John Simpson. London: *Garden* Office.**

The author of this addition to our already numerous works on fruits is well known to the gardening world as a good practical gardener. The matter of his book is professedly original, the style is eminently so. The expressed intention of the author is to prove that, for the purposes of fruit-growing, our fruit trees are at the present time much over-pruned, and that if they were pruned less, finer trees and a greater abundance of fruit would be the result.

That there is a considerable amount of truth in this, and that trees are in many instances sadly mismanaged, there can be no doubt, and Mr. Simpson will be doing some good service if he be the means of directing more attention to this important matter. We are doubtful, however, of much result. There is little or nothing in the contents to justify the title assumed of "Improved;" while almost the only definite point advanced is "extension." This we are to believe is the one thing needful to secure abundant crops and fine fruit. This term "extension," and the "extension system" of training, is claimed by Mr. Simpson as original; and as far as we can glean from the pages before us, it virtually means the allowing a tree to grow and fill space as fast as possible. The main object is for the tree to extend. The mere extension of the tree, Mr. Simpson tries to prove, induces fruitfulness. "It is Nature's plan; the extension system is an exhaustive system, a way of running the tree out, as it were, to fruitfulness." Where is the "improved pruning and training" in allowing a tree to follow "Nature's plan, and to run itself out"? It is more like the old, the common practice of every fruit grower who does not follow or adopt any improved or particular system. It may with equal propriety be termed the anyhow system, or the want of system. It is, however, extremely difficult at times to understand what is really meant, as what is stated in one place is contradicted or qualified to such an extent subsequently that no meaning is left.

Dwarf bush and pyramid systems of cultivating the Apple and Pear come in for perhaps the strongest measure of condemnation at the hands of our author, not because they are the subjects of mismanagement, but rather, it would seem, because they are adopted and popular, and it has become the business of our author to write things down.

The four systems of training recommended as possessing "all the merits" are, the "fan," "horizontal," "standard," and "cordon," the old "standard" being thus the only form available apart from walls and trellises for general purposes. Chapter 5 is devoted to an abuse of what is termed the "Rivers school" of fruit culture. The dwarf bush, pyramid, and almost every form of growing the Apple and Pear are condemned, as well as all root-pruning, pinching, &c.; while a distorted figure of a "dwarf pyramid tree" is given (p. 44) with the branches at right angles, &c., in such a manner as we should imagine was never seen. Many varieties of the Pear naturally assume the pyramidal form, and we venture to say it is the most elegant. Can Mr. Simpson be serious in recommending the old "standard" tree for general adoption? Around London and in the great fruit-growing districts it is fast giving place to the dwarf bush and pyramid so condemned by him. In chapter 6 Mr. Simpson harks back a little, and says, "there is not so much objection to the natural pyramid, &c." And after all we begin to fancy that Mr. Simpson's dwarf bush and pyramid trees are all hard pinched, pruned and mismanaged objects, as we are told (p. 48) that "The dwarfing system, as at present practised, is in fact wrong in conception and in principle." A dwarf tree may be an unpruned tree.

It is difficult to reconcile Mr. Simpson's advocacy of extension and preference for the old "standard" form, with his raptures over the "cordon system." At p. 70 we are told :—"The cordon Apple or Pear illustrates in the most instructive and beautiful manner the nature and advantages of the extension principle, and is in itself quite a sufficient refutation of the necessity of the restriction system as applied to dwarf trees." How cordons are grown without restriction we know not, and how the pinching required by cordons is right, whilst that for pyramids is wrong, we leave Mr. Simpson to explain.

The practice of pinching the growing shoots in summer is repeatedly objected to and condemned (p. 49) :—"Pinching and pruning may enable us to shape a tree as we wish, but they are in themselves no aid to fertility." Pinching no aid to fertility!

As to pruning Mr. Simpson is often right in his condemnation of too much knife, but what are we to understand by the advice given at p. 64 :—"With erect-growing, close-habited kinds [of Apples and Pears], it will be found the best plan to prune them in the same manner as upright-growing varieties of the Gooseberry;" and p. 40 :—"The advice given in winter pruning, to 'leave' strong shoots long, and weak ones 'short,' in order to weaken the former and strengthen the latter, I never could see the force of. Were all the branches equally strong, I would dissipate their luxuriancy by expending their growth in as many channels as possible; but if one shoot was strong and another weak, I would check the first and encourage the latter till it came abreast of the other. To leave a strong Apricot shoot '1 foot in length or a little longer' because it is strong, and 'shorter if weak,' as some writers direct, is not the way to promote equality. What the strong branch has got it will keep, and what the weak one loses it will have to make up at a disadvantage. I never knew the object attained by such means." This either betrays ignorance of the first principles of pruning, or Mr. Simpson does not know how to apply them. A strong shoot is left long because it has strength or power sufficient to "break" many buds, and a weak one is shortened according to its strength, and its forces are concentrated on a few buds that may equal those on the strong shoot.

Mr. Simpson's occasional references to stocks for fruit trees are equally hazy and uncertain. At p. 6 it is stated that "by the persistent pinching process, which is a way of growing fruits by the dozen and not by the bushel, we deprive ourselves of the full benefits of the Quince or Paradise." P. 47 :—"The difficulties of the dwarf-tree system are, however, greatly aggravated when the natural stock is used. It is, indeed, almost impossible to keep such trees of a dwarf size, and at the same time fertile, if they are planted out; and it is most unwise to attempt to cultivate them as pyramids or bushes at all." Mr. Simpson knows gardens where pyramid Pears are grown on the "natural stock." In one instance the nurseryman (foolish man) sent every Pear tree grafted on the "natural stock," and had the audacity to describe them all as "dwarf pyramids," and the legacy of trouble these trees brought with them it is too painful to quote. It would be interesting to know what Mr. Simpson's definition of a "dwarf" is, but that we will come to presently, but "such are the disappointing results of attempting to make dwarfs of trees grafted upon stocks calculated to produce giants, as the natural stock undoubtedly is." "The dwarfing system as at present practised is in fact wrong in conception and in principle." At p. 46 :—"Had 'Amateur' planted only half the number of trees—one portion of them on the dwarf, and the other on the natural stock . . . he would have had finer trees and a much greater quantity of fruit . . ."

These will suffice as tolerably plain statements as to the author's belief in a difference between what he is pleased to term the "natural" and "dwarf stocks,"—whatever may be meant by "natural" the reader must imagine. At p. 54 the following counterblast is given—"I cannot help expressing the conviction also that we have overrated the value of the dwarf stock—the Quince and Paradise, for example. Under the extension system of training I doubt if the one be very much more precocious than the other under equal conditions. The chief difference between the two is that while the dwarf stock produces a few fruitful shoots, the natural stock produces many . . ." This is refreshing after the distressing experiences related at p. 48. At p. 67, however, another distinction between the stocks is brought forth :—"The natural Apple and Pear stocks planted in deep well-prepared ground, soon become independent of surface feeding; but the dwarf stocks, being surface rooters, are much benefited by mulching and surface dressings . . ." What is the value to be placed on such contradictions?

As a specimen of the indefinite style of writing indulged in, we quote the following in reference to walls and espalier fences from p. 29 :—"Walls, for the same reasons that trellises under glass are recommended to be lofty, should be high. It is of course understood that garden walls should not be too high, for reasons unconnected with fruit culture; still, there are no objections, so far as I am aware, why they should not be at least 3 or 4 feet higher than 12 feet, the usual maximum height of walls. Twelve feet is too low for dwarf-trained trees, and far too low for riders, as they reach the top in a year or two, after which their tops have to be constantly shorn off to keep them within the compass of the wall, and much to their injury. A lofty wall, if short, is better than a long and low one, and the same remark applies to espaliers."

Such a rigmarole is rarely to be met with, and all to convey the information that a wall for dwarf-trained trees should be from 15 to 16 feet high. This is dwarfing with a vengeance; what the proper height of a high wall might be we are afraid to contemplate. At p. 33 a singular instance of contradiction occurs in a single paragraph. In speaking of the training of Plums, we read, "Its future shape and health will depend upon a diligent adherence to the rules laid down for the beginning. Anything like a strict adherence to rigid rules is out of the question." Which is meant? Many more "Irishisms" might be pointed out were it worth while, as at p. 25—remarks on disbudding—we are told to "Cut those which are removed clean off with a sharp budding-knife." At p. 86, "Allow all young shoots to grow, and, should it be necessary to cut any out, remove them entirely." P. 87, "When any young shoot is so placed that these elements (light and air) can play around them their entire length, &c.;" and we are also told that growth pushes (p. 90) in spring—a new physiological fact. What does it push?

At p. 60 a long list of Apples and Pears is given that are stated to assume an open or spreading habit of growth, which is of no value whatever. Beurré Hardy forms naturally the most handsome of pyramids, &c., and White Doyenné and Doyenné Blanc are noted as two distinct varieties. The author's knowledge of the French language seems to be as imperfect as his pomological.

Thalictrum anemonoides.—This pretty little plant, the Rue-Anemone of the United States, differs a good deal in appearance from the other Meadow Rues in cultivation. Indeed in size and general appearance it approaches closely to the Wood Anemone, A. nemorosa, with which in woods in the United States it grows intermixed, flowering at the same time. It is now in bloom in the Kew herbaceous department.

# Garden Operations.

## PLANT HOUSES.

Stoves.—Close attention must still be given in respect to ventilation. Keep the evaporating troughs filled, to maintain a good degree of moisture, for at such times as this the houses will dry up quickly. Where a batch of cuttings of Crotons and other decorative plants have been struck, as previously advised, and are filling their small pots with young roots, they may be gradually inured to the temperature and general treatment of stove plants. If it is required to grow any on quickly the healthiest plants should be selected, and have a shift before becoming pot-bound, bearing in mind that if they are wanted to be used as table plants 6-inch pots should be the largest size tolerated for that purpose. Give attention to the pricking off of seedling plants of Torenias, Gloxinias, and Begonias before they become drawn in the seed-pans. If they can be treated to a little room in a pit or frame in which Melons or Cucumbers have been recently planted so much the better. Where Cycads or any close allies are grown, should they show signs of making a start to throw up another batch of leaves they will be greatly benefited if they can have a warmer position and more liberal treatment during the development of the young growths. These plants, though they can be safely grown in a temperate-house, will always develope much finer foliage if placed in the stove proper when showing indications of making a start. As greater stress is put upon these plants at such times through making their growth so rapidly, see that they are well supplied with water. Maranta Warscewiczii under general treatment will now be throwing up its distinct and handsome flower-spikes, each one of which will be furnished with one or two leaves; after the flowers fade each of these spikes will make a nice young plant if looked to before they become exhausted. Begonia nitida odorata will now be flowering freely; in order to prolong the blooming period, plants of this kind should be removed to a temperate-house or warm conservatory, where its distinct character will render it most attractive for a long time. Begonias of the ornamental foliage section should be potted now, before they commence to grow freely, increasing by division where necessary.

Greenhouse.—In order to retard the blooming of Azaleas, some of the later kinds, such as Brilliant, Souvenir du Prince Albert, and Gem should be kept as cool as possible with safety to the plants; if a north house is available for this purpose so much the better. Where a large supply of flowers has to be maintained such a house is invaluable to the gardener for many purposes. The winter kinds of Epacris and soft-wooded Ericas, after having been cut down, will now be breaking freely if they are in a healthy condition. Keep them as near the glass as possible, and shift any that may require it. Old plants of Bouvardias that have done flowering should be cut back into the ripened wood; they will soon break freely, when they may be reduced at the root and repotted into smaller pots, and after danger of frost is past be planted out in a sunny border. They will make good plants for early autumn bloom under this treatment. Plants of the berry-bearing Solanums will do well and give an early crop of matured berries if treated in like manner, making good plants for the autumn decoration of the conservatory. Pots of Rhodanthe and Ten-week Stocks will now do well in a cold frame, paying attention to protecting the same when cold at night. Where a large quantity of plants are wanted for house decoration a good stock of these and other annuals should be grown, as after they have done service they can be consigned to the rubbish heap. This is far preferable to having to restore plants to health that cannot be so summarily dispensed with as is the case with annuals. Attention should now be given to potting forward some good plants of the finer sorts of Pelargoniums (Zonal and Ivy-leaved), both single and double; they will come in most serviceable during the summer after the show and fancy kinds are past their best. Boronia megastigma, now in bloom, may be allowed to stand in the conservatory, where the sweet perfume of its somewhat insignificant flowers will be most acceptable.

Conservatory.—Now that there is an abundance of flowers, every attention should be paid to the proper and harmonious arrangement of the plants, both as to form and colour. Young hands often overlook this point, merely taking out a stale plant and replacing it with another, without any regard to the effect produced thereby. The groups of plants now to be seen at most flower shows ought to give a lesson on this matter, by which to profit in the home arrangement. *James Hudson, Gunnersbury House Gardens, Acton, W., April* 19.

## HARDY FRUIT GARDEN.

The continued cold winds and frosty mornings which we experienced during the earlier part of the month, effectually retarded the blooming of all fruit trees except Peaches and Apricots on walls with a southern aspect, and where these have been protected, as previously recommended, the crop may be expected to be safe, as the exceptionally low night temperatures were fortunately unaccompanied by either rain or heavy dews in most districts. A peep behind the protecting material has revealed a truly beautiful sight, the trees presenting a sheet of very bold bloom, which is now falling in showers of petals to the ground in a most promising way. It will be of advantage to seize an early opportunity on a mild day to thoroughly wash with tepid water, applied from a garden engine, in order to dislodge the aphides that generally manage to get established here and there during the time the trees are in bloom. The nets or other materials that require to be removed in order to allow full freedom in cleansing the trees from insects and dead bloom, must be replaced for a time until the foliage is well-developed; but if it is not of an open description, it must not remain over the trees during the daytime in fine weather. The higher temperature, accompanied with mild showers, is causing the blooms of Pears, Cherries, and Plums to unfold; it will be well, therefore, to arrange for protecting such as can have this advantage given them on walls or espaliers. A very easy and convenient means of protecting trees on wire trellises is to drive in short stakes at a few paces apart on each side of the line of trees, and at 2 feet from it. Long strips of wood are then nailed along the tops of the stakes at 2 or 3 feet from the ground, and to these the Frigi-Domo or other protecting material is secured in tent-like fashion, the top wire of the trellis forming the ridge over which the material must be stretched, and fastened at each side to the temporary framework above described. It will be found advantageous in this mode of covering if the trellis is carried one wire higher than the trees are allowed to extend, as the spurs projecting from the top wire will be found to be inconvenient and liable to tear the Frigi-Domo, besides preventing it from being effectually tightened, and secured from the effects of wind. Lines of pyramidal trees may be protected in the same manner by running a ridge line of strong laths on a centre row of poles, just a little higher than the trees themselves, to support the covering in the same way as the top wire of the trellis does. If an excuse be needed for thus dwelling upon modes of covering fruit trees while in bloom, I think it may be found in the fact that the labour of a season, and the hopes of a like period, are so frequently undone and blighted by frosts that happen to find us unprepared.

Copious supplies of liquid manure from tanks may now be given to the borders of fruit walls where the trees are fully established in a bearing state. It will help the trees greatly over the exhaustive process of perfecting the enormous quantities of pollen produced by trees covered with such quantities of bloom as most are bearing this year. Plantations of Strawberries and Raspberries will be equally assisted by such waterings as above recommended for wall borders, and it will generally be found that the liquid manure can be better spared for this department now than later on, when growing crops require it. Forced Strawberries from which the crop has been gathered may be planted out, after being gradually hardened off, in the quarter previously recommended to be prepared for them. If they are quite healthy and have not been affected with red-spider they make as good plantations in one year as can be had under any other system in two. Supposing the plants to be clean they may, after this time of the year, be planted, directly the fruit is gathered, in well-manured ground; but if the plants are set on one side and neglected, even for a day or two, they will not make satisfactory after-progress, and are not worth the trouble of planting. Let the balls of earth, of a suitable batch of plants, be opened carefully, and planted very firmly, and so low as to leave a little depression in the soil around them to receive the soaking of water that will require to be subsequently applied. If a mulching of litter be given it will greatly assist their establishment and after-progress during periods of drought. *R. Crossling.*

## FRUIT HOUSES.

Pines.—Staking should have attention before the fruits get too large or the stems become bent. A good guide for this operation is to stake the fruit as soon as the pips are well set and the crowns are formed, to admit of the raffia being placed round them. This should be carefully performed, as advised in a former Calendar. Plants which are crowded should have more space given them: succession plants that are making a good growth should be allotted a distance of 2 feet apart each way. Queens may be put a little closer, say about 22 inches. When making the last and permanent shift, plunge the plants in straight lines and diagonally, to prevent the leaves becoming crowded and to make the best use of the space. Nothing is gained at any time by overcrowding. It is also most essential to arrange the plants in sections, when their requirements can be attended to in a methodical way. If fruiting, succession, and suckers are huddled together in one compartment it is impossible to give them careful treatment. Queens make many suckers; these should be thinned out to one or two to each plant. If large fruits are wanted for exhibition all may be taken out. If the beds are broad and comprise four lines or more of plants, with only one path at the back, the front and centre plants are not comeatable. A good way to get the suckers out of the plants is to have a pair of iron pincers with long handles, and with these take a firm hold of the sucker as near the base as possible, then with a dexterous twist the sucker comes out of the plant intact. It is very important that no remains of the suckers be left adhering to the plants, or the next progeny will be more numerous than before. Fruit beginning to colour should be kept a little drier at the roots; this also applies to the atmospheric conditions. Plants in other stages should have copious dampings overhead once or twice a day in bright weather; but in dull weather every afternoon will be sufficient. A few pieces of charcoal 2 or 3 inches long, may be placed betwixt the plants, after damping. A little good guano may be put in the evaporating troughs; this gives off ammonia, and although Pines do not absorb so much through their leaves as Vines and other plants do, yet their stems are very porous. There are also many small aërial roots in the axils of the leaves towards the base of the plants, which form and constitute important agents in giving stamina to the plants. As the sun's rays are now getting powerful under glass, do not neglect shading; but as this is a vital element I shall give comprehensive details which will form the gist of my next Calendar. *D. Wilson, Castle Hill, Devon.*

### Vines.

The present bright weather is very favourable for pushing on early Vines. To those which are colouring and are nearly ripe give a good supply of warm air back and front, keeping a gentle heat in the pipes even on the brighest days, which will cause the air to circulate freely, and give a better flavour and finish. Also allow the laterals to grow within reasonable limits without stopping. On bright days, even when they are colouring, it is best to damp paths and borders early in the morning with tepid water, so that the house dries up early in the day, which benefits the foliage and keeps them healthy. Those not yet advanced so far as to commence colouring keep as recommended in last Calendar, and if they are dry at the roots give a good watering with tepid manure or guano water, which, if thoroughly done, will be sufficient until they are ripe. In succession houses keep the shoots tied down and thinned as required, also examining the borders, and when dry giving a thorough soaking with tepid water. Keep Muscats coming into flower at a night temperature of 70°, or in very mild weather a few degrees higher, but 70° at night is a safe temperature even in the mildest weather at this time of the year, raising it early in the day to 80°, and putting a little air on the back ventilators early—say by 7.30; shutting up early in the afternoon, and allowing the temperature to run up to from 90° to 95° with bright sunshine. Late varieties of Grapes, such as Gros Colmar, Lady Downe's, or any thick-skinned variety should be kept at a night temperature from 65° to 70° during mild weather, rising 10° by day, closing early, and allowing the temperature to run up to 90° with sun-heat, which will draw out the bunches and economise fire-heat. Late houses of Black Hamburghs must be as cool as possible until the bunches show; then close them early, and if the nights are cold assist them with a little fire-heat, just enough to keep them on the move and healthy. Any Vines planted a month ago will now be growing freely, and will take liberal supplies of water; but clear tepid water will be best for the present. Give air early in the day and increase it until mid-day, when there should be a good supply in bright mild weather, which will keep the growth sturdy and short-jointed. Close early and give borders, paths and foliage a good syringing. Pot Vines with ripe fruit must not be allowed to get dry at the roots, and the paths should be damped down early on bright days as well, giving a liberal supply of air. Those that have not yet commenced to colour may be kept as previously recommended. Those having a good supply of pot Vines can secure two crops from the same house by shifting the earliest ones as soon as they are ripe into the earliest permanent vinery or a greenhouse; and by keeping some of the pot Vines in a cool orchard-house they will, if kept cool, be breaking a few inches long when the earliest ones are ripe. Any Vine eyes in pots or turfs not potted must be seen to at once, for early growth now means early maturity in the autumn, which is the only way to be successful with early pot Vines. *Joshua Atkins, Lockinge Gardens, Wantage.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | April 25 | Sale of Imported Orchids, at Stevens' Rooms. |
| Tuesday, | April 26 | Royal Horticultural Society: Meetings of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Floral Exhibition in the Town Hall, Manchester, including the Northern Show of the National Auricula Society. Sale of Flowering Orchids, at Stevens' Rooms. |
| Wednesday, | April 27 | Royal Botanic Society's Second Spring Show. Sale of Imported Orchids, and Camellias, Azaleas, &c., at Stevens' Rooms. |
| Thursday, | April 28 | Sale of Imported Orchids, at Stevens Rooms. |
| Saturday, | April 30 | Sale of Hardy Plants and Bulbs, at Stevens' Rooms. |

WHEN the Royal Horticultural Society is so fortunate as to secure the services of one who has been called, not inaptly, *primus* in his particular way, it is a great injustice to him and a great disappointment to those who come to hear him to let him waste his words in the vaulted roof of the great conservatory. As if the construction of the building itself were not fatal to any attempt at public speaking, even with the aid of the booth, or by what other name the tabernacle erected for the purpose be called, there are the other distracting elements of a large concourse of visitors, a large proportion of whom are eagerly waiting for the lecturer to cease and the more popular "band of the Blues" to strike up, occupying themselves meanwhile by scrooping their chairs, walking and talking, and other diversions, anything but reassuring to the lecturer, and eminently vexatious to those who come to listen. In the face of all these untoward circumstances Mr. HORNER managed to deliver on Tuesday last an address, the style and the matter of which will by plant lovers in general, and Auricula lovers in particular, be perused with great pleasure and interest. Dividing his subject, according to the custom of his cloth, into three heads, the speaker first of all alluded briefly to the botanical history of the Auricula, showed its kinship to the Primrose, the Cyclamen, and other members of the Primrose family, and dilated on the direct lineage of the Auricula proper. What he said upon this point may be seen in another column, our only regret upon that head is that so conscientious an historian should have overlooked the remarkable paper of KERNER's, entitled "Die Geschichte der Aurikel," an abstract of which appeared in our columns, December 25, 1875, p. 807. In that paper a fuller history of the lineage of the garden flower is given, and its parentage traced back to P. pubescens, a supposed natural hybrid between P. Auricula and P. hirsuta. The point is not one of mere antiquarian or pedantic interest only, but it supplies one explanation of a question raised by the lecturer himself when he gave expression to the sense of wonder that all "this investiture of different orders of beauty descended upon a pale wild flower of the Alps." If the investiture was derived from a double source, partly rose-coloured or purple, partly yellow (the green being common to both parents), the wonder becomes the less. By the intermixture of different essences, as it were, the door was opened for varied combinations, which were seized on by the early florists, selected and perpetuated till we have arrived at our present position. In so doing the florist has followed the same lines as Nature herself. In Nature when a flower breaks or varies, those variations which become serviceable to the flower, either by attracting some insects or repelling others, and so securing cross-fertilisation and variety, with enhanced fertility and vigour of offspring, or in other cases by ensuring self-fertilisation and consequent perpetuity of character — those variations which are serviceable in either of these ways, or in any other of the complex inter-relations of a plant and its surroundings, are likely to be perpetuated, and those variations which prove of no service one way or the other die out and disappear. The florist acts precisely in the same way when he casts aside seedlings that do not answer his purpose.

The history of the culture of the Auricula as a florists' flower by the Lancashire weavers is a curious and a touching one. It illustrates in a remarkable way the action of those self-same principles of selection, rejection, and adaptation to circumstances of which we have been speaking. All the time circumstances were favourable the weavers cultivated their plants with loving care in their own rooms, to their own great solace and joy, but on the introduction of steam factories the conditions became greatly altered, and whatever benefit accrued from the change the Auricula did not for a time share in it.

Passing on to the nomenclature of these popular flowers, Mr. HORNER adverted incidentally to the "Big Gooseberry," and by imputation objected to the repute it has as something "vapid and inflated." But the lecturer here seems to have overlooked the fact that "big" Gooseberries are, as a rule, vapid and inflated, and that is one reason of the objection raised in certain quarters to Gooseberry shows and kindred displays, which tend to foster qualities which it is not desirable to encourage, at least at the expense of other more valuable properties. A good crop of Gooseberries of moderate size and superior flavour would with most people be far more acceptable than a bushel of "Thumpers" and "Roaring Lions." This leads us to the third heading of Mr. HORNER'S lecture—the consideration of the Auricula as a florist's flower. Here we must be careful how and where we tread. The "points" detailed so clearly by Mr. HORNER are so much matters of individual taste and opinion, in the exercise of which every one should be allowed to disport himself at pleasure, that it would be unseemly and improper to raise unconsidered objections to such a system and to one which has, it must be admitted, elicited so much beauty, and which has been the source of so much true happiness to generation after generation of flower lovers.

That genial florist, Mr. TYMONS, as quoted by the lecturer, demurs to the assumption that the points of a good flower are "arbitrary," and goes on to say that they appeal to canons of beauty accepted by those most skilled in the subject, and whose opinion, therefore, is entitled to the most weight. Outsiders, however, in these times of free thought and unfettered judgment, will require to know what are these canons of beauty, and especially what title they have to be accepted as such. What they are in the case of the Auricula is very clearly laid down in the lecture by Mr. HORNER, but their title to acceptance was not so fully pressed home; such and such a disposition of colours, such and such a form are beautiful, and to be accepted accordingly. We are reminded of the illustration in *Punch*, where, in reply to the objections raised by some connoisseur as to a particular picture, the defects of which he points out, the specialist, tied by his arbitrary rules, has no other reply to give than that the "pitchaw is beautiful." The florists lay down a standard, and one to whose advantages outsiders are largely disposed to assent. That they cannot fully do so arises from the fact that the florists as a rule do not give us the reason why. Such and such a form is to be accepted as the ideal—Why? Is it the form best adapted for its purpose? Is it the one best calculated to please the eye of man? Why not some other form, some other arrangement? Nature's resources are illimitable—she knows nothing about any hard and fast lines—her forms are the very highest types of beauty, and they are so because they are the manifestations of intelligence, adaptation and purpose. When the florist is able to show us that the rules he lays down are an improvement upon those in accordance with which Nature herself works, we shall be disposed to look with more respect upon his "points;" but for the present we cannot assent so fully to them as the specialists do. So far as these things have a meaning, as in the case cited by Mr. HORNER, where a washy colour in the tube of the flower is proved to co-exist with a weakly habit, we assent all the more gratefully, because we have a fact of practical value brought out — so far as they appeal to the intellect or even to the imagination, and not merely to the eye, so far they are good — so far as they fail in doing so they are at best harmless pastimes. If we wanted to put our case more strongly we have only to look back to that history which was so gracefully sketched by Mr. HORNER. Three hundred years has the Auricula, "in spite of failures past account," been the pet and the comfort of many a humble worker, the joy of many a more highly favoured individual: from this point of view it is impossible to over-estimate the blessing this flower, with others, has been to poor humanity—long may they continue to be so; but the keener joys, the more extended pleasures, the deeper reverence which an insight into the how and why of Nature's works—why have these been so neglected? How is it that after centuries of straining after points in the way of "pin-eyes" and "thrum-eyes" it was left for a modern physiologist to show the real significance of these things, and to put before gardeners in general a practical lesson, the value of which will become greater and greater as the years go on? Surely this is a far more important matter than any system of points for which only eye reasons can be alleged. An arbitrary standard is a good thing used properly, but increased knowledge and progressive development in the right road are better.

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—— RUBUS DELICIOSUS.—Lovers of hardy shrubs to whom the plant we now figure (fig. 101) is unknown, will assuredly be grateful to us for directing their attention to it. Though a true Bramble it grows as a shrub in the shrubbery, or against a wall; it is destitute of thorns, and has simple 3—5-lobed sharply saw-toothed leaves, instead of the usual palmate leaves of the Bramble proper. But its chief value for garden purposes lies in the profusion of exquisite pure white flowers which it produces in summer, and of which our figure, taken from specimens obtained from Kew, may suffice to give some idea. It is a native of the Rocky Mountains at considerable elevations, and was introduced to British gardens by Mr. ANDERSON HENRY. We have not seen the fruit, which, however, is described in the *Botanical Magazine*, t. 6062, as of a maroon-brown colour and agreeable flavour. We have seen the plant at Mr. ELLACOMBE'S, at Bitton, and elsewhere, and have no hesitation in recommending it as one of the loveliest of hardy flowering shrubs. At Kew it has survived the last two winters unhurt.

—— THE UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY.—The report of this useful Society, together with the balance-sheet, is before us. The object of the Society is to afford assistance to the members in sickness, and "in addition realise the advantages of a savings-bank with that of a life assurance." For a yearly payment of £2 4*s.* 6*d.* a grant of 16*s.* per week in illness is allowed. The treasurer is Mr. GEORGE BAKER, Combe Cottage, Kingston, Surrey; and the secretary, Mr. JOHN MCELROY, Moray Lodge, Campden Hill, Kensington. The financial affairs are in a satisfactory condition.

—— IMPROVEMENTS AT KEW.—The miserable little beds which for some years past have offended the eye in front of the great Palm stove at Kew, have lately been turfed over, greatly to the improvement of the general effect. The expanse of green turf forms a far better base for the fine lines of this monumental conservatory than the wriggling impertinences which

detracted from the dignity of the building, and destroyed all sense of what artists call repose.

—— Ficus stipulata.—In the *Gardeners' Chronicle* of December 4 mention is made of this plant. In the Botanic Garden of Coimbra, writes Professor Henriquez, the plant is quite hardy, and clothes the walls of the garden. A single plant covers a wall space of 36 metres in length and 4 metres in height. It bears fruit every year of a somewhat different shape to those figured in the *Chronicle*. Is this another instance of dimorphism? Last year one of the gardeners pruned the plant very severely, leaving only the branches which clung to the wall, forming a kind of trellis of remarkable appearance. I feared the plant would die, but this spring the new leaves covered the denuded branches, and have rendered the plant more beautiful than ever.

—— Bank Holiday Statistics.—At the Royal Horticultural Society's Gardens, South Kensington, on Monday, the numbers admitted on payment of 2*d*. each was 12,246, about 2000 more than last year; 75,410 had passed through the turnstiles at the Alexandra Palace at 7 P.M.; and 47,295 persons visited the Crystal Palace during the day. The National Gallery had 17,283 visitors; the new National History Museum at South Kensington, 15,204; the Tower of London, 6000; the British Museum, 10,668; the South Kensington Museum, 27,991 up to 6 P.M.; and the Zoological Gardens, 33,614.

—— Agave lurida.—A plant of this species in the garden at Coimbra, Portugal, in addition to the main spike of flowers, has thrown up from the base between the leaves a series of shorter axillary inflorescences, which surround the mother flower-stalk like so many satellites. Dr. Henriquez has obligingly sent us a sketch of the Agave representing the growth in question. The appearance calls to mind a central candelabrum surrounded by several smaller ones.

—— Exchange Catalogues.—We have received the following:—*Index Seminum Horti Regii Botanici* (Panormitani, Palermo). In addition to the list of seeds there are some notes on various species of Aloe

Fig. 101.—Rubus deliciosus: flowers snow-white. (see p. 536.)

allied to A. arborescens, by Prof. Todaro.—*Samereien zum Tausch aus dem Königlichen botanischen garten der Universität Breslau, mit einem morphologischen anhange und einer notiz über Amorphophallus.* It is to be hoped that the learned Professors who draw up these morphological and systematic memoranda will publish their observations in some other manner than in the fugitive and ephemeral exchange catalogues of seeds which they publish annually.

—— Ceanothus rigidus.—This beautiful evergreen shrub was introduced to cultivation during its palmy days by the Horticultural Society, whose collector (Hartweg) discovered it at Monterey, in California. At first it was regularly stated that the species was quite hardy, but this is not the case; indeed, it may be doubted whether any Ceanothus can, under ordinary conditions in the open air, fairly withstand such winters as the two last. C. rigidus is, however, such a handsome plant that it is well worth a place on a wall, and care and attention during the winter months. The small rigid glossy leaves are very pretty, and these form a pleasing contrast to the umbels of rich deep purple-blue flowers. A nice bush is now flowering freely on a wall in the Coombe Wood nurseries of Messrs. Veitch.

—— British Fungi.—The second part of Dr. Cooke's *Illustrations of British Fungi* is before us, containing coloured illustrations of a number of the higher fungi. The work is intended as an atlas to the *Handbook of British Fungi*, and is likely to prove so useful to all collectors of these plants that no recommendation of ours is needed to induce them to add it to their library shelves.

—— Messrs. Osborn's Exhibition of Bulbs, &c.—Messrs. Osborn, of the Fulham Nursery, had an exhibition in the Fulham School-room on Monday, the 11th, of Hyacinths, Narcissus, Tulips, Azaleas, Primulas, and Cyclamens, interspersed with Ferns and dwarf Palms. The whole were arranged tastefully, so as to form a sloping bank round the room. The proceeds of admission and the sale of the plants were given to the fund for rebuilding Fulham Church. The Hyacinths especially were very fine, and also the Narcissi. The former popular plant has been seen in better condition generally this season than for the last year or two. To those who may not have had an opportunity of seeing any of the spring shows now held in different parts of the country, or any considerable number of Hyacinths together, the names of a few of what were the best varieties here shown, as they have also been in other places, may be of use. Amongst the best we may name the following:—La Grandesse, single, white; King of the Blues, single, blue; Princess Mary of Cambridge, single, blue; Czar Peter, single, blue; Mimosa, single, dark purple; Fabiola, single, pink; King of the Yellows, double; Laurens Koster, double, blue; Cavaignac, single, pale blue; Charles Dickens, single, blue; General Havelock, dark blue, single; Lord Byron, porcelain, single; Prince Albert Victor, bright crimson, single; Von Schiller, single, pink; Koh-i-noor, salmon-red, semi-double; Ida, single, yellow; Gigantea, single, red; Snowball, single, white; La Franchise, creamy-white, single; Lord Derby, single, blue; Van Speyk, lilac, double; Macaulay, single, red; Duc de Malakoff, yellow, striped with red, single; Grand Duc de Luxembourg, single, yellow; Princess Louise, double, red; La Joyeuse, single, rose; Leviathan, single, white; Lord Wellington, single, flesh colour; Marie, single, dark blue; Blondin, single, blue; Solfaterre, single, light red; Lord Mayo, single, violet.

—— Toxicophlæa spectabilis.—This free-flowering plant has a pretty appearance when grown in a pot and blooming from every bit of growth it makes; but so cultivated it is not seen in anything like its best form. Mr. McIndoe has it planted out in the border of the long corridor which connects a number of the houses at Hutton Hall; here, trained on the back wall, it makes growth unusually strong, and flowers proportionately more profusely, the dense bunches of bloom almost covering the wood of last season's growth, clothing the shoots for nine or ten joints so as to almost hide the leaves.

—— Seedling Pines at Lambton.—Doubtless there are many who have been engaged all their lives in fruit growing and yet have never seen a seedling Pine just as it appears above-ground. Recently there was at Lambton a pan of seedlings that had just made their way through the soil. The seed is from a previous seedling of Mr. Hunter's, which he crossed with Smooth Cayenne. Possibly there may be less interest attached to these seedlings than there would have been at one time, when this fruit was more generally cultivated, but even yet those who require a really full-flavoured Pine need to have it grown within the kingdom.

—— Hardy Herbaceous Plants at the Fulham Nursery.—The early hardy spring flowers have had an unusually hard time of it during the past winter and through the early part of spring. Amongst Messrs. Osborn's fine collection of these early bloomers the following were a few of the best in flower the second week in April:—Erythronium giganteum, Chionodoxa Luciliæ, Hepatica cœrulea flore-pleno, Fritillaria Moggridgei, Sanguinaria canadensis, Trillium grandiflorum, Anemone bracteata flore-pleno, A. Pulsatilla, Sisyrinchium grandiflorum album, Scopolia carniolica, peculiar-looking, brownish-green flowers; Orobus vernus, Doronicum caucasicum, Triteleia uniflora lilacina, Fritillaria Imperialis (Crown Imperial), Primula platypetala plena, double Primroses, Puschkinia libanotica compacta, Narcissi, &c.

—— Strawberry Shelves at Hutton Hall.—The merits of the wire shelves for several years in use here for forcing Strawberries on are, we learn, even more apparent than at first. They are hung from the roofs of the long houses at some 3 feet from the ridge on each side, and are about 1 foot wide, holding a double row of plants; they are made of strong iron wire running lengthways of the houses, 1 inch apart, and secured with cross pieces of similar wire at intervals of 5 or 6 inches. One of the principal advantages is that the syringe can be brought to bear on every portion of the leaves whenever required in a way that ordinary board shelves does not permit of. The crop of Strawberries in the different stages of growth on these shelves was unusually fine.

—— Solanum venustum.—There are few stove climbers which surpass this species when, as at Kew, it is allowed to freely develope itself. In order to show off its beauty to the fullest extent the plant should be trained to the rafter of a house, so that its large pendulous panicles of handsome lavender-blue flowers can exhibit themselves in all their native grace. It is a native of Brazil. A specimen at Kew is now—if we except a finely-coloured and well-flowered variety of the beautiful Hexacentris mysorensis, which has already been noticed in these columns—the loveliest of the climbers at present in bloom in the Palm-house.

—— "Zeitschrift des Schweizerischen Gartenbauvereins."—The second part of this journal is before us, and already the editor's plan is pretty well developed. It is well printed and carefully edited, and contains a good selection of articles and paragraphs. This number contains a figure of Freesia refracta var. alba, and a representation of a Pompeian garden, with descriptive text. We hope this praiseworthy venture of the Swiss Horticultural Union will prove successful.

—— Macrozamia Miquelii.—Mr. Charles Moore, director of the Botanic Garden of Sydney, sent to the New South Wales court of the International Exhibition of Melbourne two grand specimens of this Cycad (both bearing fruit) to add to the scenic features of the Exhibition by the display of living decorative plants. This particular Macrozamia, writes Baron von Müller, has to some extent been misunderstood in former descriptions, when only fragmentary material in a dried state was available for definition. In M. Miquelii, as well pointed out by Mr. Moore, the stem is nearly glabrous (as well as all other parts of the plant), the leaves are remarkably rigid, and in their young state almost straight, not twisted in the manner of those of M. spiralis, which species from that character took its name. The segments of the leaves of M. Miquelii are closely approximated, not very spreading, and decrease gradually in length, the lowest being reduced to mere teeth, while the petiole is very short, whereas in M. spiralis the leaves are long-stalked, the lowest segments (with the exception of a few odd teeth-like abbreviations) very long, and all much spreading; besides, the foliage is less rigid. Irrespective of this, the male amenta, and also the fruits, are not quite alike in both. M. Miquelii is a grander plant than M. spiralis, and seems confined to Queensland, while the last-mentioned species has been traced southward to near the boundaries of the colony of Victoria.

—— Vine Growing at Hutton Hall.—The Vines here—especially those in the three span-roofed houses, each 60 feet long by 30 feet in width, filled with most of the leading kinds—are showing for a fine crop of more than usually large bunches. Mr. McIndoe, in some of his houses, has adopted Mr. Hunter's long-shoot system of Vine growing. The strength of the wood and size of the bunches at once show the effect of concentrating the powers of the canes within a limited number of shoots, and there is little doubt that in roomy houses, where the canes are not too near together, and consequently admit of this method being carried out, after the first flush of youthful vigour is passed, and the Vines are inclined to produce smaller bunches than when larger bunches are wanted, this method is the way to get them.

—— Erica carnea.—This is one of the few Ericaceæ that will thrive in chalky soil. In the Cambridge Botanic Garden, where other kinds grow only with much trouble, this one is now covered with a mass of flowers, and it appears to have spread considerably.

—— The Botanical Department, British Museum.—We take the following account of the arrangements made for housing the botanical collections in the new Natural History Museum at South Kensington from a daily paper. The herbarium and portion devoted to students' use has been available for some time, thanks to the zeal and efficiency of the officials, and the improvement over the over-crowded, badly-lit rooms in Bloomsbury must be experienced to be appreciated:—

The collections occupy the whole of the third floor of the eastern portion of the building, the pavilion in the tower, and two floors in the tower above the pavilion. One half only of the long gallery will be open to the public, and everything exhibited there is under glass. The other half, together with the pavilion, and the two rooms over it, will be open only to those who have tickets for special study. This latter portion contains the general herbarium. A special feature of the glass cases in the public portion of the gallery is their construction. In addition to the tall metal and glass cases, 14 feet high, for the exhibition of stems of Cycads, Palms, Ferns, &c., there are cases round the room to which the name "cells" has been given. They are the first of the kind that have been made. They project from the wall into the gallery on both sides, after the fashion of book-shelves in many libraries. The glass on all three sides is permanently fixed, with the exception of a small door giving access to the interior of the cell, which may be considered dust-tight. In order to secure egress and ingress of air, a hole is bored near the bottom of the case, and is plugged with cotton-wool, which gives passage to the air, while it excludes the dust.

In the pavilion, resting on the floor, are placed in their stalls the herbarium of Ferns and other vascular Cryptogams and the extensive herbarium of British plants, founded on collections made by Sowerby in the prosecution of his great work, *English Botany*, and incorporating the plants of Robert Brown, Edward Forster, and other botanists. The literature relating to British plants is conveniently placed in a bookcase alongside the herbarium. The remarkable coloured drawings by the Brothers Bauer are kept in this room. Here also is the collection of plants which John Ray formed in his Continental journey, mounted and written up by himself, and afterwards published in his work on European plants. On the flat above the pavilion is the general herbarium of cellular Cryptogams. In this storey there are three large rooms, in the middle one of which the cabinets containing the following plants are arranged:—Mosses, Hepaticæ, Lichens, Algæ and fungi. The room on the south side is fitted up with suitable tables, &c., for the examination of these plants. The collection of vegetable objects preserved in spirits is placed on shelves on the inner wall of this room. The corresponding room to this one on the south side is used for the preparation and mounting of plants for the herbarium and for the carpenters' workshop. The rooms are all well lighted. In the general herbarium of Phanerogams the mounted plants are in a series of high cabinets, each with many divisions. These cabinets project from the walls between the windows, so that each window gives light to what is practically a small, isolated study. The fruits and seeds are in drawers in table cabinets running the whole length of the room. The fruits, &c., are

as near as possible to the cases of the mounted plants to which they belong. The top of the table cabinets affords a convenient surface for examining the plants, &c., while in each recess are a small table and a chair.

—— The Sale of Mr Day's Orchids.—At the sale of the second portion of Mr. Day's collection, on April 12 and 13, the following amongst other prices were realised:—Cattleya exoniensis, 1008*s.*; Aerides Lobbii, 140*s.*; Cypripedium barbatum grandiflorum nanum, 160*s.*; Cattleya gigas, 150*s.*; C. labiata, 462*s.*; C. Skinneri, 420*s.*; Saccolabium præmorsum, 210*s.*; Cattleya labiata Warneriana, 180*s.*; Lælia anceps rosea, 462*s.*; Aerides affine, 567*s.*; Angræcum Chailluanum, 315*s.*; Phalænopsis intermedia, 1302*s.*; Saccolabium guttatum, 442*s.*; Lælia anceps alba, 252*s.*; Masdevallia ignea aurantiaca, 420*s.*; Odontoglossum niveum majus, 215*s.*; Aerides Schröderi, 336*s.*; Masdevallia Wallisii, 220*s.*; Lælia elegans, var. Wolstenholmiæ, 378*s.*; Dendrobium Schröderi, 1398*s.*; Lælia crispa superba, 925*s.*; Aerides Dayanum, 410*s.*; Cattleya labiata, 336*s.*; Lælia purpurata, 630*s.*; Saccolabium guttatum var. Turneri, 588*s.*; Masdevallia Chimæra, 220*s.*; Lælia anceps rosea, 315*s.*; Angræcum Ellisii, 210*s.*; Odontoglossum niveum majus, 483*s.*; Masdevallia macrura, 273*s.*; Cypripedium Spicerianum, 525*s.*; Saccolabium guttatum, Gurney's variety, 357*s.*; and Cymbidium Dayanum, 231*s.* Total amount of the two days' sale, £1803 7*s.* 6*d.*

—— The Bath and West of England Show. — The approaching show at Tunbridge Wells seems likely, from all we hear, to be a great success, and to be well taken up by the inhabitants of the two counties (Kent and Sussex). In the flower-show department Mr. Boscawen is as zealous as ever, and proposes to give a ten-guinea cup for the best group of Orchids, and five guineas for the best specimen Orchid. It is also proposed (though its realisation depends on the way in which the proposition is received) that a prize of five guineas be offered for the best bunches of Grapes grown by an amateur; also a five-guinea cup to a gardener who has never won a prize at a London show (provided of course his exhibit is sufficiently good to warrant such a reward).

—— Canker in the Wild Service Tree.—A seedling Pyrus domestica in the garden at Sibbertoft, of about fifteen years old, is highly illustrative of the peculiar condition of canker lately brought before the Scientific Committee of the Horticultural Society at South Kensington. At the junction of every branch with the stem there is a virulent canker, which appears to have arisen somewhat in the following manner:—In cases where the branch has arisen from an ordinary or adventitious bud, the soft tissue of the bark has protruded, and being unprotected by cuticle it has been subject to the action either of frost, as suggested by Dr. Hogg, or repeated chilling from moisture, the tissue at the same time being more or less hypertrophied; decay has in consequence taken place in the exposed cells, which has spread inward, till the state has been produced which is known under the name of canker. There is, however, in the same tree a more ordinary form of canker, which so often is destructive in uncongenial soils to the young shoots of Apples, without any accession of fungi. Another form of canker arises when there is a tendency to produce bunches of adventitious roots, and the exposed cellular tissue in like manner is destroyed. *M. J. B.*

—— Fancy Polyanthuses. — Whilst the old florists' favourite Polyanthus, the gold-laced section, seems to have run the length of its tether, and now is unable to budge an inch in the direction of variety or improvement, its congener, the fancy Polyanthus, seems in but its infant state in the production of fine and beautiful forms in substance and robustness of constitution. If evidence of the comparative arrestment of development shown by the one were wanting it surely is to be found in the almost universal decadence of its progeny. Its young, in the proportion of quite 90 per cent., are fit only for the rubbish-heap, whilst any that exhibit advance or even features equal to those of its progenitors are so rare that they are hailed with triumphant peans. On the other hand the fancy Polyanthus is full of vigour, development and progress. Thanks to its cosmopolitan features it can never be tied down by any hard and fast rules or lines. No amount of lacing will ever hold it within the straight-jacket which imprisons the florist's strain, for of lacing it has none, and probably never will have. We get from it variety ranging from purest white to almost black, whilst parti-coloured markings seem to be infinite in colour and commingling. Then there are in process of development curious duplex kinds, in which all the form and substance the fancier may desire is found allied to wonderful and double floriferousness. Not least pleasing is the capacity shown in the progeny to equal and excel the parents. There is little that can be termed reversion, whilst as the flowers seed freely there may be raised a vast quantity of seedlings annually, thus lending interest and variety that is ever enjoyable. We may divide them into self, fancy, and duplex sections, and insist on good form, substance, thrum-eyes, and clear centres, but that is at least enough. Thus the choice selections will delight the florist, whilst the rejected will beautify the spring garden.

—— Daphne Fioniana. — A basket of this charming hardy plant, staged at the Birmingham spring show on Easter Monday by Messrs. R. Smith & Co., nurserymen, Worcester, attracted much attention from the dwarf, close habit of the plants, their free-blooming character, and the pleasing perfume of the flowers. It is a charming subject to flower at this season of the year, and, being perfectly hardy, is well adapted for rockwork, on which it would be a conspicuous feature in early spring. The plants shown on this occasion were worked on a common stock, and the numerous shoots on the dense, low, bush-like heads each bore flowers. It is one of the comparatively neglected plants that richly deserves to be lifted out of the obscurity into which it has fallen, and brought to take a more prominent place in our gardens.

—— Publications Received.—*Glasshouses and Heating*, a few Hints and Designs, by Mr. B. W. Warhurst, 33, Highgate Road, N.W.—*The Ladies' Multum in Parvo Flower Garden*, by Samuel Wood (Crosby Lockwood & Co.).—*The Universal Instructor*, part 6 (Ward, Lock & Co.).—*Transactions of the Scottish Arboricultural Society*, vol. ix., part 3.—*The Law Relating to Railway Rates*, a Guide to Farmers and Traders, by W. A. Hunter, Barrister-at-Law (Agricultural Press Co.).—*The Cherry and Medlar*, by D. T. Fish (*Bazaar* Office).—*The Rocky Mountain Locust*, by Charles V. Riley.—*How to Cultivate the Potato* (B. K. Bliss & Sons, New York).—*The Stewarton: the Hive of the Busy Man*, by the Rev. E. Bartrum (Longmans).—*Fruit-growing in Kent*, by Charles Whitehead (Effingham Wilson).—*Hops: from the Sets to the Sky-lights*, by Charles Whitehead (Effingham Wilson).

—— The Weather.—General remarks on the weather during the week ending April 18, issued by the Meteorological Office, London:—The weather has been milder and rather less settled than of late, with some showers of rain. A thunderstorm occurred at Brooksborough on the 15th, at our central and north-westerm stations on the 13th or 14th, and at Stonyhurst on the 16th. The temperature was 1° or 2° above the mean in all districts except "England, N.E." and "Scotland, E." The maxima were rather high, readings of 69° being registered in London and at Leicester, and of 65° or 66° on our southern coasts on the 17th. At most other stations the maxima occurred during the earlier part of the period. The lowest of the minima were registered on the 18th, when the thermometer at Aberdeen fell to 28°. The rainfall was slightly more than the mean in "Scotland, E.," "England, E.," "England, N.W.," and "Ireland, N.," and equal to it in "Scotland, W." and the "Midland Counties," but in all other places the fall was less than the mean. Bright sunshine shows a decided decrease in nearly all districts, the percentages ranging from 36 in the south and east of England to 18 in "England, N.E." Depressions observed:—No 1 was shown over England on the 14th; it was very shallow, and moved slowly in an easterly direction, at the same time filling up. It caused light or moderate winds from west in the south, from south in the east, from east in the north, and from north in the west. No 2 was shown over the Bay of Biscay on the 17th, and the pressure continued low in that region during the remainder of the period.

# Home Correspondence.

**Abutilons as Bedders and Wall Creepers.**—Abutilons are chiefly recommended for pot culture for flowering in winter, for which purpose they are of great value for supplying the bouquetiste with cut flowers, and also for the embellishment of temperate-houses, where the variety of their flowers and the richness of their foliage render them objects of special attraction in winter. But they must be planted out to be seen at their best as regards size and substance of leaf and flower. They are invaluable for covering the back walls of greenhouses or vineries, and for this purpose alone no better plants could be recommended to amateurs and others, who are frequently at a loss to know how to drape their walls with quick-growing plants. The back wall of a vinery here is covered from top to bottom with handsome leaves and flowers, many of the former being 8 inches in diameter, with flowers in proportion, of such kinds as rosæflorum, Boule de Neige, and several other varieties. The plants are growing in a narrow border not more than 18 inches wide, and were planted out last year. In the subtropical garden I find them equally useful, in fact doubly useful, for we possess no more beautiful plants for the subtropical garden than the variegated forms of the Abutilon, such as A. Thomsoni and A. Darwinii tessellatum. These plants are lifted again in the autumn, and are employed during the winter months for the embellishment of a large conservatory—not scrubby, puny plants, but fine well-proportioned bushes, such as will be found useful for the decoration of large halls, staircases, &c., and which, taken all in all, are not to be surpassed in point of appearance and utility for the commoner purposes of decoration. *Cultivator.*

**Chamæpeuce diacantha.**—Mr. Horsefield need have little fear but that his Chamæpeuce diacantha will ripen seeds, as five plants stood out here through the winter of 1879-80 in an open flower-bed on the lawn without any protection, and last summer they matured a fine crop of seeds from which I have raised a good batch of plants for planting out this spring. It seems to be as hardy as a Scotch Thistle. *A. G., Hadlow Castle, Tunbridge, Kent.*

—— Chamæpeuce diacantha flowered and produced seeds here last summer after standing out unprotected the whole winter of 1879 and 1880. We have now plants growing outside that have occupied their present position since last May. I may remark they will not make bushy ornamental plants a second season, but should be sown annually. *A. S. Kemp, Haughton, Shifnal, Salop.*

—— In dry situations we have found this plant quite hardy, having had some standing out during the last three winters. Those that stood out during the winter of 1879-80 flowered last summer and ripened seed. The flower just before it opens somewhat resembles a Globe Artichoke. *G. Duffield.*

**Blue Wood Anemones.** — The enclosed specimens were found by Mr. Edward Little in a copse about a mile from Tunbridge in Kent, growing in a patch by themselves amongst a large number of those of the usual colour. He failed to find any difference in soil, aspect, or proximity of any peculiar plant, the manure from the decayed leaves of which might have occasioned this marked change of colour. *W. T. T.* [We never saw blue flowers of Anemone nemorosa before. They are nearly as blue as those of A. apennina. Eds.]

**Diosma capitata.**—This fine old-fashioned plant, now almost forgotten, is one of the very best that can be grown for supplying sprays for mixing with cut flowers. It is sweet-scented, and this fact alone should commend it to the notice of those who crave after sprays of Myrtle, lemon-scented Verbena, and such-like, being associated with their cut flowers. I cannot describe the treatment the plant requires better than to state that it will succeed under identical treatment with soft-wooded Heaths, that it roots freely, and is a rapid grower for a plant of a semi-hard-wooded nature. Cuttings taken now of the half-ripened shoots will soon take root, and if potted on, and pinched in, will make nice little plants for grouping, or making up front rows in a twelvemonth from the time of putting in the rootless cutting. A few of the shoots arranged in conjunction with non-scented flowers produces the much-desired odour which is so acceptable in sitting-rooms. *Cultivator.*

**Potato Disease Under Glass.**—I never before had it in early forced Potatos, but this year I have had it in earnest, and it has quite destroyed the crop, although I treated them as I have always done—that is, I made up a bed of good fermenting material of leaves and dung in brick pits, which has retained its heat up to the present time, and a more healthy lot I

never saw until about three or four weeks ago, when they were struck. I have them in five different stages of growth, and they have all taken the disease more or less. Some are totally destroyed, but the most mysterious part of it is that the earliest took it last—that is only a few days ago. I can only account for it in that they are 80 yards from the others, and on higher ground. I have some now just coming through the ground, but I am afraid they will take it. Will some of your correspondents state if they have met with it, or if they have got it this year? *A. W.*

**Slugs.**—These hardy little gentlemen are just now (like gardeners) commencing their busy season in the garden, but with their whole energies directed, as usual, entirely in opposition to those of the said gardeners. As there seems no prospect of our being able to educate them (I mean the slugs) sufficiently to make them useful, I will, with your leave, just mention what I have found the most handy thing for putting a stop to their operations. With freshly slaked lime and a dredger (any sort of canister with some very small holes in the top will do) we have settled many a thousand slugs, a slight sprinkle being sufficient to kill any except the largest; a second dose will generally finish even these. What a pity they cannot be persuaded to confine their attentions to the weeds, that we might be spared the necessity for such wholesale murder. *G. Duffield, Winchmore Hill.*

**Spring Flowers at the York Nurseries.**—These are now very beautiful and pleasing. Coming immediately after the long, hard winter, we seem to appreciate them the more. A short notice of some of the most conspicuous kinds which I saw on looking over the rockwork, herbaceous and alpine borders, will, I doubt not, be interesting. Primula rosea is charming, flowering close to the ground, with its large bright rosy flowers, it is certainly one of the best of all the hardy species. The Italian Primrose (P. marginata) is very fine, especially so on the rockwork, where there are several large masses more than half a yard through. Two varieties have been selected from the type, one with small flowers, blue or slaty-blue in colour; the other with fine large, bold flowers, rosy-purple, having a light centre or eye. Then there are Primula purpurea, and the darker form pulcherrima, which are two capital and useful rock or border plants. P. Dinyana is just about to open its deep rosy-purple flowers. The same may be said of P. Allioni, which is perched high up amongst the huge rocks, to imitate its natural condition of growth. The flowers are very bright, and rest on such short stems, nestling amongst and upon the villose leaves. Scilla sibirica scattered about in masses is very effective; the same may be said of Scilla taurica, which is a little known kind; in habit it resembles S. bifolia, but is in every way larger and more beautiful. Amongst the Daffodils I noticed scattered about N. minimus, N. minor, and N. cernuus, which were very pleasing, contrasting well with other foliage and flowers. One is accustomed usually to see isolated plants of such things as Androsace carnea, and its sister form eximia, but here they may be seen in quantity; and what beautiful spring flowers they are. I have tried them in various kinds of soils, but since imitating as far as possible the conditions under which I have found them in a wild state they have grown well. One-third fibrous loam, and two-thirds hard fibrous peat, with a liberal addition of white sand, suits them the best. If the plants are in pots, I find it a good plan to shelter them from excessive rain and snow during the winter. Hutchinsia alpina with its snow-white flowers is desirable for rockwork. Saxifraga cariophylla is also good. For the past week or ten days Anemone blanda has formed and is still one of the most attractive objects both on the rockwork and in the borders, the flowers are so large and deep in colour. Its companion, A. apennina, is just commencing to unfold its pale blue petals and bids fair to be equally beautiful. Omphalodes verna, the creeping Forget-me-not, and its white variety, are now lovely; no garden should be without this charming plant, which is as easy to grow as a weed. Then there is the spring Heather, Erica carnea, which is here in immense sheets festooning the rocks and banks with bright green and studded over at this season with millions of its rosy, black-tipped flowers. The white variety, E. carnea alba, is well worth having. Alyssum podolicum, hanging in a large mass from between two rocks, resembles a little patch of snow. Another bulbous plant, which is extremely beautiful, is Fritillaria Moggridgei, with large drooping bells of bright orange blossoms checquered more or less with brownish crimson internally. Daphne Blagayana is a pretty rock shrub with aggregate clusters of creamy white fragrant flowers. Speaking of rock shrubs, what a fine evergreen bush Daphne neapolitana forms; there is one here nearly a yard through: it is planted in a sunny position, and after the two last severe winters not a leaf is injured. It unfortunately is not a profuse flowerer, nevertheless it forms an ornamental object. There are some fine kinds of Lungwort here: Pulmonaria azurea is dwarf and neat for rockwork with drooping heads of deep blue flowers; the same may be said of P. villaria [What is this?] but the flowers are more of a reddish-blue. P. angustifolia is a large-growing kind with blue flowers; P. sibirica has deep blue flowers and handsomely spotted leaves; but the most beautiful Lungwort which I have ever seen is one grown here, of the name of which Mr. Backhouse is not certain, so that at present it is grown and distributed minus a name. It is an erect grower with clear, large, blue flowers which are borne in aggregate erect clusters. Corydalis cava albiflora is a capital white Fumitory. Chionodoxa Luciliæ has been charming but is now rapidly passing out of flower. There are several species of Botryanthus or Muscari which are well worthy of notice, viz., M. rupestris, sky-blue; M. paradoxa is a sort of black-blue; M. pallens and M. Heldreichii are useful and showy. Then there are the Dog's-tooth Violets (Erythronium dens-canis), pink, rose and white varieties. E. giganteum is strong and vigorous, and has a good show of flower-buds. In the boggy part of the rock garden I noticed a large mass of Saxifraga aromatica, which is a useful kind with bright green foliage and large snow-white flowers. *R. Potter, Holgate, York.*

**Saxifraga lantoscana.**—Your illustration of this lovely plant is good, and will give especially great pleasure to all those who may have been so lucky as to see the plant in its natal place. I strongly adhere to the opinion of the gallant authors (Boissier and Reuter) that it is a distinct species. This species grows as low down on the southern side of the Alps as Saxifraga cochlearis, Rchb., where the genuine Saxifraga lingulata never grows. That is the fine ornament of the high peaks of the dolomite, and may even now be seen here and there in its original beauty. Never can I forget the magnificent sight of hundreds of such plumes moved by the wind, growing with Primula marginata and Anthyllis montana, when first I came to the top of the Col de Tenda, on July 17, 1843. Now those rocks are destroyed to make the road. On the northern side one may meet with Saxifraga lingulata rather [lower] down, as under the Cima di Salanta, on the Boaira (not the Boaira of Val San Giovanni). On the southern side the single low prominence is near the Madonna de la Vicura. Boissier and Reuter were decidedly right in regarding this, the dark leaved plant, as that of Bellardi, as this author quotes it "in valle Pisii, in montibus Limoni aliisque locis alpium Monregalensium." I wish to allude to the fact that the wants and habits of life of the two species appear totally distinct. We have grown for years the genuine old S. lingulata without the least success in the Hamburgh Botanical Garden. On the contrary, I do not know of any Saxifraga (Aizoon included) that is easier to grow and to flower than Saxifraga lantoscana. A little mass gave seven spikes, and it flowers every year in profusion. My typical specimen, given me by my late friend Reuter, a glorious thing as to development, is inscribed: "Cultivée sur ma fenêtre." Now try to grow Saxifraga lingulata on your *fenêtre;* you may have to wait *calendas græcas usque.* I may state at once that Saxifraga cochlearis, Rchb. f., is regarded by me as a totally distinct species, too. It makes just such round masses as Potentilla Saxifraga, though even more compact. There is a variety with shorter and one with longer petals, both covered on the peduncle with glandular hairs, and never to be seen in the high Alps. *H. G. Rchb. f.*

**Early Birds**—It may possibly interest some of your readers to learn that the cuckoo was seen and heard here for the first time this year on Sunday, the 17th, and the swallow on the 9th inst. *J. Horsefield, Heytesbury, Wilts.*

**Abutilon Thomsoni and Ricinus Gibsoni.**—One of the most pleasing and attractive beds of fine-foliage plants that we had last year was planted with the above, and margined with a broad band of Alternanthera magnifica. When seen from a distance, such a bed has a most charming and telling effect. To maintain anything like symmetry of growth between the Abutilon and Ricinus, the latter, after a certain stage, requires to be freely pinched back. Should Mr. Sheppard carry out his present intention of planting out the two together, he will, I feel sure, be highly pleased with the result. *J. Horsefield, Heytesbury.*

**Setting Boilers.**—A few weeks ago you were kind enough to insert in your columns a short paragraph, in which I asked Mr. T. Christy to kindly explain how he accounted for the more successful working of a saddle boiler when set on four courses of bricks than when set on two courses above the furnace bars, as recorded by him in a previous number. Perhaps Mr. Christy has not observed my note, or has been too busy to reply, as no answer has appeared. I must therefore ask you to kindly enlighten me on this subject. What puzzles me is, how is it possible a higher temperature can be obtained when a boiler is so set that the hottest part of the fire (and of necessity sometimes the whole of the fire) is in contact with bricks, instead of the boiler, than when set in what I believe to be the usual way—that is, right down on the bars. You will, I feel sure, allow that this is not an unimportant subject, for unless Mr. Christy has made some mistake there are a great many saddle boilers wrongly set. *G. Duffield, Winchmore Hill.*

**Double Flowers.**—Now and then double flowers will revert to the single form, and it is then, I believe, invariably shown that as far as the Primula family are concerned they all originate in thrum-eyed flowers. I have now single white Primroses reverted from the double. I once had single lilac Primroses, also reverted; whilst the Scotch red kind always shows single blooms early in the season, and all have or had thrum-eyes. The beautiful auriculæflora I am disposed to think is a reversion from the double crimson, as its origin has never yet been shown, whilst it exactly resembles the double in colour and leafage. Putting these things together, we must conclude that good single Primroses of various hues were in existence long ago, as from these the old Dutch florists must have originated the doubles we now have. I think this same feature will be found in all Chinese Primroses, so that the first step in the production of double flowers in these kinds must be sought for in thrum-eyed flowers. The conversion of the stamens into petals, and thus converting the pollen-bearing anthers into barren inflorescence, is a curious feature, and one I hold to be more the product of constant high cultivation and abnormal development than of hybridisation. Perhaps it might be more truly termed the outcome of that sportive faculty that is almost common in many plants. We do not find this tendency to produce double flowers a common one with wild plants; most of these, in spite of the fact that they are almost universally visited by insects, rarely change character. It is only when brought under the influence of the florist's cultivation that the abnormal development of excess of floral petals is manifest. The wild Primrose universally remains a single Primrose to this day, so also does the Violet; but where both have become garden flowers both have produced double flowers in comparative abundance. *A. D.*

**Herbaceous Plants that will Furnish Flowers for Cutting.**—A correspondent at p. 477 appears to attach but small importance to the value of these plants as producers of flowers for cutting. Now I had for many years to keep up a constant supply of cut flowers, and I fancy I must sometimes have felt at a loss in spring and early summer, when winter-blooming stove and greenhouse plants, as well as forced flowers had become scarce, if I had not had hardy herbaceous plants to fall back upon. It must, however, be admitted that the present season is in all respects a very late or backward one, and no doubt most spring flowers will be found to be at least a fortnight later than they are in ordinary seasons. I will, however, try to name a few hardy bulbs and herbaceous plants which I have found to be very useful for cutting to fill glasses, vases, &c. As you have said, "some of the Hellebores are showy, and produce flowers very freely," and I may add very early in the season, and most of the flowers keep well in water. Nothing can be more desirable than the various kinds of Violets and the many beautiful varieties of coloured Primroses and early Pansies, as well as the flowers of the single and also the various varieties of double German Wallflowers and Stocks, whose blooms have also the advantage of being exceedingly fragrant. There are also the numerous species and varieties of the Anemone, such as A. hortensis, A. fulgens, &c., Solomon's Seal, and Lily of the Valley, together with the beautiful Dielytra spectabilis, one of the most graceful of herbaceous plants, which only requires a slight protection of some kind to prevent its young shoots being injured by spring frosts, from which it generally suffers; but the plant nevertheless usually makes successful efforts, even then, to produce its pretty flowers; only they necessarily come at a later period of the season. Some of the hardy species of Geranium are also useful for cutting, such as G. pratense, with its pretty pale blue flowers. There are also many varieties of the mule and the common garden Pink, the Carnation, and the Picotee, together with the endless varieties of the homely but none the less beautiful Sweet William; and as the season advances, the various species and varieties of Delphinium, late Phloxes, and the rich blue Aconitum japonicum, &c. Among early or spring flowering bulbs I should have mentioned the Sternbergia lutea [often autumn blooming], Bulbocodium vernum, the Snowflake, the Daffodil, Dog's-tooth Violet, Hyacinths of all shades of colour, the pretty little blue Scilla, the Triteleia uniflora, the sweet-scented Jonquil, and Narcissus Campernelli, N

poeticus, and its double variety, whose blooms are as fragrant as that of the Gardenia, which they very much resemble. And for a later supply, the Alströmerias and the Gladiolus are also very useful for cutting from, as are the blooms of many early flowering hardy trees and shrubs, such as the Mezereum, Forsythia, Deutzia, Cytisus, Honeysuckle, Chimonanthus fragrans, Ribes atrosanguineum, Magnolia fuscata, Coronilla Emerus, Kerria japonica, &c. Many hardy annual plants are also very useful for the purpose of furnishing suitable flowers for cutting, such as the varieties of Dianthus Heddewigi, Larkspurs, the French and African Marigolds (if not objected to on account of their scent), Sweet Peas, Mignonette, and the various and exceedingly beautiful varieties of the Phlox Drummondi, Rhodanthe Manglesii, and many other everlastings, Scabiosa atropurpurea, and the beautifully veined flowers of the Salpiglossis variabilis, which are well adapted for placing in glasses, &c.; while there are also the fine double blooms of the Zinnia elegans of all shades of colour, which have the property of keeping fresh in water for a long time. Many other hardy plants might be enumerated as useful for the purpose of furnishing flowers for cutting at nearly all seasons of the year, with the exception of midwinter, or when the soil is frost-bound, or covered with snow. *P. Grieve.*

**Spring Flowers at Rose Cottage, Painswick.**—All true lovers of alpine plants have some idea of the choice collection existing on this somewhat remote side of the Cotswolds, and those of my readers who are more intimately acquainted with Mr. Atkins will know well his ardent love for these plants. The choicer and rarer alpines seem to be the special delight of Mr. Atkins, with whom they may be said to grow with such freedom as to make them hard to recognise at first sight. While visiting there a few days since I was delighted with many a fine tuft of Saxifrage, masses of the netted Iris, I. reticulata, a gem among spring flowers; a bed with some 200 of its flowers was grand in the extreme; beyond its lovely colour and its lasting period of flowering it has the good quality of being deliciously scented as of Violets, which is by no means a common occurrence in the genus Iris; Crocus Imperati, planted *en masse*, still bore marks of having been smothered with bloom. The compact form of Scilla sicula was finely in flower, and is most beautiful, shaded with pale blue on a light ground. A dwarf and early form of the hoop-petticoat Narciss was also flowering; the flowers are smaller than those of N. corbularia conspicua: beyond this and its early flowering I can trace no difference, the colour being the same. N. minor (Linnæus), a dwarf and early flowering variety, was at its best, and the same may be said of N. bicolor Empress, a fine bold-habited plant of great beauty. Hepaticas in variety were very pleasing in masses, the most distinct among single blues being H. angulosa. Ficaria grandiflora, with bright golden-yellow flowers, which are produced in abundance in early spring, are most attractive, and well suited for a moist situation. Cheiranthus tristis, "the night-scented Stock," is flowering in the cold frame where it has been wintered; and near by, in the same frame, a plant of Ficus minima had survived the past winter. To me this is as astonishing as it is true. I have been aware for years of its doing well in a cool greenhouse, but never knew it to stand such a winter as the past has been. Galanthus plicatus had been remarkably fine. Pulmonaria dahurica, in cold frames, were pushing up strong; and near this a fine batch of Houstonia cœrulea were growing well, with many flowers opened. Among other rare plants, Omphalodes Luciliæ seems to grow with amazing rapidity, both in pots and on the rock. Anemone ranunculoides was just opening its bright yellow flowers; Saxifraga oppositifolia and its varieties were just passing: these are represented in exceedingly fine tufts. Among Saxifragas of the crusted section are S. Burseriana, S. juniperina, S. cæsia, S. cæsia major, S. squarrosa, S. aretioides, S. Rudolphiana. S. diapensoides and others equally rare were all in fine clumps plunged in gravel of a loamy nature in a frame; S. calyciflora was represented largely and looking well; S. primulina (Atkins) is a distinct and pleasing plant, S. flagellaris, with small yellow flowers, and many more. Androsace sarmentosa was in abundance on the rock, besides which are a variety of Campanulas, Helianthemums, Dryas octopetala in fine tufts just sending up its young foliage; Tropæolum polyphyllum was springing up in all directions, and will form a striking mass when in flower. A noted feature not to be overlooked is the mass of European Cyclamens which abound here, many clumps 2 feet across, with large and abundant foliage, are very striking. In a cool house some huge plants of Kniphofia caulescens attracted my notice, in which house also Trillium grandiflorum var. was flowering. Protected by a square handlight from the keen biting winds was a strong plant of Helleborus odorus (true), and which is exceedingly rare; Jeffersonia diphylla was just pushing through the ground, and Primula rosea was nicely in flower. Such are a few among the many little gems here to be met with, all seeming to enjoy the best of health, and each favoured with a situation likely to suit its after-requirements, which is probably one of the greatest secrets of alpine cultivation. *J.*

**Pinguicula Bakeriana.**—At the last meeting of the Royal Horticultural Society a very beautiful plant

Fig. 102.—PINGUICULA BAKERIANA.

Colour rosy-lilac; habit of plant reduced; flowers and buds natural size.

was exhibited under this name by Mr. Sander, of St. Alban's. The leaves are in rosettes, as in a Sempervivum, stalked, spoon-shaped, covered with glandular hairs, which doubtless exercise the same solvent faculty on insect and other animal tissues that the

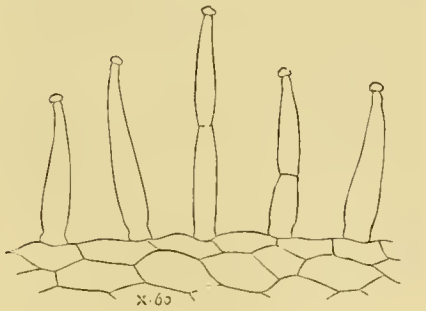


Fig. 103.—GLANDULAR HAIRS ON LEAF, ENLARGED 60 DIAM.

other species do. The flowers remind one at first sight of those of Masdevallia Lindeni as to colour, but of course in structure they are widely different. We believe the plant comes from Central America. There seems to be some doubt as to its specific identity, on which account we defer botanical description till further information is available, and adopt for the present the name under which it was shown.

**The Conifers at Dropmore.**—I am able to bear out Mr. Frost's statement as to the well-doing of the Deodar at Dropmore. The equals of these specimens are rarely to be met with, at the same time my experience confirms the opinion of "H. K." and "J. S." Planting annually large quantities of all kinds of Coniferæ and other trees, in varied positions and aspects, I have invariably found the Deodar suffer more than the majority of Conifers, and numbers of them in this neighbourhood from 1 to 25 feet high have been destroyed by the severe weather of the past two winters. But still, plant a Deodar properly in a suitable position, and it will repay you with (as "J. S." says) "its silver-grey colour and gracefully pendulous branches;" add to this thousands of beautiful cones, as seen on the Dropmore trees annually, and then we have such an ornamental tree as cannot be spared from our gardens. I enclose photos of the Dropmore Araucaria and Douglas Pine; the dimensions of the former were given at p. 339. *T. Bevan, Landscape Gardener to Wm. Cutbush & Son, Highgate.*

**Triteleia uniflora.**—I doubt whether this pretty Buenos Ayres plant is as generally cultivated as it deserves, either for winter-flowering in pots or as a hardy spring-flowering bulb. Its delicate white flowers slightly washed with violet are most useful for small bouquets. A tuft that has stood the last winter with no other protection than the snow is now flowering freely with me, and it is mainly for this reason that I recommend it to the notice of those not already acquainted with it. Moreover, an additional merit is that the bulbs are not expensive, but quite within the reach of the great majority of window gardeners. *E. S. Dixon.*

**Fruit Prospect in South Wilts.**—As the result of a fine autumn and a somewhat late spring, the fruit crop of 1881 is a most promising one, and in the event of our not being visited by frosts in May, it will be a bountiful year of fruit all round, excepting perhaps Apricots. Trees growing in various situations, and under different modes of training, are covered with blossoms, which are large and strong. Amongst Pears the following varieties are studded with blossom, viz.:—Jargonelle, Louise Bonne of Jersey, Marie Louise, Glou Morceau, Beurré de Capiaumont, Josephine de Malines, Easter Beurré, Winter Nelis, Ne Plus Meuris, Van Mons Léon le Clerc, Prince Albert, Duchesse d'Angoulême, Dunmore, Grosse Calebasse, Uvedale's St. Germain, Nelis d'Hiver, Monsieur le Curé, Jean de Witte, Williams' Bon Chrétien, Winter Bon Chrétien, and Bon Chrétien Fondante. Plums, too, are showing blossom splendidly, amongst which are included Green Gage, Coe's Golden Drop, Columbia, Jefferson's, Drap d'Or, Reine Violette, Reine Claude de Bavay, Guthrie's Apricot Plum, Orleans, Red Magnum Bonum, La Délicieuse, and Kirk's Plum. Peach and Nectarine trees are also well covered with blossoms, which perhaps are not so large and strong as could be desired. The Morello Cherry trees will in a few days be one sheet of blossom. The Apple crop, perhaps the most important fruit crop of any, also promises, with bush fruit, to be an abundant one. *H. W. Ward, Longford Castle.*

**Pumpkins.**—The great scarcity of fruit suitable for making preserves for use during the past winter has no doubt made itself severely felt in most families, and therefore many will, no doubt, be glad to learn that they may fill their jam-pots with an excellent substitute made from the Mammoth Gourd, or any large kind of Vegetable Marrow they may think proper to grow. The former, however, is greatly to be preferred on account of its being more solid and fruity, and the flesh of a better colour, in which respect it is almost equal to Apricots, with which it is said it is sometimes largely used for the purpose of adulteration. Be this as it may I can only say that for years past Pumpkin preserve has been the principal sweet used in my house, and to which we have formed a strong liking, so much so that I should greatly miss it, as with boiled rice or plum puddings made with that grain it is simply delicious, and also in tartlets, or indeed for any of the purposes and nick-nacks to which jam is put. It may be asked, Why take up a subject of this kind now? But as the advice is, First catch your hare, &c., so in like manner the Pumpkin must be grown before the preserve can be had. The first preliminary, then, towards this part of it will be to get the seed and sow in any warm frame or house, where the plants, when they come up, can have plenty of light, and be nursed on till towards the end of May, when it will be safe to turn them out under the shelter of hand-glasses or the protection of a few Laurel branches stuck in around them so as to keep off the wind and cold till they get a fair start. A rubbish-heap, an old spent hotbed or other heap of decomposed rich material of that nature is the best place to plant, and if the roots can be accommodated in that way it matters not where the tops run. These may be trained over an arbour, shed, or hedge or to

cover any unsightly object, where its huge leaves and enormous sized fruits are sure to command notice and be objects of interest. During summer all the attention plants of it require is to keep them well supplied with water or sewage, the latter being preferable, as they are gross feeders, and will take it strong and in unlimited quantities. With liberal doses of liquid manure and plenty of loose rich soil to ramble in, it is surprising the dimensions fruit of these Gourds will attain to. In favourable summers I have known them to grow as large as to measure near 8 feet round, and to turn the scale at 200 lb., so that some idea may be formed of the appearance such a gigantic rich-looking Pumpkin would present in the autumn. When grown to anything like this size the flesh is very thick and solid, and the rind of a reddish-orange colour, handsomely netted. In preparing the fruit for preserving, this should be trimmed off, and any soft spongy part where the seeds are embedded cut away, and the remaining portion chopped up into pieces about the size of dice and weighed. If wanted to keep long, the usual amount of sugar necessary for other preserves must be used, and for flavouring, either Oranges or Lemons according to taste. These may be simply cut in halves and boiled with the jam in that way and taken out after, or minced up fine that the rind may be eaten. Ginger likewise imparts an agreeable flavour without the Oranges or Lemons, and by using essences much variety may be afforded to suit different palates. *J. S.*

## Reports of Societies.

**National Auricula (Southern Section):** *April* 19.—The annual exhibition of the Southern Section of this useful Society was held on Tuesday, in the conservatory of the Royal Horticultural Society, at South Kensington, and judging by the excellent attendance of visitors in the afternoon, and the great interest which most appeared to take in the quaint and beautiful flower in whose honour the exhibition was held, it would seem that its promoters and managers were beginning to reap an increased measure of support from the outside public, and which we hope may continue. The exhibition on the whole was not so good as that of last year, the flowers, though quite as numerous, showing the effects of the severe winter and long-continued cold spring weather in their coarser floral garb. Last year the level of quality was high, but on this occasion the flowers were almost universally rough, and many sorts were but mere shadows of themselves at their best. Of novelties there were very few, the Rev. Mr. Horner not being in a position to bring up but a few of his seedlings, and the plants of several other growers not being forward enough. It was, however, another feather in the cap of Mr. Douglas that one of his seedlings, shown for the first time, should have been good enough to take the prize for Premier. We append the prize list:—

### Auriculas.

*Twelve, dissimilar.*—1st, the Rev. F. D. Horner, Kirkby Malzeard, Ripon, with Lancashire Hero (Lancashire), C. J. Perry (Turner), Erebus (Horner), a grey-edged seedling (Horner), Ringdove (Horner), John Simonite (Walker), Heroine (Horner), Intrepid (Horner), George Lightbody (Headly), Frank Simonite (Simonite), Ajax (Horner), and Snowdrift (Horner). 2d, F. Whitbourn, Esq., Loxford Hall, Ilford (Mr. Douglas, gr.), with Smiling Beauty (Heap), C. J. Perry, Lancashire Hero, Mabel (Douglas), a very fine grey-edged seedling; Silvia (Douglas), Pizarro (Campbell), a white-edged seedling; Glory (Taylor), Acme (Reid), and a grey-edged seedling. 3d, Mr. Ben. Simonite, Rough Bank, Sheffield, with Mrs. Douglas (Simonite), purple self; Frank Simonite, Ringdove, John Simonite, Pizarro, Mrs. Dodwell (Simonite), white-edged; Anna (Traill), Richard Dean (Simonite), Freedom (Booth), George Lightbody, and a green-edged seedling. 4th, J. T. D. Llewelyn, Esq., Penllegare, Swansea, with Lord of Lorne (Campbell), Imperator (Litton), Grey Friar (Llewelyn), C. J. Perry, Smiling Beauty, Regular (Ashworth), General Neil (Trail), Ensign (Turner), a dark maroon seedling self; Catherina (Summerscales), George Lightbody, and Complete (Sykes).

*Six, dissimilar.*—1st, the Rev. F. D. Horner, with Frank Simonite, Phantom (Horner), grey-edged; Pizarro, Sapphire (Horner), Lancashire Hero, and Ajax. 2d, Mr. James Douglas, with Prince of Greens (Trail), Frank Simonite, Lancashire Hero, George Lightbody, a claret-coloured seedling self, and a large white-edged seedling. 3d, Samuel Barlow, Esq., Stake Hill House, Castleton, with Pizarro, Lovely Ann (Oliver), Samuel Barlow, green-edged; Ringdove (Horner), Frank Simonite, and a green-edged seedling. 4th, R. K. Penson, Esq., Dinham House, Ludlow, with Beauty (Trail), Topsy (Kay), Glory, Robert Trail (Lightbody), Colonel Taylor (Leigh), and Lancashire Hero. 5th, J. T. D. Llewelyn, Esq., with Highland Queen (Horsefield), Meteor Flag (Lightbody), George Lightbody, Lord of Lorne, Acme, and Earl of Errol (Dickson).

*Four, dissimilar.*—1st, R. K. Penson, Esq., with Colonel Taylor, George Lightbody, True Briton (Hepworth), and Vulcan (Sims). 2d, Mr. James Douglas, with Colonel Taylor, C. J. Perry, Glory, and George Lightbody. 3d, Mr. B. Simonite, with John Simonite, Ellen Lancaster (Pohlman), Frank Simonite, and a green-edged seedling. 4th, S. Barlow, Esq., with Alderman C. E. Brown (Headly), Blackbird (Spalding), Beauty, and Anna. 5th, J. T. D. Llewelyn, Esq., with Glory, G. Lightbody, Colonel Taylor, and Garland (Smith).

*Two, dissimilar.*—1st, Mr. J. Douglas, with Smiling Beauty and Lancashire Hero. 2d, Mr. B. Simonite, with Frank Simonite and Brilliant, a dark maroon self, 3d, the Rev. F. D. Horner, with Ringdove and Lancashire Hero. 4th, R. Gorton, Esq., The Woodlands, Gildabrook, Eccles, with Robert Trail and C. J. Perry. 5th, R. K. Penson, Esq., with Topsy and Robert Trail. 6th, Mr. J. E. Hay, Newcastle-on-Tyne, with Beauty and a seedling green-edged flower.

*Single Specimens: Green-edged.*—1st, the Rev. F. D. Horner, with Lancashire Hero. 2d, R. K. Penson, Esq., with Prince of Greens. 3d, Sam. Barlow, Esq., with King of Greens. 4th, R. K. Penson, Esq., with Talisman. 5th, Mr, B. Simonite, with a seedling. 6th, Mr. J. Douglas, with Lancashire Hero. 7th, Mr. Douglas, with Colonel Taylor. 8th, the Rev. F. D. Horner, with Lancashire Hero.

*Grey-edged.*—1st, R. K. Penson, Esq., with George Lightbody; Mr. Douglas 2d, with George Lightbody; 3d, with Alexander Meiklejohn (Kay); 4th, with Dr. Horner (Reid); 5th, with George Lightbody; 6th, with Alderman C. E. Brown, and 7th, with George Lightbody. 8th, R. K. Penson, Esq., with Confidence (Campbell).

*White-edged.*—Mr. Douglas 1st, 2d, and 3d, with Smiling Beauty; 4th, Mr. B. Simonite, with Trail's Beauty; 5th, R. K. Penson, Esq., with True Briton; Mr. Douglas 6th and 7th, with Smiling Beauty, and 8th with Ann Smith (Smith).

*Selfs.*—1st, R. Gorton, Esq., with Blackbird; 2d, R. K. Penson, Esq., with Lord of Lorne; 3d, R. Gorton, Esq., with Blackbird; 4th, S. Barlow, Esq., with Blackbird; 5th, R. Gorton, Esq., with Miss Bainey, a seedling in the way of Vulcan, but smaller in the pip; 6th, Mr. Bolton, with Lord of Lorne; 7th, Mr. B. Simonite, with Pizarro; 8th, Rev. F. D. Horner, with Daphne (Horner).

*Fifty Plants, not less than Twenty Varieties.*—1st, Mr. James Douglas, with a capital and well varied group, including amongst others Metropolitan (Spalding), Silvia, Dr. Horner, Admiral Napier (Campbell), True Briton, John Waterston (Cunningham), Prince of Wales (Ashton), Lady Sophia Dumaresque, Campbell's Green-edge, Complete, Taylor's Glory, Eliza (Sims), Lady Sale (Smith), Alderman Wisbey (Headly), Marie (Chapman), Ne Plus Ultra (Smith), and a number of seedlings. 2d, Mr. Turner, with a bright, showy collection, containing several duplicates of C. Perry, and Colonel Champneys (Turner); Unique, Topsy, Vulcan, Ann (Sims), Pizarro, Lord Clyde (Lightbody), Meta (Turner), Clipper (Turner), Matilda (Dickson), Sultana (Turner), Bessy Bell (Spalding), Peverel of the Peak, and Mary Ann (Fletcher). 3d, J. T. D. Llewelyn, Esq., with many of the above-named sorts, and Lady Ann Wilbraham (Oliver), Corona, a claret-purple self; Grey Friar, Ashworth's Regular, Frank Simonite, Meteor Flag, &c.

### Alpine Auriculas.

*Twelve, dissimilar.*—1st, Mr. Chas. Turner, with Diadem (Gorton), and Mariner, Mrs. Dodwell, Mrs. Llewelyn, Unique, Mrs. Thomson, Evening Star Rembrandt, and four seedlings, all of his own raising. 2d, J. T. D. Llewelyn, Esq., with Dolly Varden (Turner), Evening Star, Unique, Ovid (Gorton), Distinction (Turner), Elcho (Turner), Mrs. Meiklejohn, and five seedlings. 3d, Mr. James Douglas, with Sensation (Turner), Beatrice (Turner), Mrs. Dodwell, Queen Victoria (Turner), Diadem, Mrs. Llewelyn, Flora (Douglas), George Lightbody (Turner), Mrs. Meiklejohn, and three seedlings.

*Six, dissimilar.*—1st, Mr. James Douglas, with George Lightbody, Queen Victoria, Mrs. Llewelyn, and three seedlings. 2d, Mr. Turner, with Mrs. Thomson, Mariner, Distinction, Sensation, Marginata, and a seedling. 3d, Mr. E. Adams, Swalwell, Newcastle-on-Tyne, with Col. Scott (Turner), George Lightbody, Diadem, Brilliant (Turner), Mercury (Turner), and Slough Rival (Turner). 4th, J. T. D. Llewelyn, Esq., with Queen Victoria, Diadem, Bronze Queen (Turner), Mercury, Mrs. Meiklejohn, and Mrs. Llewelyn.

*Single specimens, Gold centre.*—Mr. Turner, 1st and 2d, with Diadem, and a seedling, maroon ground with shaded edge. 3d, Mr. Adams, with Col. Scott. 4th, Mr. Turner, with President (Turner). 5th, Mr. Douglas, with a seedling much in the way of Alex. Meiklejohn, but not so large. 6th, the Rev. E. L. Fellowes, with Diadem.

*White or Cream centre.*—1st, Mr. Douglas, with a seedling. 2d, Mr. Turner, with Philip Frost. 3d, Mr. Douglas, with a seedling; 4th and 5th with George Lightbody, and 6th with Selina (Turner).

### Polyanthuses.

*Six, dissimilar, Gold-laced.*—1st, S. Barlow, Esq., with John Bright, Harbinger, Sunrise, Criterion, Firefly, and a seedling, all of his own raising. 2d, Mr. James Douglas, with George IV. (Buck); Rev. F. D. Horner (Jackson), Exile (Crownshaw), Cheshire Favourite (Saunders), Lancer (Bullock), and President (Hilton). 3d, Mr. W. Bolton, with Cheshire Favourite, President, Exile, Earl of Lincoln (Cox), and two seedlings.

*Three, dissimilar.*—1st, Mr. Douglas, with Lancer, Cheshire Favourite, and George IV. 2d, Mr. W. Bolton, with Cheshire Favourite, George IV., and Lancashire Hero (Whittaker). 3d, S. Barlow, Esq., with President, Firefly, and John Bright.

*Single Specimens.*—1st, Mr. Douglas, with Exile. 2d, S. Barlow, Esq., with John Bright. 3d, Mr. W. Caudwell, Wantage, with George IV. 4th, J. T. D. Llewelyn, with Lancashire Hero (Whittaker). 5th, S. Barlow, Esq., with Sunrise; and 6th, with Lancashire Hero (Yates).

### Fancy Auriculas and Polyanthuses.

*Twelve, dissimilar, Fancy Auriculas.*—1st, S. Barlow, Esq., with a dozen seedlings, all yellow grounds, with white centre. 2d, Mr. W. Bolton, with a similar group, showing more variation in the ground colours.

*Twelve, disimilar, Fancy Polyanthuses.*—1st, Mr. R. Dean, Ranelagh Road, Ealing, with a very bright lot, varying in colour from white to buff, yellow, primrose, mauve, violet, rose, crimson, and maroon. 2d, Mr. F. Hooper, Bath; and 3d, Mr. Douglas.

*Twelve, dissimilar, Double and Single Primroses.*—1st, Mr. R. Dean; 2d, Mr. H. Hooper, Bath.

*Twelve hardy Primulas.*—1st, Mr. Douglas, with well-flowered representatives of P. cortusoides, P. Munroi, P. intermedia, P. marginata, P. rosea, P. sikkimensis, &c. 2d, J. T. D. Llewelyn, Esq.; 3d, S. Barlow, Esq.

*Premier Auricula.*—Mr. J. Douglas, seedling grey-edged, Mabel.

### Prizes for Seedlings.

New Auriculas were not quite so numerously shown as last year, Mr. Horner, unfortunately, not being able to show his best seedlings. Beginning with the green-edged class, S. Barlow, Esq., gained the 1st prize with King of Greens, tube rather pale, maroon ground colour, like Champion, pure white paste, and good green-edge. Rev. F. D. Horner was 2d with Intrepid, a very good flower with yellow tube, paste pure and good, black body colour, and rich green edge; some persons thought this a better flower than King of Greens, but it was scarcely fully developed. In grey edges there were some very good flowers exhibited, notably Mabel (First-class Certificate), from Mr. J. Douglas, which gained Premium as the best Auricula in the exhibition, and 1st prize as the best seedling grey edge. It has a neat truss, like George Lightbody, good yellow tube and dense paste with a very well shaped petal. Mr. Douglas also gained the 2d prize for Hilda, a large flower of the George Lightbody type, with the size and quality of a good Alexander Meiklejohn.

In the white-edged class the Rev. F. D. Horner gained the 1st prize and a First-class Certificate with Snowdrift, a large circular flower, remarkable for its full white edge, black body colour, and dense circular white paste. Mr. Douglas gained the 2d prize with Dr Kidd, a seedling from Smiling Beauty.

In selfs the Rev. F. D. Horner was 1st, with Erebus quite a black-edged flower, medium size, beautiful white centre, and gold tube. 2d, Mr. Simonite, with Brilliant a seedling from Duke of Argyll, but a more richly coloured flower, deep reddish-crimson, white centre and beautifully mealed foliage.

Alpines, yellow centres.—Mr. J. Douglas gained the 1st prize with Rosamond S. Fellowes, a good dark shaded-edged flower, deep crimson shading to red. The same exhibitor gained the 2d prize with Minnie Cooper maroon-crimson shading to reddish-brown. In white or cream centres Mr. Charles Turner gained the 1st prize with Mrs. Stafford, a good round flower, maroon-purple shading to deep purple; and Mr. J. Douglas was 2d with Edith Wynne, cream centre, purplish-maroon shading to purple.

There was a grand set of seedling Polyanthuses from S. Barlow, Esq., who gained 1st and 2d prizes respectively for Criterion, perhaps the best Polyanthus yet raised, the centre round deep yellow, colour rich deep maroon, the lacing very correct. John Bright was 2d to it, although it is a grand flower, it lacks a point in its angular centre. They both received First-class Certificates, which they well deserved. In the red-edged class Firefly gained the 1st prize. It is not of such good quality as Sunrise, but is distinct, with deep yellow centre, and correct lacing. Mr. W. Bolton gained the 2d prize with Regular, a small neat flower, of good quality, round centre, and correct lacing.

Mr. R. Dean gained a First-class Certificate for fancy Polyanthus Grenadier, a brilliant red flower with yellow centre; very showy.

In addition to the Auriculas there was a nice display of stove and greenhouse plants, contributed by various nurserymen, including a very fine lot of pot Roses and forced Rhododendrons from Messrs. Lane & Son; a capital group of flowering and fine-foliaged plants, Orchids, &c., from Mr. B. S. Williams; a smaller group, but similar in character, from Messrs. Veitch & Sons; a showy bank of flowers from Mr. Aldous, who also exhibited a handsome bouquet of Narcissus bicolor, and a pure yellow-flowered form, mixed with a few Fern fronds. It was very much admired and highly commended. Mr. R. Dean sent a choice lot of hardy spring flowering plants, and Mr. H. Hooper, of Bath, several stands of Pansies. Mr. Turner sent from Slough a pretty group of half-standard Azaleas, admirably flowered; and Mr. Heims, gr. to F. A. Philbrick, Esq., Q.C., Old Field, Bickley Park, showed two grandly spotted varieties of Odontoglossum Alexandræ, and one of them, the variety Andersonianum, was especially rich in its ground colour.

**Scottish Horticultural Association:** *April* 5.—The ordinary monthly meeting of this Association was held in 5, St. Andrew Square, Edinburgh—the President, Mr. John Downie, in the chair. There was a good attendance of members.

In opening the fifth session of the Association the President congratulated the members on the great amount of work they had been enabled to accomplish under the presidency of his predecessor, Mr. Dunn. The Association had now reached a position of considerable stability, and was destined to take a still larger hold on the gardening profession of the country. He esteemed it a great honour to follow Mr. Dunn in the presidency, and although he could not speak so well as he on the exhibits which came before them, yet he would do his best to prove himself worthy of the confidence they had been pleased to place in him.

Mr. Geo. Oliver, Royal Botanic Gardens, then read a paper on "Insects Destructive to Plant Life." Their different stages of development, their nourishment, propagation, and duration were the principal points to be learned by the horticulturist. Insects in general are produced from eggs, a few species, such as the greenfly and cockroach, in which the eggs are developed in the body of the mother, are termed viviparous. Some people erroneously believe that greenfly and other garden pests are propagated or spread about by certain winds or states of the air, mysteriously and indefinitely termed blight. The eggs deposited in autumn produce insects the following spring. Aphides are very prolific; it is calculated that one aphis may be the progenitor of 5,904,900,000 descendants during its life. It was the extraordinary fecundity of insects that gave rise to the belief that they were spontaneously generated. Mr. Oliver then gave interesting details regarding the structure, life, the manner of feeding, and the changes undergone by the principal insects destructive to plant growth.

Mr. Frederick Foreman, Eskbank Nursery, Dalkeith, received a Certificate for a new seedling Skimmia, named Foremanni. Its leaves were larger than those of oblata; it was also a free grower and well berried. Mr. Robertson Munro, Abercorn Nursery, received a Certificate for Soldanella minima alba, and also exhibited Draba Maweana, Anemone vernalis, and a seedling Primrose. Mr. Alexander McMillan, gr. to Mr. McBraire, Broadmeadows, exhibited a collection of seedling Cineraria flowers; there were forty varieties, the flowers well formed and of good colours; also Geranium trusses, single and double, of large size; and a dozen of Carnation blooms of different kinds. Messrs. Thomas Imrie & Sons, Ayr, exhibited three plants of their new seedling Coleus, Imrie's Lady Alice, which received a Certificate from the Association last October. Mr. M. Chapman, gr. to Charles Jenner, Esq., Easter Duddingstone Lodge, exhibited Fuchsia excelsa, which had been in flower since February. Mr. W. J. Macadam, analytical chemist, distributed among the members a new plant manure of his own composition.

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**The Birmingham Spring Flower Show:** *April 18 and 19.*—This exhibition—the first of its kind that has been held in Birmingham for some time past—took place under the management of a Spring Flower Show Society, of which the Mayor, R. Chamberlain, Esq., is President. It was an attempt to give greater prominence to the cultivation of spring flowers in pots round Birmingham, and as an exhibition it was decidedly successful. Should this venture on the part of the promoters prove sufficiently encouraging it may induce them to make a further trial in 1882. The arrangement was the best possible under the circumstances, and it appeared to give great satisfaction to the visitors.

Miscellaneous groups of plants furnished by nurserymen greatly helped the display, and imparted an added interest to the exhibition. Mr. B. S. Williams, Victoria Nursery, Holloway, sent down a charming collection of plants, including some beautiful Orchids, prominent being Odontoglossum vexillarium, O. Pescatorei, O. triumphans, Oncidium concolor, O. Marshallianum, Ada aurantiaca; Cyclamen in great variety and excellent form; the new forms of hybrid Azalea, viz., William Carmichael and Mrs. Carmichael; Azalea mollis in variety; the sweet-smelling Boronia megastigma, which seemed to fill the hall with its perfume; Rudgea macrocephala, and several other subjects of a like interesting character. Mr. Hans Nieman, Floral Nursery, Harborne Road, of which Mr. W. Spinks, formerly of the Aston Lower Grounds is now the manager, had an exceedingly pretty and beautifully arranged group of Palms, handsome foliage plants, flowering stuff, &c., affording an excellent lesson in artistic arrangement: in the foreground were groups of the pretty new varieties of Primula intermedia, which deserve to be much grown as flowering plants in pots as this season of the year. In the opposite corner of the hall Mr. Thomas Hewitt, nurseryman, Solihull, had a large and attractive group, consisting of Azaleas, regal and other decorative Pelargoniums, all in fine bloom; and in the foreground large circular baskets of show and alpine Auriculas and Primroses of the most charming character, and also one of Anthurium Scherzerianum. This group was much admired, and the baskets of hardy Primulas were worthy of all praise, and seemed to have great fascination for the visitors. Between the two last-named groups Messrs. H. Pope & Son, nurserymen, Birmingham, had a group of decorative Pelargoniums in good condition, a number of plants of Clianthus puniceus, Auriculas, &c., of a highly attractive character. At the far end of the centre stage Mr. R. H. Vertegans, Chad Valley Nursery, Birmingham, had a large and valuable group of spring flowering plants, comprising Azaleas, Dielytras, Hyacinths, Tulips, Lily of the Valley, pans of Tulips, pots of Narcissus Bulbocodium, with Coleus, Palms, Ferns, &c., to give effect. In this group were some of the best Hyacinths in the show. spring flowering bulbs being exceedingly well represented. Other small collections of plants were sent, not for competition.

The collections of large plants found a place in the centre stage. The best six stove and greenhouse plants in flower came from J. Jaffray, Esq., Edgbaston (Mr. F. Denning, gr.), and consisted of Dendrobium nobile, Erica hyemalis, Cytisus racemosus, Rhynchospermum jasminoides, Diosma capitata, and Azalea Iveryana—a very good lot. 2d, J. E. Wilson, Esq., Edgbaston (Mr. W. Jinks, gr.), who had Anthurium Scherzerianum, Ixora Williamsii, Franciscea calycina major, and Polygala Dalmaisiana as his leading subjects. Mr. Jinks had the best three, staging a good piece of Medinella magnifica, laden with flowers, a capital piece of Tabernæmontana coronaria, and Ixora alba. J. Webber, Esq., Selby Oak (Mr. W. H. Dyer, gr.), came very near to 1st with nice even specimens of Phaius Wallichianus, Dendrobium nobile, and Azalea Bernhard Andreas.

The only exhibitor of six Orchids was C. Winn, Esq., Uplands, Selby Oak (Mr. Shields, gr.), who had small but nicely flowered specimens of Oncidium Marshallianum, Odontoglossum Alexandræ, O. Pescatorei, Zygopetalum crinitum cœruleum, and the pretty Dendrobium Bensoniæ. In addition Mr. Shields staged a large plant of Cymbidium Lowii, with two finely arched spikes, one containing twenty-seven, the other twenty flowers, and some plants of Dendrobium nobile. To the former a special Cultural Certificate was awarded.

The best six Azaleas came from Mr. W. H. Dyer, the plants being of good size, and on the whole well flowered, but unnamed. Mr. Jinks came 2d with small plants of decidedly better quality of flower, but the collection was weak in one or two respects, or it would have taken a higher position. The best varieties were Roi d'Hollande, Stella, Mrs. Turner, and Bernhard Andreas. The best three Azaleas came from C. E. Matthews, Esq. (Mr. W. Jones, gr.), and there were some fine single specimens, but being placed in the middle of the centre stage it was difficult to discover the exhibitors' names.

Lilies of the Valley in pots were not satisfactory; the pots had evidently been fitted for the Primrose, and brought on to flower in heat, and the colder atmosphere of the Town Hall soon told upon them. Some remarkably good specimens of Dielytra spectabilis were shown in pairs by Messrs. Jinks and Dyer, the prizes being awarded in the order of the names. Hoteia japonica were in rare form as far as the leading collection of six plants was concerned, for they were large, finely grown, and well bloomed. These deservedly won the 1st prize for Mr. Jinks, T. Chatwin, Esq., Edgbaston (Mr. C. Busted, gr.), coming in 2d. Mr. Busted was 1st with three plants, also in good form, Mr. Jinks having to be content with 2d place. With the exception of the three plants of Deutzia gracilis from Mr. Jinks, to which the 1st prize was awarded, the others were scarcely sufficiently advanced in bloom, but all were large in size and full of bloom. Mr. Jinks' plants were remarkably well done. Mr. W. H. Dyer was the only exhibitor of three Roses in pots, but they were backward in coming into flower. They were awarded the 1st prize. Epacris were poorly represented; on the other hand, Cinerarias were very good, though the preponderance of self-coloured flowers made them look dull and heavy. Mr. W. H. Dyer's 1st prize collection of six plants showed excellent culture, Mr. Denning coming in 2d, with smaller but equally well grown plants. Mr. Dyer was also 1st with three plants, C. E. Matthews, Esq., being 2d. There was an entire absence of Chinese Primroses, though Birmingham is so famous for these plants in autumn. Probably they are grown more for autumn and winter than for spring decoration; besides, the middle of April is rather late for them. There was one lot of six Cyclamens.

The best three foliage plants came from Mr. Jinks, who had nice examples of Dieffenbachia Bausei, Croton variegatum, and Dracæna Mooreana. Mr. Jones came in 2d, with Dracæna Shepherdi, Pandanus Veitchii, and a good young specimen of Araucaria excelsa. Mr. Dyer staged three capital examples of Ferns, having Davallia Mooreana, Gleichenia dichotoma, and G. Speluncæ, which more than deserved the 1st prize. Genistas and Cytisus were shown as nice pyramid specimens, well grown and flowered. The collection of nine miscellaneous plants in flower were of value in the show, but they did not call for special remark. The best three Palms were Phœnix sylvestris, Latania borbonica, and Kentia Fosteriana, from Mr. F. Denning.

Hyacinths were a leading feature, and they were much more numerously represented so late in the season than might have been supposed. The flowers were highly attractive when massed together, but fine and symmetrical spikes were the exception, while the foliage generally was much drawn. The establishment of this show will no doubt give an impetus to the cultivation of this favourite spring flower, and a higher development of spike will result. In class 1, for the best Hyacinths, not less than ten varieties, Mr. W. Jinks was 1st, with King of the Blues, Baron Van Tuyl, Lord Palmerston, Sir J. Lawrence, Queen of Hyacinths, Lina, Madame Ristori, Grand Vainqueur, D. R., Lord Wellington, and Alba maxima as the leading varieties; Mr. Jones was 2d. In the class for twelve varieties the best flowers in the leading collection were Koh-i-noor, Fabiola, Mrs. Beecher Stowe, Regina Victoria, Lord Derby, Van Speyk, Ida, and Bird of Paradise. We much regret that the successful exhibitors' names were not obtained before our representative left the hall. There was also a class for six varieties, and one for six Hyacinths grown in glasses; the only six which were of *bonâ fide* water growth and well done came from Mr. W. Grice.

The class for four pots of Polyanthus Narcissus brought no competitors, probably because too late; and what should have proved a very interesting class—namely, twelve pots of various spring flowering bulbs, excluding Hyacinths, Tulips, and Polyanthus Narcissi—contained no entry also. Tulips were numerously represented for the season of the year; the best six single varieties comprised Keizer Kroon, Wouverman, Proserpine, Joost van Vondel, and Vermillon Brillant—these came from Mr. Jinks. The 2d prize lot comprised Proserpine, White Pottebakker, Couleur Cardinal, Rouge Luisante, Bride of Haarlem, and Keizer Kroon. We are unable to give the name of the exhibitor of this collection. The best six pots of double Tulips came from L. Hayman, Esq., Edgbaston (Mr. G. Newell, gr.), and consisted of Yellow Tournesol, Imperator Rubrorum, Tournesol, La Candeur, Rex Rubrorum, and Duke of York.

Auriculas, both in the reserved and other classes, were somewhat poorly shown. There were some good Pansies in pots, and cut blooms of the same, from Messrs. Pope & Son.

In the way of cut flowers there were sixes of Roses, twelve and six of Camellias, epergnes of flowers, bouquets, button-hole bouquets, &c., all being good; and we regret that fuller particulars cannot be furnished owing to the shortness of time for taking notes. We conclude by expressing the hope that the show proved the financial success it well deserved to be.

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## Obituary.

We are informed of the death of Mr. Samuel Elliott Martin, on April 6, aged 55 years. The deceased gentleman was the senior partner in the firm of Messrs. Martin & Son, of the Yorkshire and Lincolnshire Nursery and Seed Establishments at Cottingham and Hull, which we understand are to be carried on as usual by Mrs. Martin and her two eldest sons.

—— We also note with much regret the death, on the 2d inst., aged 23 years, of Mr. W. G. Earley, only son of Mr. William Earley, of Ilford, and who for some time was attached as an assistant to the editorial staff of this journal.

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## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON*
For the Week ending Wednesday, April 20, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| April | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 14 | 29.64 | −0.10 | 60.8 | 42.0 | 18.8 | 50.9 | + 4.6 | 47.0 | 87 | S.W. | 0.00 |
| 15 | 29.75 | 0.00 | 63.5 | 45.1 | 18.4 | 52.0 | + 5.5 | 45.5 | 82 | W.: S. | 0.00 |
| 16 | 29.81 | +0.07 | 60.0 | 41.0 | 19.0 | 49.0 | + 2.4 | 41.1 | 79 | N.E. | 0.00 |
| 17 | 29.82 | +0.07 | 67.6 | 40.3 | 27.3 | 52.6 | + 5.8 | 45.4 | 80 | N.E.: S.S.E. | 0.00 |
| 18 | 29.77 | +0.01 | 66.1 | 39.2 | 26.9 | 50.5 | + 3.5 | 39.9 | 68 | N.E. | 0.00 |
| 19 | 29.79 | +0.04 | 43.9 | 37.6 | 6.3 | 39.2 | − 8.0 | 31.3 | 73 | N.E. | 0.00 |
| 20 | 29.60 | −0.15 | 43.0 | 33.8 | 9.2 | 37.6 | − 9.8 | 30.2 | 75 | N. | 0.00 |
| Mean | 29.74 | −0.01 | 57.8 | 39.9 | 18.0 | 47.4 | + 0.6 | 40.1 | 78 | N.E. | 0.00 |

April 14.—A dull cloudy mild morning. A fine day. A few drops of rain at 3 P.M.
— 15.—A fine but rather dull day. Cloudy fine night, moon just visible.
— 16.—A fine day and night.
— 17.—A fine bright sunny day. A fine night.
— 18.—Fine sun shining through the clouds. Strong cold wind. Cold night.
— 19.—A very dull cloudy day. Strong cold wind. Bitterly cold.
— 20.—Very dull day. Hail at 10.30 A.M. Snow in small quantities, and hail at different times. A bitterly cold day. Fine but very cold night, the temperature decreasing to 29°.5 on the morning of Thursday.

London: *Atmospheric Pressure.*—During the week ending Saturday, April 16, the readings of the barometer, in the neighbourhood of London, at the level of the sea decreased from 30.07 inches at the beginning of the week to 29.84 inches by 3 P.M. on the 11th; increased to 29.90 inches by the morning of the 12th; decreased to 29°.87 inches by the afternoon of the same day; increased to 29°.92 inches by the same evening; decreased to 29°.80 inches (the lowest in the week) by the morning of the 14th; and at the end of the week was 30.03 inches. The mean reading at the level of the sea was 29.90 inches, being 0.06 inches lower than last week, and 0.02 inches below the average of the week.

*Temperature.*—The highest reading in the week was 66°.2 on the 13th, the next highest being 63°.5,

on the 15th. The lowest of the seven high day temperatures was 57°.2, on the 12th. The mean of the seven high day temperatures was 61°.2. The lowest temperature during the week was 37°, on the 10th, the next lowest being 40°.5, on the 11th. The highest of the seven low night temperatures was 48°, on the 13th. The mean of the seven low night temperatures was 42°.8. The greatest range of temperature in one day was 24°, on the 10th, the next in order being 19°.1, on the 11th, and 19° on the 16th; the least range was 11°, on the 12th, being more than 7° smaller than any other range during the week. The mean of the seven daily ranges was 18°.4.

The mean daily temperatures were 47°.5 on the 10th, 50°.7 on the 11th, 50°.8 on the 12th, 55°.5 on the 13th, 50°.9 on the 14th, 52° on the 15th, and 49° on the 16th. They were respectively 1°.8, 4°.9, 4°.9, 9°.4, 4°.6, 5°.5, and 2°.4 above their averages.

The mean temperature for the week was 50°.9, being 9°.9 higher than last week, and 4°.7 above the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb placed in the full rays of the sun were 133°.5 on the 13th, 125°.5 on the 14th, and 119° on the 12th. The lowest readings were 77° on the 10th and 82°.5 on the 11th. The mean of the seven daily readings was 102°.6.

The lowest readings of a thermometer on grass with its bulb exposed to the sky were 35° on the 16th, 36°.5 on the 10th, and 37° on the 15th. The highest reading was 45°.2, on the 12th. The mean of the seven readings was 40°.1.

*Rain.*—Rain fell on four days at the beginning of the week in small quantities, the largest quantity measured in one day being 0.08 inch. The total fall for the week was 0.15 inch.

The weather during the week was on the whole fine and warm, with a considerable amount of sunshine.

England: *Temperature.*—During the week ending Saturday, April 16, the highest temperatures were Cambridge, 70°, Nottingham, 67°.6, Blackheath, 66°.2, and Bristol and Brighton, 64°; at Plymouth, Wrottesley, and Sunderland, the temperature never rose above 59°.4. The mean from all stations was 62°.7.

The lowest temperatures were Hull, 22°, Cambridge, 26°, Wrottesley, 28°.5. The highest of the low temperatures were Liverpool, 40°.2, Truro, 40°, and Plymouth, 38°.8. The mean from all stations was 34°.

The greatest ranges were at Cambridge, 44°, Hull, 39°, and Nottingham, 35°.5. The least ranges were Sunderland, 20°, Plymouth, 20°.6, and Truro, 22°. The mean from stations was 28°.7.

The mean of the seven high day temperatures was highest at Cambridge, 63°.6, the next in order being Blackheath, 61°.2, and Bristol, 59°.7. The mean was least at Sunderland, 49°.1, and Bradford, 54°. The mean from all stations is 57°.2.

The mean of the seven low night temperatures was lowest at Hull, 37°, the next in order being Sunderland, 39°.5, and Cambridge, 40°.2. The mean was highest at Truro, 46°.3, and Plymouth, 46°.1. The mean from all stations was 42°.

The mean of the seven daily ranges was greatest at Cambridge, 23°.4; the next in order being Nottingham 18°.8, Hull 17°.3, and Wrottesley 16°.8. The mean was least at Sunderland, 9°.6. The mean from all stations was 15°.2.

The mean temperature for the week was highest at Blackheath, 50°.9; the next in order being Truro, 50°.5; Cambridge, 50°.4; and Bristol, 50°.3. The means were least at Sunderland, 42°.8, and Hull, 44°.1. The mean from all stations was 48°.1.

*Rain.*—Some fell at all stations, the greatest quantities being Leeds, 1.21 inch; Liverpool, 1.12 inch; and Bradford, 0.98 inch; the least fall was 0.07 inch at Brighton. The greatest number of days on which rain fell was six at Bradford, and the least two at Brighton.

Scotland: *Temperature.*—The highest in the week was 60°.5 at Greenock and 60° at Paisley; at Aberdeen the highest temperature in the week was 48°.9. The general mean was 56°.6.

The lowest temperature in the week was 28°, at Glasgow, and the next in order was 30°, at Leith. The general mean was 30°.9.

The greatest range of temperature in the week was 33°.2 at Leith and 32° at Glasgow; the least range in the week was 15°.6 at Aberdeen. The general mean was 27°.

The highest mean temperatures were 47°.4 at Glasgow and 46°.4 at Paisley; the lowest mean temperatures were 41°.4 at Aberdeen and 42°.5 at Dundee.

*Rain.*—The largest fall was 1.13 inch at Greenock, and the smallest was 0.1 inch at Dundee; the average fall was 0.52 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

Arum palestinum.—*W. C.* asks for directions how to cultivate Arum palestinum. He has tried it in various soils and temperatures. His plants are in 7-inch pots, and died down about six weeks ago, so that they are now at rest in an intermediate house.

Coronilla varia.—*C. E. B.* asks: Can any correspondent inform me whether Coronilla varia would be a safe forage plant for horses or cattle? It grows very vigorously on a brashy soil.

Tulip Offsets.—I should be glad to know whether the habit of certain Tulips, such as T. Clusiana and T. sylvestris, to spread far and wide by offsets or scions, and then to cease flowering, can be checked by taking up and replanting the bulbs annually, or by any other means? A group of T. Clusiana, which produced flowers for two or three years, has now ceased to bloom, but has thrown up young plants over a space of ground of three or four square yards in extent. *C. E. Broome.*

## Answers to Correspondents.

American Aloe: *J. Corbett.* The growth of the flowering stem is very rapid, it may reach the height of from 20 to 25 feet, according to the size and vigour of the plant, and would probably take three or four weeks of genial weather to reach the flowering stage, after which it would last for several weeks, the blossoms opening in succession. The plants do not flower at any particular age, but under the restrictive conditions they have to endure in our greenhouses, the age of the plant is always considerable. When the flowering is over the leaves gradually shrivel, but suckers are formed from which young plants may be obtained.

Apple: *W. Wilson.* See our last number, p. 514, last line. The answer unfortunately got into the wrong place.

Conifer Seeds: *New Subscriber.* These may be sown in spring, in any well-worked free soil, and covered to a depth of an inch or so; the seed bed should be in some open situation. A slight covering of Fern, to prevent the drying of the surface, would do no harm.

Cucumber Disease: *T. H. W.* What you send are hair-worms (Gordius aquaticus), which have nothing in common with the minute vibrios found in diseased Cucumber plants.

Darlingtonia: *N.* This has now flowered frequently. You will find a figure of it in the *Gardeners' Chronicle* of July 1, 1871, p. 834.

Insects: *E. W. Serpell.* Otiorhynchus sulcatus. Very destructive pests.

Lyme Grass: *Subscriber.* Elymus arenarius.

Names of Plants: *W. M. Geddes.* Dendrobium Pierardi.—*K. & S.* Medicago arborea.—*W. Hannaford & Sons.* Catasetum atratum.—*James Garraway & Co.* 1, Osteospermum moniliferum; 2, a species of Echium, which we cannot determine without leaves.—*A. M.* Magnolia conspicua, var. Soulangeana.—*W. C.* 1, 2, and 3, next week; 4, Saxifraga ligulata; 5, Asplenium Trichomanes.—*D. P.* Sanguinaria canadensis.—*B. R.* We do not recognise the scrap.—*E. C.* A nicely spotted variety of Odontoglossum Alexandræ.—*T. Spencer.* Oncidium sarcodes.—*Mrs. N.* Draba azoides, differing only sexually.—*R. P.* 1, Adiantum hispidulum; 2, Woodwardia radicans; 3, Onychium japonicum; 4, Cyrtomium falcatum; 5, Nephrolepis tuberosa; 6, Selaginella cuspidata; 7, Adiantum pentadactylon.—*P. N. F.* Your Cymbidium sp. from Rangoon is the new C. Lowianum.

"Gracillissima": *B. R.* The word should be gracillima—feminine superlative of gracilis; meaning very or most slender or graceful.

Grape Wine: *G. Carter.* We cannot give you the details in the brief space at our command. You had better buy one of the cheap books on home-made wines.

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

B. S. Williams, Victoria and Paradise Nurseries, Upper Holloway—New and General Plant Catalogue for 1881.

Dicksons & Co., 1, Waterloo Place, Edinburgh—Florists' Flowers for 1881.

J. B. A. Deleuil, Marseilles—General Plant Catalogue.

B. K. Bliss & Sons, 34, Barclay Street, New York—Select List of Novelties.

Frères Simon-Louis, Metz—Stove and Greenhouse Plants, &c.

Louis Roempler, Nancy, France—General Plant Catalogue.

T. L. Mayos, Whitecross Road, Hereford—General Nursery Stock.

Communications Received.—S. P. O.—R. & Co.—C. B. S.—W. B.—H. E.—J. D. P.—G. D.—W. H.—W. A. T.—J. D.—A. F.—E. J.—J. W.—F. A. D. & S.—P. G. (next week.)—G. N.—J. T. B.—W. H. F.—A. B.—F. W. B. (in the hands of the engraver.)—W. A. T. (MSS. received.)—G. S. B.—J. H.—R. D. B.—J. G.—H. K.—A. F.

# Markets.

*COVENT GARDEN, April 21.*

We have no alteration to report this week; trade being dull and quiet. *James Webber, Wholesale Apple Market.*

Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 2 0– 3 0 |
| Grapes, per lb. | 12 0–20 0 | Strawberries, per lb. | 4 0– 6 0 |
| Lemons, per 100 | 4 0– 6 0 | | |

Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Herbs, per bunch | 0 2– 0 4 |
| Asparag., Fr., bndl. | 2 0–15 0 | Horse Radish, p. bun. | 4 0– .. |
| — English, bund. | 6 0– .. | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| — Sprue, per bund. | 1 6– 2 0 | — Cos, each | 0 4– 1 0 |
| Beans, French, p. lb. | 2 0– .. | Mint, green, bunch | 0 9– .. |
| — Broad, per lb. | 1 0– .. | Mushrooms, p. baskt. | 1 6– 2 0 |
| Beet, per doz. | 1 6– 2 6 | Onions, per bushel | 7 0– .. |
| Cabbages, per doz. | 1 0– 2 0 | — Spring, per bun. | 0 6– .. |
| Carrots, per bunch | 0 4– 0 6 | Parsley, per bunch | 0 4– .. |
| — New Fr., bund. | 2 0– .. | Radishes, per bun. | 0 2– 0 6 |
| Cauliflowers, English, each | 0 3– 0 6 | Rhubarb, per bund. | 1 0– .. |
| Celery, per bundle | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| Garlic, per lb. | 1 0– .. | Tomatos, per lb. | 0 9– 1 0 |

Potatos:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 sprays | 0 9– 2 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Azalea, 12 sprays | 0 6– 1 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Bouvardias, per bun. | 1 0– 3 0 | Narcissus, in variety, 12 sprays | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | Pelargoniums, 12 spr. | 1 0– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | — zonal, 12 sprays | 0 6– 0 9 |
| Cyclameo, 12 blms. | 0 3– 0 6 | Primroses, 12 bunch | 0 6– 1 6 |
| Daffodils, single, 12 bunches | 1 0– 2 0 | Primula, double, per bunch | 0 9– 1 6 |
| — double, 12 bun. | 2 0– 4 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Epiphyllum, 12 blms. | 0 6– 1 0 | Stephanotis, 12 spr. | 6 0– 8 0 |
| Eucharis, per doz. | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Euphorbia, 12 sprays | 1 0– 3 0 | Tuberoses, per dozen | 2 6– 4 0 |
| Gardenias, 12 blms. | 2 0– 9 0 | Tulips, 12 bunches | 6 0– 8 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Violets, 12 bunches | 0 9– 1 0 |
| Hyacinth, Roman, 12 sprays | 0 6– 1 0 | — Neapolitan, Fr., per bunch | 3 0– 5 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | — Czar, Fr., bunch | 0 8– 1 0 |
| — red, 12 blooms | 1 0– 3 0 | | |
| Lilac, Fr., per bunch | 6 0– 8 0 | | |

Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Foliage Plants, various, each | 2 0–10 6 |
| Azalea, per doz. | 30 0–42 0 | Genista, per doz. | 9 0–18 0 |
| Begonias, per doz. | 6 0–12 0 | Hyacinths, per doz. | 8 0–12 0 |
| Cineraria, per doz. | 8 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Cyclamen, per doz. | 12 0–24 0 | Marguerite, white, per dozen | 24 0–42 0 |
| Cyperus, per dozen | 6 0–12 0 | — Yellow, per doz. | 12 0–30 0 |
| Dielytra, per dozen | 9 0–12 0 | Myrtles, per doz. | 6 0–12 0 |
| Dracæna terminalis | 30 0–60 0 | Palms in var., each | 2 6–21 0 |
| — viridis, per doz. | 12 0–24 0 | Pelargoniums, doz. | 18 0–30 0 |
| Erica, in variety, doz. | 18 0–30 0 | Primula, single, per dozen | 5 0– 6 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Roses, various, doz. | 12 0–30 0 |
| Evergreens, in var., per dozen | 6 0–24 0 | Scillas, 12 pots | 9 0–12 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |
| Ficus elasticus, each | 1 6– 7 6 | | |

## SEEDS.

London: *April 20.* — Owing to two market days having been missed, there was a larger attendance on Mark Lane to-day than is usual for a Wednesday. The demand for Clover and other forage seeds continues active. Quotations all round continue at the moderate level previously indicated. Some genial rains with warm growing weather would now be very welcome. As large breadths of land are being laid down to grass there is a good sale for permanent pasture seed at the low rates current. Fine white Clover seed has become scarce. Holders are now accepting more reasonable prices for spring Tares. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## POTATOS.

The Borough and Spitalfields markets reports state that for best samples prices are higher; for inferior easier. The general demand is quiet and the trade somewhat irregular. Scotch flukes, 100s. to 140s.; ditto Victorias, 90s. to 120s.; Regents, 80s. to 90s.; Champions, 70s. to 80s.; Kent and Essex nominal; German reds, 4s. to 4s. 6d.; Belgian kidneys, 3s. to 3s. 6d. per bag.

## COALS.

The following are the prices current at market during the week:—Bebside West Hartley, 14s. 9d.; East Wylam, 16s. 6d.; Ravensworth West Hartley, 14s. 9d.; Walls End—Haswell, 16s. 6d.; Hetton, 16s. 6d.; Hetton Lyons, 15s.; Hawthorns, 15s. 3d.; Lambton, 16s.; Wear, 15s.; South Hetton, 16s. 6d.; Tunstall, 15s.; Thornley, 16s. 3d.; Tees, 16s. 3d.; Radford Navigation, 17s.

**Government Stock.**—Consols closed on Tuesday at 100⅝ to 100¾ for delivery, and 100¾ to 100⅞ for the account; the final quotations of Wednesday were the same. On Thursday Consols were finally quoted ⅛ better for delivery, but no alteration in sales for the account.

# CARTERS' PERMANENT and BEAUTIFUL LAWNS.

**NECESSARY AND IMPORTANT CAUTION.**

The Six Magnificent Lawns formed with Messrs. Carters' Grass Seeds at the Paris Exhibition, were awarded the ONLY GOLD MEDAL, Prizes of inferior value being awarded to all other English and Foreign Exhibitors. The 1st Prize Lawn Grass Seeds should be procured direct from JAMES CARTER & CO., to prevent disappointment.

**CARTERS' GOLD MEDAL LAWN GRASS**

In sealed packets, price 1s. (post-free, 1s. 4d.), 1s. 6d. and 2s. 6d. per packet.
(A 1s. 6d. packet will sow 1 rod of ground).
Price per Bushel .. .. 25s.
Price per Acre (of 4 bushels) .. 90s.
ORDINARY LAWN GRASS .. .. 20s. per Bushel.
20s. value Carriage Free.

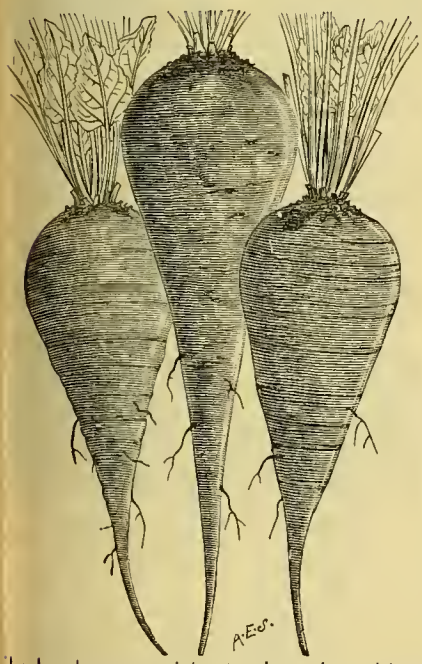
THE QUEEN'S SEEDSMEN — SEEDSMEN BY SPECIAL WARRANT TO — H.R.H. THE PRINCE of WALES

37 & 38, High Holborn, London, W.C.

## NEW BEETROOT.

## COOLING'S OMEGA

**Should be Sown now.**



The handsomest, richest coloured, and best flavoured Beetroot in Cultivation.

This variety is quite distinct. It is the result of a selection extending over many years.

In sealed Packets, 1s. 6d., Post-free.

GEO. COOLING & SON, Seedsmen, BATH.

## CRANSTON'S NURSERIES.

(Established 1785.)

## CATALOGUE

OF

*New English and French Roses*

for Spring of 1881,

DAHLIAS, CLEMATIS, PHLOXES, and CHOICE BEDDING PLANTS,

*Free on application to*

**CRANSTON'S NURSERY & SEED CO.**
(Limited),
KING'S ACRE, near HEREFORD.

**Ferns a Speciality.**

## EXOTIC AND BRITISH FERNS.

IN great number and variety, suitable for Stove and Greenhouse cultivation, for Outdoor Ferneries and other purposes.

A SPECIAL LIST will be forwarded free on application, and our ILLUSTRATED CATALOGUE, which contains copious yet simple "Hints on the Cultivation of Ferns," will be forwarded on receipt of six penny stamps.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

## *Come and See.*

HOW and from WHAT we SAVE our AURICULAS, POLYANTHUS, WALLFLOWER, and FORGET-ME-NOT SEEDS. They are now beautifully in Flower, and we should like all our Friends to see them.

SWANLEY, KENT.

H. CANNELL AND SONS beg to announce that they have now a very fine Stock of Show Auricula-eyed VERBENAS, of precisely the same wonderfully fine varieties which have been awarded so many Medals by the Royal Horticultural Society. Ditto PETUNIAS, which also consist of the finest kinds in cultivation.

Prices of both kinds—Cuttings, 1s. 6d. per dozen; Plants, 4s. per dozen, 24 for 7s., H. C. & Sons' Selection.

THE HOME FOR FLOWERS — SWANLEY KENT

## GEO. JACKMAN & SON,

(Established 1810,)

**Cultivators of**
FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
ROSES, RHODODENDRONS,
*Conifers and Hardy Climbers.*

**THE CLEMATIS**
A SPECIALITY.

*Descriptive Priced Catalogues free.*

**WOKING NURSERY, SURREY.**

ONION. ONION. ONION.

**NUNEHAM PARK,**
extra selected, per packet, 1s.
This superior variety maintains the high character we gave when it was first introduced.

For description, see our ILLUSTRATED SEED CATALOGUE, post-free, on application.

W. CUTBUSH & SON,
HIGHGATE, LONDON, N., and BARNET, HERTS.

## POTATOS FOR PLANTING.

The following popular sorts, true to name, are offered at extremely low prices, to effect a clearance:—

| | Per Cwt. s. d. | Per Ton. £ s. d |
|---|---|---|
| MAGNUM BONUM .. .. .. .. | 6 0 | 5 10 0 |
| EARLY ROSE .. .. .. .. .. | 5 6 | 5 0 0 |
| LAPSTONE (true Old) .. .. .. .. | 6 0 | — |
| VEITCH'S IMPROVED ASHLEAF .. | 7 0 | 6 10 0 |
| MONA'S PRIDE .. .. .. .. | 7 0 | — |
| SCOTCH CHAMPION .. .. .. | 5 6 | 5 0 0 |

RICHARD SMITH & CO.,
SEED MERCHANTS & NURSERYMEN, WORCESTER.

**THE LARGEST ROSE GARDENS IN ENGLAND.**

## CRANSTON'S NURSERIES.

(Established 1785.)

*New Rose Catalogue for* 1880-81,
now ready, and may be had post-free on application.

**Awarded over 60 First Prizes for Rose Blooms this season.**

CRANSTON'S NURSERY and SEED CO. (Limited), King's Acre, Hereford.

**For Sale.—Very Vigorous.**

## GLEICHENIAS

| | ft. in. | | ft. in. |
|---|---|---|---|
| MENDELII .. .. .. | 4 6 | by | 5 6 |
| SPELUNCÆ .. .. .. .. | 4 0 | ,, | 4 0 |
| CIRCINATA MACROPHYLLA | 3 6 | ,, | 4 0 |
| ,, GLAUCA .. .. .. | 2 0 | ,, | 3 0 |
| MENDELII .. .. .. | 3 0 | ,, | 2 0 |
| FLABELLATA .. .. .. | 3 6 | ,, | 3 6 |

W. BROWN, Gardener, &c., Elmdon Hall, near Birmingham.

## GARDEN REQUISITES.

**COCOA-NUT FIBRE REFUSE,**
3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

**H. G. SMYTH,**
17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

## GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE, fresh and pure, 4 bushels, 1s.; 120 for 20s.; truck, 25s.; BEST BROWN FIBROUS PEAT, 5s. per sack, 5 for 22s. 6d. BLACK FIBROUS PEAT, 4s. 6d. per sack, 5 for 20s.; Sacks, 4d. each. COARSE SILVER SAND, 1s. 6d. per bushel. Yellow Fibrous Loam, Leaf-Mould, and Peat-Mould, 1s. per bushel, MANURES of all kinds, fresh SPHAGNUM, GARDEN STICKS and LABELS, RUSSIA MATS, &c. TOBACCO CLOTH and PAPER, as used by the leading Nurserymen, and acknowledged to be the best in the Market—Cloth, 8d. per lb.; Specialité Paper, imported solely by us, 1s. per pound, 28 lb. 26s.; 2d quality Paper, 7d. per lb. Write for Price List.—W. HERBERT AND CO., Horticultural Stores, 19, New Broad Street, London, E.C. (turning by Gow's, Fishmonger).

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1s.; 15 bags, 12s.; 30 bags, £1, bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15s.; truckload of about 250 bushels, £1 3s. (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons. Invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1s. each; 15 Sacks, 12s.; 30 Sacks, 20s. (all Sacks included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (equal to about 300 bushels when dry), free on rail, 25s. Terms cash with order.

CHUBB, ROUND AND CO.,
Fibre Works, West Ferry Road, Millwall, London, E.

PEAT.—Superior Black or Brown Fibrous PEAT, for Rhododendrons, Azaleas, Orchids, &c., same as supplied to Messrs. John Waterer & Son, and other noted growers, 6 tons, loaded on trucks at Camberley Station, S.W.R., £4 4s.—Address,
Mr. W. TARRY, "Golden Farmer," Farnborough Station.

**Fibrous Peat for Orchids, &c.**

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.
Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.
Fresh SPHAGNUM, 10s. 6d. per bag.
WALKER AND CO., Farnborough Station, Hants.

# FLORAL MANURE LIQUID.

*SOLD by ALL FLORISTS, &c.,*

AND

BEE & CO., Stratford, London, E.

## "FLOREIN."—True Food of Plants.

**For the Garden, Greenhouse and Lawn.**

In Elegant Packages, 6d. and 1s., with full directions for use.
In Bags, 5s., 7s. 6d. and 10s. each.

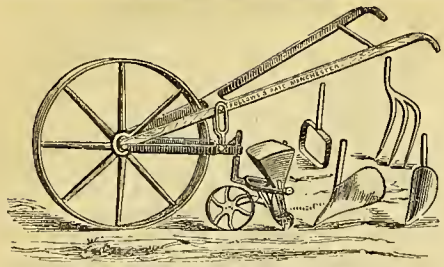
## DAISY and WEED DESTROYER

**FOR LAWNS.**

Price, 30s. per cwt.; 56 lb., 16s.; 28 lb., 8s. 6d.
Packages included, and delivered free to any Station.
*Wholesale Terms upon application.*

MANUFACTURED SOLELY BY
**MORRIS and GRIFFIN, Wolverhampton**
Established 1821.

**Important to Market Gardeners and Others.**



## Patent Hand Garden Plough and Cultivator.

This capital little Implement is now coming into general use. It consists of one light but strong Steel Shovel for marking out rows to plant, or for loosening up the ground after the plants are up. Also a small Steel Plough to be used for billing-up the rows when desired, and a Cutter for exterminating weeds, and Rake for pulverising the ground. These pieces are made separate, and attached or detached in a moment by means of a simple fastening Its construction enables the user to push it readily and easily through the ground, stirring the earth, if required, to a depth of 6 inches. It is exceedingly light, strong and tasty, and fully adapted to the purpose designed.

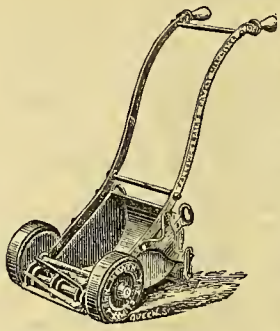
*Price complete, with Shovel, Plough, Weed-cutter and Rake,* £2 2s. *If with Seed Drill attachment, extra,* 13s.; *if with Pony attachment, extra,* 10s. 6d.—Illustrated CATALOGUE, containing numerous Testimonials, post-free on application.

**Address, FOLLOWS & BATE, Patentees and Manufacturers, Manchester.**

WITH LATEST IMPROVEMENTS.

"CLIMAX," "CROQUET," NEW "MANCHESTER," "ROLLER," and

ROYAL PRIZE MEDAL "ANGLO-AMERICAN"



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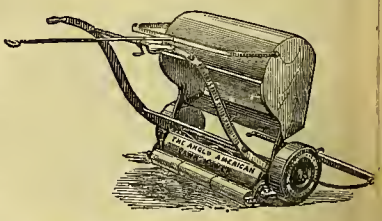
Are the best Lawn Mowers made, the simplest, and by far the easiest to work. Between 40,000 and 50,000 of these justly celebrated Machines have been sold during the past eight years. They have been submitted to numerous practical tests in public competition, and in all cases have carried off every **1st prize** that has been given. They were awarded the Medal for Merit and Diploma at Vienna Exhibition, 1873, and at other places many 1st Prizes and Silver Medals, the latest being at Paris Exhibition, in 1878.



The Patentees direct particular attention to their **"Croquet" Machines**, specially designed for Ladies' use, and also to the new **Pony Machines**, which have the simplest tipping arrangement extant.

## Address, FOLLOWS & BATE, Patentees and Manufacturers, MANCHESTER

N.B.—F. & B. are the Sole Makers of the well-known **25s. Climax Lawn Mower**, the only effective Machine of its class; New Patent **Lawn Edge Cutter**, which entirely supersedes the Scythe; Garden Rollers, &c.

F. C. HILLS & CO.,

DEPTFORD and EAST GREENWICH, LONDON, S.E.,

HAVE APPOINTED

MESSRS. HOOPER AND CO.,

**COVENT GARDEN, LONDON, W.C.,**

the SOLE AGENTS in Great Britain and Ireland for the Sale of their very successful Special

**CONCENTRATED POTATO MANURE.**

GISHURST COMPOUND.—Used by many of the leading Gardeners, since 1859, against Red-spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 oz. to the gallon of soft water, and of from 4 to 16 oz. as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen, in boxes, 1s., 3s., and 10s. 6d.

AMERICAN BLIGHT on APPLE TREES CURED by rubbing a wet hard Painter's brush on Gishurst Compound, and working the lather into the infected part.

GISHURSTINE keeps feet dry, softens hard boots, preserves leather, takes a polish. In boxes, 6d. and 1s. each.

Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

TOBACCO CLOTH and PAPER, Best and Cheapest.—PAPER, 7d. per pound; 28 lb. 15s. CLOTH, 8d. per pound, 28 lb. 18s. Best ROLL, 9d. per pound, 28 lb. 18s. J. DENYN, Manufacturer, 73, Rendlesham Road, Clapton, E.

*Hooper's—*

*The Covent Garden Seed Warehouse*

SUPPLY EVERY GARDEN REQUISITE

In the Highest Quality.

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*CATALOGUES READY.*

*HURRY'S*

PLANTAIN AND DAISY EXTRACTOR.

*The most Simple Invention before the Public.*

Over 2000 Sold last Season.

Plantain, &c., removed Without Destroying the Lawn.

**Carriage Free of the Patentee, 4s. 3d. and 5s. 3d.**

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Wholesale Agent: THOS. TILLEY, 12, Walbrook, London, E.C.; BEALE AND CO., Cambridge.

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CORRY, SOPER, FOWLER AND CO. invite buyers to inspect their Show of WREATHS and CROSSES in Metal, Porcelain, and Dried Flowers, in great variety—made on the premises, 18, Finsbury Street, E.C.

**Garden Walks and Carriage Drives.**

BEAUTIFUL RED GRAVEL SIFTINGS, of the best binding nature, put on rail at Farnham Station, S.W.R., at 2s. 9d. per ton. The best of coarse GRAVEL for roads or concrete, same price. Finely sifted sharp SAND, 1s. 10d. GEORGE FOOT, Farnham, Surrey.

**Oil Paint No Longer Necessary.**

HILL AND SMITH'S BLACK VARNISH, for Preserving Ironwork, Wood, or Stone.

(*Registered Trade Mark.*)

This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in Casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL.

"*Piercefield Park, June* 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had Address Varnish to Piercefield Park, Chepstow.—I am, Sirs, yours respectfully, WM. COX."

*CAUTION.*—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to

HILL AND SMITH, Brierley Hill Ironworks, Staffordshire; 118, Queen Victoria Street, London, E.C.; and 180, Buchanan Street, Glasgow.

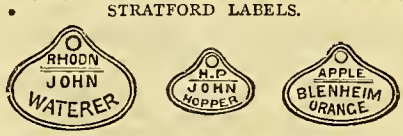
PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., 2½d. per lb.—all colours. Improved Zinc White Paint, 4½d. per lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest Prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers. FISHER, CLARK AND CO., Boston.

**Under the Patronage of the Queen.**

J. SMITH'S IMPERISHABLE STRATFORD LABELS.




The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

PARISIAN GREENHOUSE BLINDS

Made of Wood and Iron only.

Sole Agents for Great Britain—

W. RICHARDSON & CO.,

NORTH OF ENGLAND HORTICULTURAL WORK

DARLINGTON.

**PIPES and FITTINGS,**

FOR HEATING APPARATUSES.

The largest stock in the Kingdom. 4-inch pipes, 1s. 7d. per yar

**SILVESTER & SAINSBURY,**

Castle Hill Foundry, Newcastle, Staffordshire.

THE

PRESIDENT,

LATEST

**American Lawn-Mower,**

is, without question, the best in the world, and its sale exceeds any other. The makers challenge competition on the following points: Mechanical Construction, Excellence of Material, Workmanship, Finish, Simplicity, Durability, and Lightness of Draught when Cutting Long or Short, Wet or Dry Grass. See it and try it before you buy any oth Every Machine is unconditionally warranted.

Awarded twenty-four First-cl Gold, Silver, and Bronze Med at the Principal Exhibitions a Trials in America and Europe

**New Pony and Horse Mo ers,** Carriage paid any Station. Ha sizes—8-in., 42s.; 10-i 63s.; 12-in., 84s; 14-i 105s.; 16-in., 126s.; in., 147s.; 22-in., 18

**THOMAS M'KENZIE & SONS, Limited**

16, Holborn Viaduct, London, E.C.;

Dawson Street, Dublin; and Victoria Street, Belfast.

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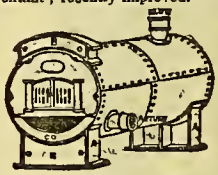

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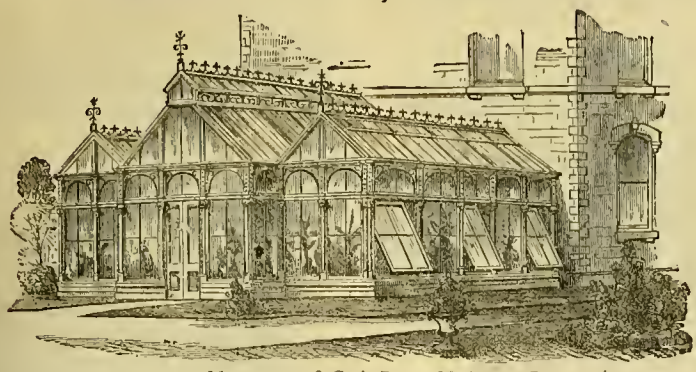

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## ARE THE BEST.

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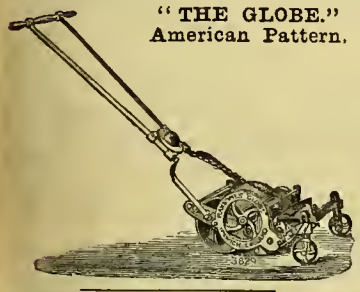

The "**GLOBE**" Lawn Mowers are intended to meet the demand for machines specially adapted for cutting long grass; and which, whilst similar to the Lawn Mowers imported from America, have the special advantages of the more accurate fitting and general durability of English manufacture and perfect adjustment.

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| 12-in. | ,, ,, ,, .. | .. 4 | 4 | 0 |
| 14-in. | ,, ,, Man .. .. | .. 5 | 5 | 0 |
| 16-in. | ,, ,, ,, on Level Lawns | .. 6 | 6 | 0 |

Grass Boxes extra if required.

8-in., 5s.; 10 and 12-in., 7s. 6d.; 14 and 16-in., 10s.

**THE "AUTOMATON."**
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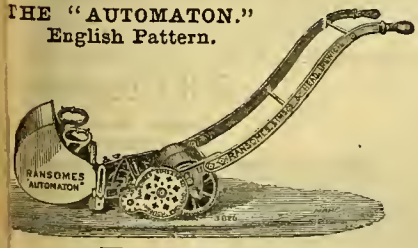


The "**AUTOMATON**" Lawn Mowers are thoroughly strong, well made, and durable machines, and the best suited for *general* work and *Gardeners'* use. They cut the grass perfectly, leave no ribs, but produce a smooth velvety surface on the Lawn, and are light in draught.

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| 14-in. | ,, ,, Man .. .. .. | .. 5 | 10 | 0 |
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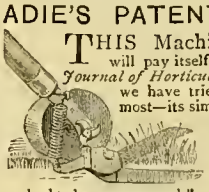

THIS Machine constantly employed will pay itself in two days. Dr. Hogg, in the *Journal of Horticulture*, says—"This Edge Clipper we have tried, and know not which to admire most—its simplicity or efficiency." Mr. Moore, in the *Florist*—"This new machine does its work rapidly and admirably, the grass being cut with precision, and" he further adds, "the use of it willl, we have no doubt, become general." Prices 25s. and 30s.
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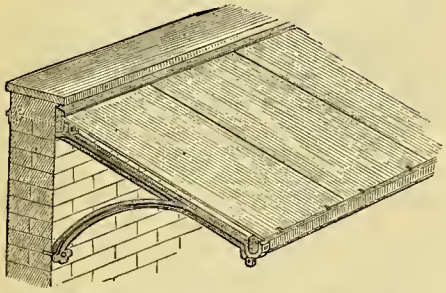

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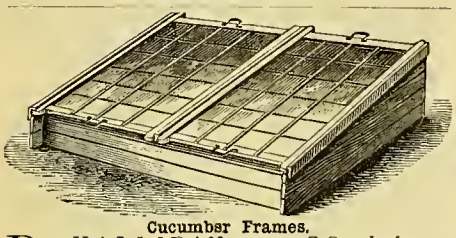

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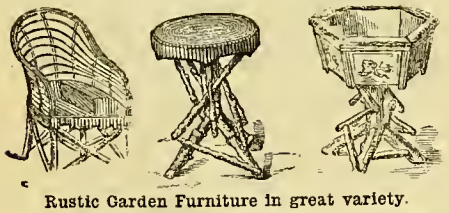

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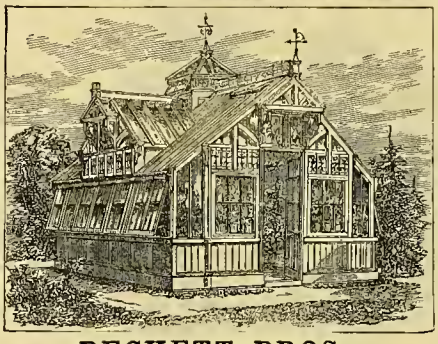

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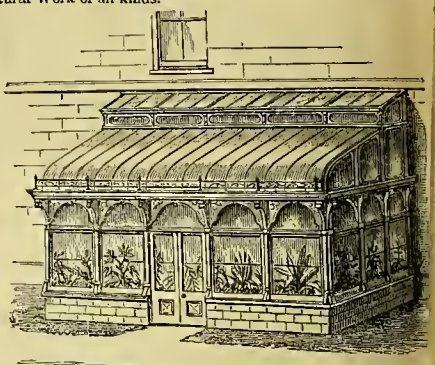

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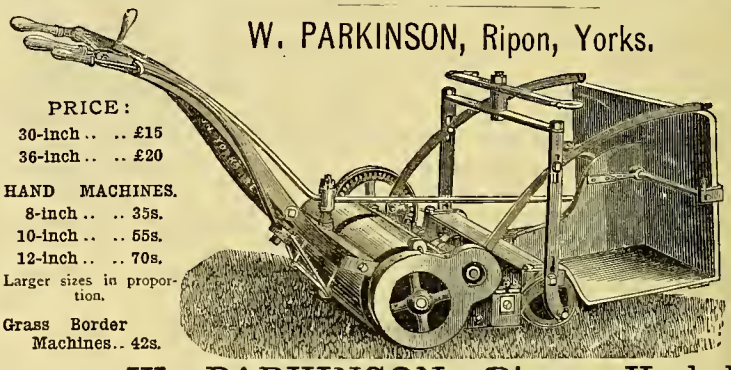

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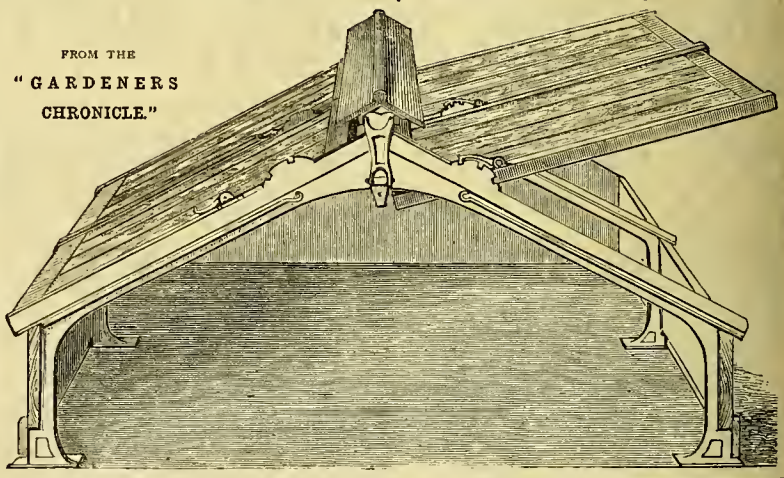

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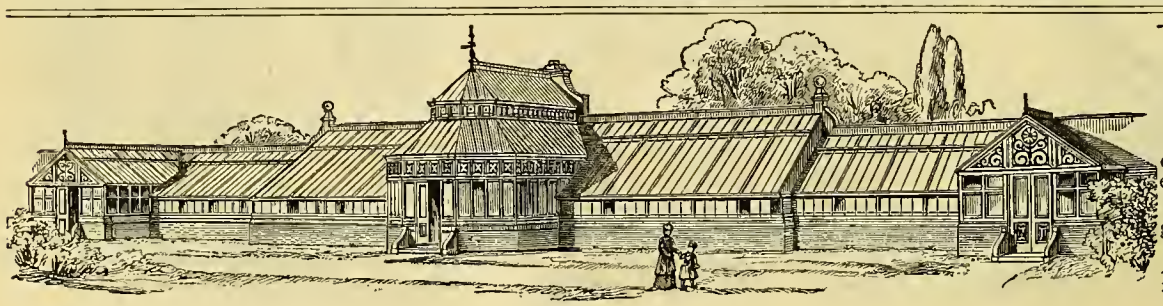

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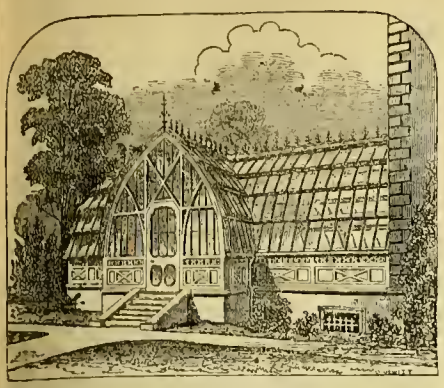

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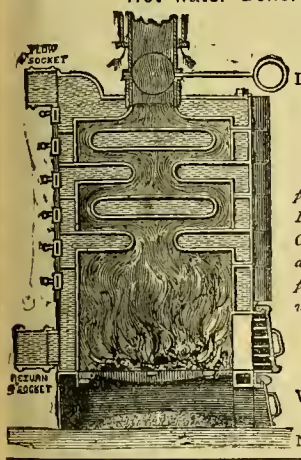


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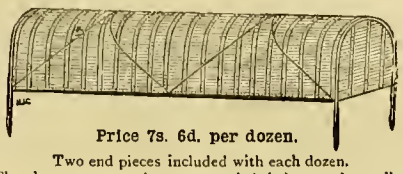

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**ANÆCTOCHILUS BOYLEI.**—This very beautiful and distinct species belongs to the "Setaceus" group, of which there are many distinct forms; the one before us is a very free grower. The leaves are ovate-acuminate, about 3 inches long by 2 broad, olive-green, netted and pencilled over the entire surface with gold. It is named in compliment to H. Boyle, Esq., of Ambleside, a successful cultivator and great admirer of this unique class. Price 42*s.* to 63*s.* each.

**ANÆCTOCHILUS HERRIOTII.**—Another of the "Setaceus" group, but in habit of growth it is much stronger and more robust than the type: leaves 3½ inches long, 2½ broad, of a dark mahogany colour; the reticulations, which are of a gold colour, are well defined with a shadow of network through the surface. This is named after G. Herriot, Esq., of Highgate, a great admirer of this class of plants. Price 42*s.* to 63*s.* each.

**ANTHURIUM WALNIEWI (Regel).**—This is a distinct and handsome species, allied to A. magnificum, which plant it very much resembles in habit of growth, but is not variegated; leaves broadly cordate, 12 to 14 inches long, 8 to 10 inches broad, olive-green, petioles 4 to 5 angled. The leaves, when young, are of a bright reddish-crimson. Native of Venezuela. Price 42*s.* each.

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**ARALIA SPINULOSA.**—This species when well grown will make a distinct and effective foliage plant; it is of bold robust habit, attaining large dimensions; leaves pinnate, alternate, pinnæ ovate-acuminate, of a dark green colour, margined with little reddish-crimson spines or prickles, the stem and petioles are spotted and suffused with crimson. When in the young state, this plant will form a pleasing object of decoration for the dinner-table. Price 21*s.* each.

**ASPLENIUM APICIDENS (Moore).**—An interesting novelty, which we imported from the South Sea Islands, along with A. Vieillardii facile. At first sight it appears to bear some resemblance to that species, but the resemblance is superficial, the form and arrangemant of the sori being quite dissimilar. It is an evergreen stove Fern with a thick decumbent caudex, and smooth, pinnate, firm, but scarcely leathery fronds, smooth, dull greyish-brown stipites, about a foot high; the few pinnæ are 2 to 3 inches in length, and from three-fourths of an inch to an inch broad, stalked, bluntly auricled or shortly lobed at the anterior base, with a toothed scariose margin, the teeth shallow near the base, but elongated and conspicuous near the apex, where they end in a sharp white apiculus. The veins are oblique at an angle of 45°, falling short of the exterior edge; and the sori are short oblong, forming a series of short oblique lines nearer the midrib than the margin. Though evidently allied to A. Vieillardii Schizodon, Mr. Moore remarks that this plant appears to differ essentially in its sori, which are much shorter, and set, as are the veins, at a much more obtuse angle with the midrib, those of A. Vieillardii being placed at a remarkably acute angle, so as to approach to parallelism with the midrib, while in A. apicidens they stand at an angle of 45°. Price 21*s.* each.

**ASPLENIUM BAPTISTII (Moore)**—In this novelty we have a fine and distinct looking stove Fern of evergreen habit, with a stout decumbent caudex, dull brownish-coloured stipes, and broadly ovate fronds about a foot long, furnished with rather distant pinnæ, which have a distinct stalk one-fourth of an inch or rather more in length; the basal portion is split up into distant attenuated pinnules, about two on each side, the remaining part of the pinnæ, some 4 inches long, being linear, lengthened out to a much attenuated point, and the margins bearing at distant intervals linear pointed teeth projected forwards. The texture is thick and leathery, and the sori are large, oblong or linear oblong, straight, and lying close to and parallel with the midrib. The centre of the frond has an open appearance, from the slender stalks of both pinnæ and pinnules. This Fern is no doubt allied to A. contiguum, but has the basal part of the pinnæ split up into a few distinct narrow stalked pinnules, which, except in being much smaller, resemble the remaining portion of the pinnæ, having a few distinct linear teeth, and sori parallel with the midrib. It was imported by me about a couple of years ago from the South Sea Islands, and was awarded a First-class Certificate by the Royal Botanic Society at one of the summer shows of the past year. It will make a good and elegant show Fern, on account of its distinct character and durable texture. See description in *Gardeners' Chronicle*, 1881, p. 235. Price 21*s.* each.

**ASPLENIUM CONTIGUUM, VAR. FISSUM (Moore).**—It is of evergreen habit, with ovate, subcoriaceous, smooth froods, and few distant stalked pinnæ, with about two basal segments, and an elongate, attenuate, distantly-toothed apex, the teeth linear, simple or forked. The basal lobes or pinnules are cuneate, deeply and unequally toothed at the apex. The veins are nearly parallel with the costa, so that the sori are almost parallel therewith. This Fern, which was imported from the South Sea Isles by Mr. B. S. Williams, is no doubt a more divided form of the well-known A. contiguum, a plant in which the pinnæ are usually simple, and the sori lie close beside the costa. In this variety, on the other hand, a few of the basal lobes are separated quite down to the rachis, and as they stand wide apart the fronds appear to be bipinnate. It is a distinct-looking and interesting addition to our hothouse evergreen Ferns. Price 21*s.* each.

**ASPLENIUM VIEILLARDII, VAR. FACILE (Moore).**—This fine evergreen hothouse Fern is one of peculiar interest, on account of the remarkable dentation of the fronds; it was described and figured by Mr. Moore in the *Gardeners' Chronicle* of 18 under the name of A. Schizodon, which, however, has to give way to the earlier one A. Vieillardii. The type form was introduced some ten years since, from New Caledonia, Mr. John G. Veitch, but the plant then obtained has remained a stubborn and unsatisfact grower, whereas our present subject proves to be a much freer grower and a really eleg and interesting plant. The peculiar features of the plant are its leathery deep green pinn fronds, the deep and unequal incisions which form the marginal teeth, and the acutely fork veins, with very long curved sori extending nearly to the margin. The plant was import by us from the South Sea Islands, and has been called *facile*, on account of its freer grow resulting in the production of larger fronds and more numerous pinnæ. For a more compl description see *Gardeners' Chronicle*, 1881, p. 235. Price 21*s.* each.

**AZALEA "MISS BUIST."**—This small-growing species will make a fitti companion for the A. amœna and its varieties, the character of its growth being much the san the flowers, which are pure white, are produced in umbels, and as the plant is of slow grov every shoot will flower, thus making it one of the most useful plants of recent introduction cutting and other purposes. Price 10*s.* 6*d.* and 21*s.* each.

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**CIBOTIUM CHAMISSOI (Kaulfuss).**—This fine arborescent Fern we ha recently imported from the Sandwich Islands. Its moderately stout trunk grows to height of from 4 to 6 feet, and supports a head of large spreading fronds, which issue from a b of tawny hair-scales. The stipites and rachides are furnished with deciduous cobwebby scal The fronds are broadly ovate, bipinnate, glossy green on both surfaces—the under-surf clothed with loose hair-scales. The lower pinnæ are deflexed, and the larger ones oblo lanceolate or ovate-lanceolate, 12 to 15 inches long. The pinnules are crowded, 3 to 4 inc long, sessile, linear-oblong, divided two-thirds of their depth, or in fertile specimens nearly the raches into blunt oblong slightly falcate lobes, which are toothed in the upper part, a bear along the margins, near the sinus, a close-set row of three or four sori. In t Cibotiums the sorus is enclosed within an involucre, which is of a horny texture, and tw valved, the shorter inner valve being roundish. These Ferns have sometimes been associat with *Dicksonia*, and for this particular species Gaudichaud proposed the name of *Pinon splendens*. The plant, of course, requires to be grown in the stove. Price 21*s.* each.

**CROTON "ECLIPSE."**—As a variety for table decoration this plant will pro to be an acquisition; it is of close compact habit, with arching ovate-lanceolate leaves, 9 12 inches long, by 1½ inch broad. Ground colour olive-green, mottled and veined w rosy-crimson, having a broad band of rich yellow, suffused with rose down the cent Price 21*s.* each.

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**CROTON MULTIFORMIS.**—This plant, as its name implies, has leaves different shapes, on this account it is very interesting; blades generally lanceolate, sometim spiral interrupted, which is continued with a small thread-like costa for an inch or so when second leaflet is formed, varying in size, 9 to 12 inches long, 1 to 1½ broad, bright gre mottled with light yellow, and tinted with rosy-crimson; in some cases it is margined wi the same colour. Price 21*s.* each.

**CROTON RODECKIANA.**—This charming variety belongs to the narro leaved section, and is of free-branching habit, and will make a grand table plant. Con linear-lanceolate, pendent, arching, 15 to 18 inches long, by 1 inch broad, blotched a mottled with creamy-white, and tinted with rose. In some cases the leaves of this plant va in form, being interrupted and slightly spiral, with irregularly shaped margins. This variety named in compliment to E. Rodeck, Esq., of Vienna, a great admirer and successful cul vator of this handsome class of plants. Price 31*s.* 6*d.* each.

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[*Continued on p.* 52.


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Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, April 23, 1881.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 383.—Vol. XV. { New Series. } SATURDAY, APRIL 30, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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THE NEW PLANT and BULB COMPANY'S SPECIAL LIST (No. 51) is just published. Post-free on application.
Lion Walk, Colchester.

Verbenas—Verbenas.
JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other varieties of good strong Spring-struck Cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included, for cash with order.
Queen's Road Nursery, Markhouse Common, Walthamstow.

A Quantity of
SPECIMEN FLOWERING and FINE-FOLIAGE PLANTS, fit for exhibition during the summer and autumn. At very reasonable prices.
J. HOUSE, Eastgate Nursery, Peterborough.

ROBINSON'S CHAMPION OX CABBAGE PLANTS, strong, 3s. per 1000.
THOMAS PERKINS and SONS, 34, Drapery, Northampton.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS, are requested to communicate with
W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WISE and RIDES are prepared to receive Consignments of Cut Flowers, Choice Fruits, Cucumbers, &c., in quantity.—3, Tavistock Court, Covent Garden, W.C.

Cut Flowers.
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of HOTHOUSE and OUTDOOR FLOWERS. Cash by return of post if desired. Where money is objected to ORCHIDS, &c., MAY BE HAD in EXCHANGE.

WANTED, RHODODENDRON STOCKS for grafting. Lowest price per 1000.
JOHN HAYWARD, The Nurseries, Cheadle, near Manchester.

WANTED, FRUITING CANES of the following VINES:—Buckland Sweetwater, Foster's Seedling, Black Hamburgh, Muscat of Alexandria, &c. State lowest trade price to
D. McFARLANE, The Gardens, Olive Mount, Wavertree, Liverpool.

WANTED, MAGNUM BONUM POTATO, in EXCHANGE for RIVERS' ASHLEAF, good sound seed.
J. CHEAL and SONS, Crawley, Sussex.

SUTTONS' PRIZE GRASS SEEDS. Carriage Free.

SUTTONS' GRASS SEEDS FOR LAWNS.

SUTTONS' GRASS SEEDS FOR CROQUET GROUNDS.

SUTTONS' GRASS SEEDS FOR LAWN TENNIS GROUNDS.

SUTTONS' GRASS SEEDS FOR CRICKET GROUNDS.

SUTTONS' GRASS SEEDS FOR BOWLING GREENS.

FOR FULL PARTICULARS SEE

SUTTONS' PAMPHLET ON LAWNS, &c., Gratis and post-free on application.

SUTTON and SONS, The Queen's Seedsmen, READING, BERKS.

SUNNINGDALE NURSERY, Direction of, see *Gardeners' Chronicle*, April 16, 1881.

FINEST GRASS SEEDS, specially prepared for LAWNS, BOWLING GREENS, CRICKET GROUNDS, &c., comprising the very best dwarf evergreen kinds, quality not to be surpassed, 1s. per pound, 20s. per bushel; 3 to 4 bushels required per acre.
RICHARD SMITH and CO., Seedsmen and Nurserymen, Worcester.

SEEDLING HOLLIES.—Several thousands of the above, extra fine. Apply
W. B. ROWE and CO. (Limited), Barbourne Nurseries, Worcester.

HOLLYHOCKS.—Strong plants now ready. List of varieties and price upon application.
L. WOODTHORPE, Glazenwood Nursery, Braintree.

Pelargoniums—Pelargoniums.
JAS. HOLDER and SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties, 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

Tricolor Bedding Geraniums.
ALFRED FRYER offers a large stock of the best varieties. Priced LISTS post-free.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.
MESSRS. LEVAVASSEUR and SON, Nurserymen, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD and SON, 25, Savage Gardens, London, E.C.

H. P. ROSES, extra strong.—Very fine strong plants, in 9, 10, and 11-inch pots, of all the leading kinds, coming into bud; suitable for exhibition. For LIST of sorts and price, apply to
CRANSTON'S NURSERY and SEED CO. (Limited), King's Acre, near Hereford.

WM. POTTEN will be happy to forward his CATALOGUE of Choice Geraniums, &c., post-free to all applicants.
Camden Nursery, Sissinghurst, Staplehurst, Kent.

CHOICE PANSIES and VIOLAS.—Extra Strong Bedding Varieties, in about twenty finest sorts, 10s. 6d. per 100; Show and Fancy Pansies, extra strong plants, twenty finest varieties, 3s. 6d. per dozen. Trade price on application. All too heavy for post.
J. J. MARRIOTT, Walsall, Staffordshire.

HARDY CARPET-BEDDING PLANTS.—Antennaria tomentosa candida, 2s. per dozen, 10s. per 100; Arabis albida variegata, 2s. per dozen; Ajuga reptans atropurpurea, 2s. 6d. per dozen; Veronica repens, 1s. 6d. per dozen, 8s. per 100.
J. J. MARRIOTT, Walsall, Staffordshire.

Tea-scented Roses.
EDWIN HILLIER'S Pot ROSES are now fit to send out. Fine healthy bushy plants, on Seedling Brier Stock, by the dozen, 100, or 1000.
LISTS free. Rose blooms throughout the year.
The Nurseries, Winchester.

Pansies, &c.
DOWNIE and LAIRD, Royal Winter Garden, Edinburgh, are now sending out the finest Show and Fancy PANSIES that money can buy. Also VIOLAS, at from 4s. to 30s. per dozen.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881.
RICHARD SMITH and CO., Nurserymen, Worcester.

## SALES BY AUCTION.

**Unreserved Sale of the well-selected Sample Stock** of best modern CHINA, being consignments from Limoges, Messrs. Ulysse of Blois; Gaillé, of Nancy; Messrs. Vion & Baury, of Paris and elsewhere.

MESSRS. PROTHEROE AND MORRIS have received instructions from a firm of French agents who are relinquishing the business to SELL the above at the Auction Mart, Tokenhouse Yard, near the Bank, E.C., on MONDAY, May 2, at 12 o'Clock precisely.

On view the Saturday prior to and morning of Sale. Catalogues had at the Mart; and of the Auctioners, 8, New Broad Street, E.C.

**Special Sale of Orchids in Flower and in Bud.**

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, May 9, at half-past 11 o'Clock, choice established ORCHIDS in Flower and in Bud, including selections from some of the most noted collections in the neighbourhood of London.

Catalogues may be had at the Auctioneers' Offices, 8, New Broad Street, E.C., and Leytonstone, E.

**Ryde's Hill, near Guildford.**

CLEARANCE SALE, by order of W. Whitley, Esq., who is leaving the neighbourhood.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Ryde's Hill, about two miles from Guildford Station, on TUESDAY, May 10, at 12 o'Clock precisely, the whole of the valuable collection of STOVE and GREENHOUSE PLANTS, including many fine specimens; several handsome FERNS and PALMS, 7000 Bedding Plants, 4 Half-bred Alderney COWS, a capital LANDAU (for one or a pair), by Offord; a well-made WAGGONETTE, by Kelley; Light Spring CART, 4-wheel TRAP, 100 Head of POULTRY, and sundry items of HOUSEHOLD FURNITURE.

May be viewed the day prior to the Sale. Catalogues had of Mr. MEARING, the Gardener, on the Premises; and of the Auctioneers and Land Agents, 8, New Broad Street, E.C., and Leytonstone, E.

**Sale this Day, at 11 o'Clock Precisely.**

LEE HALL, GATEACRE, NEAR LIVERPOOL.

The noted Collection of RARE PLANTS, comprising some of the finest known Specimens in this part of the country, no pains or expense having been spared in their acquisition, and which, for variety, extent, and perfection, form a most important and highly attractive gathering.

MESSRS. BRANCH AND LEETE will SELL by AUCTION, THIS DAY, SATURDAY, April 30, at 11 o'Clock precisely, on the Grounds of Lee Hall, Gateacre, near Liverpool, the property of J. H. Wilson, Esq., J.P., who is dispersing the entire collection for further operations, requiring more space and considerable alteration, the singularly rare and beautiful ORCHIDS, many of which have only recently been introduced to this country, and are yet unique; STOVE PLANTS in the finest state and of the most desirable kinds; choice EXOTIC FERNS, Prize Specimen AZALEAS and CAMELLIAS, mostly new varieties; AZALEA GIESONI, of surpassing beauty and growth; selected ERICAS, EPACRIS, PALMS, and other ORNAMENTAL FOLIAGE PLANTS, AMARYLLIS, and a large number of Herbaceous Species, together with a comprehensive variety of general HARD-WOODED and other GREENHOUSE PLANTS, evidencing unremitting study and strict botanical knowledge possessed by the above most eminent private Collector.

Catalogues at the Offices of Messrs. BRANCH AND LEETE, 60, Hanover Street, Liverpool.

**Monday Next, May 2.**

ODONTOGLOSSUM CRISPUM (ALEXANDRÆ).

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, May 2, at half-past 12 o'Clock precisely, by order of Shuttleworth, Carder & Co., Orchid and New Plant Importers, 191, Park Road, Clapham, London, S.W., a fine importation of ODONTOGLOSSUM CRISPUM, O. PESCATOREI, O. TRIUMPHANS, O. GLORIOSUM, MASDEVALLIA HARRYANA, and EUCHARIS CANDIDA.

On view morning of Sale, and Catalogues had.

**Established and Imported Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 2, at half-past 12 o'Clock precisely, a small collection of ESTABLISHED ORCHIDS, good roots of DISA GRANDIFLORA and CALANTHES; an importation of fine plants of ODONTOGLOSSUM VEXILLARIUM and O. ROEZLII; two new cases of New Zealand FERNS, an importation of LÆLIA PURPURATA, specimen STOVE and GREENHOUSE PLANTS, ORCHID BASKETS, &c.

On view morning of Sale, and Catalogues had.

**The Third Portion of the Celebrated Collection of** ORCHIDS, formed by J. DAY, Esq., of Tottenham.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, May 4 and 5, at half-past 12 o'Clock precisely each day, the third portion of this celebrated Collection, comprising amongst other fine things, splendid Plants of

| | |
|---|---|
| Cattleya labiata, autumn var. | Cypripedium Druryi |
| ,, Skinneri alba | ,, Stonei platytænium |
| Lælia harpophylla | Phalænopsis sumatrana |
| ,, anceps alba | Angræcum articulatum |
| ,, ,, rosea | ,, Elisii |
| Epidendrum bicornutum | Oncidium ornithorrhynchum |
| ,, pseudepidendrum | album |
| Calanthe Textori | Vanda Lowii |
| ,, Dominiana | ,, tricolor, Dalkeith var. |
| Cymbidium Parisbii | Saccolabium Turneri |
| Aerides Veitchianum | ,, Holfordianum |
| Lælia elegans Wolstenholmiæ | Masdevallia Chimæra |
| Cypripedium Spicerianum | ,, Veitchii grandiflora, &c. |

Also a small Collection of NEPENTHES, including sanguinea, lanata, and other fine varieties.

May be viewed the morning of Sale, and Catalogues had.

**Orchids in Flower or Bud.**

MR. J. C. STEVENS' next SALE of FLOWERING ORCHIDS will take place on TUESDAY, May 10, and he will be glad of entries not later than WEDNESDAY, May 4.

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

**Friday Next.**

VALUABLE IMPORTATION of ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, St. Alban's, on FRDAY, May 6, at half-past 12 o'Clock precisely, an importation of the beautiful MASDEVALLIA ROSEA, in finest condition; 5000 ODONTOGLOSSUM ALEXANDRÆ, in reliable good varieties; a fine lot of LÆLIA PURPURACEA, ODONTOGLOSSUM ALEXANDRÆ LEHMANNI and O. VEXILLARIUM LEHMANNI, MASDEVALLIA HARRYANA, and other valuable importations.

On view morning of Sale, and Catalogues had.

WANTED, Small MANUFACTURING PREMISES, within a few miles of Covent Garden. If with 5 to 10 Acres of Orchard Land it would be preferred.
JOHN MARTIN, 11, Broad Court, Covent Garden, W.C.

**Hampton, Surrey.—(5212.)**

About fifteen minutes' walk from the Railway Station.

TO BE SOLD, 20 Acres of FREEHOLD LAND, suitable for Nursery purposes, with a strong loamy soil. Price £225 an acre.—Apply to
Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, E.C.

TO BE SOLD, with Immediate Possession, a First-class Old-established NURSERY and SEED BUSINESS, in thorough working order, in the leading thoroughfare, five miles south of London; owing to failing health of proprietor. Any one with a fair amount of capital will find this a profitable investment. Apply, in first instance by letter only, to
B. F. S., Messrs. Nutting & Sons, Seed Merchants, 60, Barbican, London, E.C.

FOR DISPOSAL, a SEED and FLORIST'S BUSINESS (or would take a Partner). A rare opportunity for an energetic Gentleman. The highest references given and required, with full particulars. Apply
SEED and FLORIST'S B., *Gardeners' Chronicle* Office, W.C. (no Agents).

FOR DISPOSAL, on the South Coast, a NURSERY, SEED, and FLORIST BUSINESS, comprising 2 Acres of Land, Two Vineries, Cucumber, Propagating, and two Span-roofed Greenhouses, Show House and Seed Shop, Pits, Frames, Potting Sheds, &c. Rent only £25 per annum. Goodwill, Stock, Greenhouses, and all Erections.
Price and particulars on application to
FLORIST, 96, Alexandra Street, St Leonards-on-Sea.

FOR SALE (proprietor removing), SPECIMEN PLANTS—50 Camellias, 4 to 6 feet; Azalea indica, 2 to 3 feet; about 200 Greenhouse, and about 4000 Bedding Plants. GREENHOUSES, FRAMES, MOWING MACHINE; also PONY PHAËTON, PONY and HARNESS.

Apply personally, or by post, GARDENER, 12, Mornington Villas, Wanstead Flats, E.

MARKET GARDENS and FARMS (two), Southampton.—All Land cropped or cultivated; deep loam; well manured for early and late crops: 70 acres—½ acre Fruit, and 8 of Pasture; Cucumber and Greenhouses; large Dwelling-house, Barns, Stables, Piggeries (150 pigs fattened yearly). Good sale for milk, and markets for all the produce. Lease 12 years (Folio 1121, E). Also 40 acres—9¼ choice Fruit Trees, 1¼ Rhubarb; House, Shop, and Store, two Cottages (sublet) and outbuildings. Lease 10 years (Folio 1122, E).

For particulars apply to Mr. RICHARD T. HOUGHTON, House and Estate Agent, Friar Street, Reading, Berks.

**Florists, Gardeners, Grape Growers, &c.**

TO BE LET, on Lease or Term, a semi-detached RESIDENCE, with Garden front and back 200 feet long, admirably suited for Vineries, &c. Close to Chelsea and other Stations.

MORLEY AND BATE, House Agents, 185, Earl's Court Road, Kensington, S.W.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are 8½ Acres of deep rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business. For particulars apply to
J. WATSON, 38, Crown Street, Bury St. Edmunds.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

CHOICE FERNS.—100 new, rare, and beautiful Ferns for 63s., in fifty distinct varieties, many of which are rarely to be met with. At London catalogue prices could not be bought under £15. All strong plants, fit to pot on and make a good show when bedding plants are cleared out. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

**To the Trade.—New Roses for 1881.**

LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,
Gratis and post-free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

FOR SALE, a few Tons of MYATT'S ASHLEAF POTATOS, price £4 4s. per ton. HERB ROOTS of every description. Also a few thousands of SEA-KALE sets, for planting. Apply,
H. THORNTON AND CO., Dancer's Nurseries, Fulham, S.W.

RARE HOLLY FERN (Polystichum Lonchitis) with thorns. This most beautiful Fern, 1s. free: three for 2s. 6d., or twelve for 9s., free.
MORLEY AND CO., Nurserymen, Colt Hill, Odiham, Hants.

**Special Trade Offer for One Week.**

MYOSOTIS ELEGANTISSIMA. — The new silver-edged, blue-flowered Forget-me-not, unquestionably the most charming spring-flowering plant recently distributed. Strong clumps, beautifully variegated, and coming into flower, 20s. per 100 (not less than 100 at this rate).
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

**Rhododendron Ponticum.**

J. J. MARRIOTT begs to offer small Bedded Stuff, at 15s. and 20s. per 1000; transplanted, 4 to 6 inches, bushy, 50s.; 6 to 9 inches, bushy, 70s. per 1000. Samples on application.
Highfield Nurseries, Matlock; and Walsall, Staffordshire.

**Decorative Pelargoniums.**

F. AND A. SMITH offer the above, consisting of their own superb varieties, in extra fine well-grown plants, from 9s. to 15s. per dozen; also splendid SPIRÆA JAPONICA, at 6s. and 8s. per dozen. A liberal discount for cash.
The Nurseries, West Dulwich, S.E.

KELWAY AND SON offer:—
50,000 DAHLIAS, in 400 varieties.
10,000 ,, single varieties.
50,000 PYRETHRUMS, in 50 varieties.
50,000 SCOLOPENDRIUM KELWAYI.
VERBENAS, PETUNIAS, LOBELIAS Brighton Blue and Brighton White, CARNATION (Red) Souvenir de la Malmaison.
Langport, Somerset.

**Verbenas.**

VERBENAS.—Extra strong and well-rooted plants of Purple, White, Crimson, and Pink, 6s. per 100, 50s. per 1000; ten choice Exhibition varieties, beautifully clean and healthy, 8s. per 100, 70s. per 1000; Cuttings, 3s. and 4s. per 100, 25s. and 35s. per 1000. All securely packed. Terms cash.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

**Dr. Denny's Pelargonium, "Prima Donna."**

GEORGE SMITH begs to call the attention of his friends and the Public to this grand flower. It is in advance of all other White Zonals, the habit is as good as can be, remarkably free in flowering, with large truss of pure white, of great substance, and fine form. This, for Cut Flower and all purposes that WHITE PELARGONIUMS are grown for, appears all that can be desired. G. S. has it now in bloom, and will be pleased to show it to any one who may be in the neighbourhood. Strong plants, 5s. each.

G. S. has also strong plants of Dr. Denny's set of thirteen Double ZONALS, for 20s. For description see back Advertisement, or a LIST on application.

Post-office Order to accompany all orders from unknown correspondents.
Tollington Nursery, Hornsey Road, London, N.

CYCLAMENS for Winter Flowering.—Nice young plants of the famous Covent Garden strain, 1s. 6d. per dozen; two dozen, 2s. 6d.; extra strong, 2s. per dozen; 10s. per 100; seed, 1s.
TELEGRAPH CUCUMBER, Rollisson's variety, 20 seeds, 1s.
Choice ANEMONE, 1s. All post-free for cash only.
G. CORNHILL, Byfleet, near Weybridge Station.

GEORGE COOPER, SEED MERCHANT, Hertford, has to offer in large quantities to the Trade, finest Stocks—Prices on application:—
BEET, Northumberland Crimson.
,, Dell's Dark-leaved.
CABBAGE, Gibson's Drumhead.
,, Thousand-head.
CARROT, James' Scarlet Intermediate.
,, Altringham.
,, White Belgian.
CRESS, Plain.
CUCUMBER, Bedfordshire Champion Ridge.
KOHL RABI, Green.
LETTUCES, the leading sorts.
PARSLEY, finest curled.
,, Plain.
RADISH, Red Turnip.
SPINACH, Prickly.
TURNIPS, Garden, the leading sorts.
MIGNONETTE.
TROPÆOLUM CANARIENSIS.
SWEDE and TURNIP SEEDS.
The best stocks of every kind.

NEW SEEDLING POTATOS.—Gordon's Royal Kidney Regent, and Gordon's Victoria Regent, were raised from Seedlings three years ago, and have hitherto resisted disease. The former is a Second Early, and this year yielded over 10 tons per acre. The latter is not unlike Paterson's, but rougher skinned; it boils equally well, and is a much heavier cropper, having yielded 13 tons per acre.

Further particulars, with price, may be had on application to Mr. JOHN GORDON, Balmuchy, Fearn, Ross-shire, N.B.

Messrs. DRUMMOND AND SONS, Stirling, have authority to take Orders.

**Notice.**

AUCUBA JAPONICA.—Splendid plants for immediate effect, 2½ to 3½ feet high, 24s., 30s., 36s., and 42s. per dozen. A few extra large specimens, 5s. to 7s. 6d. each.
W. RUMSEY, Joyning's Nurseries, Waltham Cross, N.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.

Near 6000 species and varieties of plants are included in this List of eighty to ninety pages. No illustrations are given, nor any exaggerated descriptions to induce purchasers to buy varieties, which on proving they generally find so woefully disappointing. Special attention is given to the undermentioned classes, and purchasers selecting from our Catalogue may feel assured that no firm possesses larger collections of the finest sorts:—
CHRYSANTHEMUMS, GERANIUMS, FUCHSIAS, and other Soft-wooded Plants for Garden or Greenhouse.
DAHLIAS, PANSIES, PYRETHRUMS, CARNATIONS and other Florists' Flowers.
HERBACEOUS and ALPINE PLANTS, many hundreds of the finest and most useful varieties.
BEDDING PLANTS, all the varieties required for any style of Bedding.
SPRING FLOWERING PLANTS, the most reliable sorts, in thousands of strong plants.
STOVE and GREENHOUSE PLANTS, Flowering and Ornamental Foliage Varieties, various sizes from quite young plants to quarter specimens, to suit various classes of purchasers.

The prices and plants need only to be compared with those of other firms, to prove that in no instance can buyers who study price and quality be supplied more advantageously than by ourselves.

W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties are now ready, 2s. 6d., 3s. 6d. and 5s. each. Full particulars and testimonials free on application to
Messrs. JONES AND NORTH, Hope Nursery, Lewisham, Kent.

**To the Trade.—Seed Potatos.**

H. AND F. SHARPE have still to offer all the principal kinds of SEED POTATOS, at considerably reduced prices, in order to clear out. Special quotations on application.
Seed Growing Establishment, Wisbech.

CHRYSANTHEMUMS and FUCHSIAS.—We can now offer the above, in best named varieties, strong, well-rooted little plants; by post or rail as preferred.

FUCHSIAS or CHRYSANTHEMUMS.

| | | | |
|---|---|---|---|
| 12 Plants, in 12 sorts | .. | .. | 2s. 6d. |
| 25 ,, 25 ,, | .. | .. | 5 0 |
| 50 ,, 25 ,, | .. | .. | 8 0 |
| 100 ,, 50 ,, | .. | .. | 14 0 |

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

**Special Offer to the Trade.**

SEEDLINGS. — 2-yr. Scots FIR, native, 5s. 6d.; 2-yr. PINUS AUSTRIACA, 2s. 6d.; 2-yr. PINUS LARICIO, 2s. 6d.; 3-yr. Silver FIR, 4s. 6d.; 2-yr. BEECH, 5s.; 2-yr. HAZEL, 10s.; 3-yr. HAZEL, 12s. 6d.; 2-yr. English OAK, 7s.; 1-yr. SYCAMORE, 2s. 6d.; 1-yr. PEARS, 4s. 6d. per 1000.
W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

PETUNIAS (magnificent new double fringed). We beg to offer the above in good strong plants, 9s. and 12s. per dozen.
ROSES (Tea-scented), on own roots, 4½-in. pots, 10s. per doz.
PELARGONIUMS (show and fancy), 4½-in. pots, strong plants.
,, Zonal, single and double, Pearson's, of 1880.
PANSIES and VIOLAS, in large quantity, 2s. to 4s. per doz.
ERICA, best hard-wooded sorts, in half and quarter specimens, and smaller plants.
AZALEA INDICA, in choice variety.
CATALOGUES on application.
Executors of HENRY WALTON, Edge End Nursery, Briefield, near Burnley.

ILLUSTRATED CATALOGUE of PERENNIALS.—The present year's issue of this Catalogue, containing many rare and choice Hardy Perennials, also Selections of Hardy Terrestrial Orchids, Primula Sieboldii, Climbing and Trailing Plants, Aquatics and Bog Plants, Ornamental Grasses and Bamboos, Sarracenias, &c., may be had post-free upon application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

**To the Trade.**

PELARGONIUMS, Show, Fancy, and Decorative, best named sorts, good plants, to flower next month, in 48-pots, 8s. per dozen, 60s. per 100; in 32-pots, 12s. per dozen, 80s. per 100.
CHRYSANTHEMUMS, best sorts, large-flowered Japanese and Pompon, in thumb-pots, 25s. per 100.
DAHLIAS, best varieties, in small thumbs, 20s. per 100.
DOUBLE PYRETHRUMS, best named sorts in variety, 25s. per 100.
GARAWAY & Co. offer the above; their own selection.
GARAWAY & CO., Durdham Down Nurseries, Clifton, Bristol.

**Now is the Best Time to Transplant Hollies.**

HOLLIES, STANDARD, GOLD and SILVER, perfect Specimens, from 10s. 6d. to 31s. 6d. each.
PYRAMIDS, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each.
GREEN HOLLIES, for Hedges, 12 to 15 inches, 21s. per 100; 15 to 18 inches, 30s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Verbenas—Verbenas.**

WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff, 6s. per 100, 50s. per 1000; strong plants from single pots, full of cuttings, 12s. per 100; 100 rooted cuttings, in twelve best show kinds, 8s., packing included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

**50,000 Pelargonium Vesuvius.**

WILLIAM BADMAN is sending out VESUVIUS, from store pots, 8s. per 100, 75s. per 1000, packing included. Send cash with order.
Cemetery Nursery, Gravesend, S.E.

NEW ROSES for 1881, in pots. TEA and NOISETTE ROSES, in pots. Price Lists free.
CLEMATISES, best new and old sorts. New List to be ready (D.V.) by end of May.
EWING AND CO., Eaton, Norwich.

POT ROSES and CLEMATIS.—A large and very extensive Collection of the above, including the finest varieties, ready for delivery in June. Early orders solicited.
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

NORTH DEVON FERNS.—Thirty roots, fourteen kinds, named, including two each of the rare Lanceolatum, hay-scented Beech and Ceterach, 2s., free. The two beautiful Hymenophyllums, 2s., free. 100 large, several kinds, in hamper, 6s. Apply,
RICHARDS, Gardener and Lodging-house Keeper, Woodbine, Lynmouth, by Barnstaple.

STRONG PLANTS.
100 Choice ZONAL GERANIUMS, all the best kinds, for 24s.
100 Choice BRONZE ditto, the best, 25s.
100 Choice SILVER-EDGED, Fancy flowering ditto, 16s.
100 Choice PHLOX, well rooted, 16s.
100 Pot Roots of the best DAHLIAS, 20s.
1000 CUTTINGS of the best GERANIUMS, Zonal, Bronze, Tricolor, and Silver-edged, for £5.
No charge for packing. Cash with order.
CHARLES BURLEY, Brentwood.

# ARTHUR VEITCH MEMORIAL

A Fund, to be called the "ARTHUR VEITCH MEMORIAL FUND," the proceeds to be dispensed through the GARDENERS' ROYAL BENEVOLENT INSTITUTION, for the benefit of aged and infirm GARDENERS, or their WIDOWS.

Subscriptions for the above object (not to exceed One Guinea from Head, or Half a Guinea from Under Gardeners) are respectfully solicited from all classes of Horticulturists.

Intending Subscribers are informed that the Fund will be CLOSED on SATURDAY, May 21, and the Committee hope the movement will continue to receive support from young Gardeners in all parts of the Kingdom, who lost in the deceased a sincere friend.

Subscriptions may be paid to any of the Collectors advertised in the *Gardeners' Chronicle* of February 5, or to either of the undersigned:

Mr. T. MANNING, Royal Exotic Nursery, King's Road, Chelsea, S.W.

Hon. Treasurer. { J. ROBERTS, Gunnersbury Park, Acton, London, W.

Hon. Secretaries. { W. WILDSMITH, Heckfield Gardens, Winchfield, Hants.
J. HUDSON, Gunnersbury House, Acton, London, W.
J. AUSTIN, Ashton Court, Bristol.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
,, Golden, many thousands, 3, 4, 5 to 10 feet high.
,, Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
,, laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
,, Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
,, Golden Queen, 4, 5, 6 to 10 feet high.
,, Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
,, ,, ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 eet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
,, DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
,, SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

**New Dahlias, New Roses, and New Verbenas.**

KEYNES AND CO. are now booking orders for their splendid new Sets, which will be ready the first week in May; also their general collection of DAHLIAS and VERBENAS. The latter may be had at once in fine bushy and well hardened plants, free from disease.
Fine strong plants of the new ROSES for 1881 now ready.
Price LISTS free on application.
The Nurseries, Salisbury, April 6, 1881.
Trade orders respectfully solicited.

**Verbenas.—50,000 now ready for Sale.**

S. BIDE is now prepared to supply to his numerous customers, as on previous seasons, really good, strong, spring-struck plants of Purple, Scarlet, White, and Pink Verbenas, at 6s. per 100; 50s. per 1000. Best Exhibition Varieties, 8s. per 100, package free. Cash must accompany each order.
Strong healthy Cuttings of the above at half price. Free by post.
S. BIDE, Alma Nursery, Farnham, Surrey.

**To the Trade.**

MANGEL WURZEL and TURNIP SEEDS.
H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.
Seed Growing Establishment, Wisbech.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.
EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.
,, TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.
,, SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.
,, GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
,, DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.
,, BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.
,, Forcing, Show and French vars., 30s. per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

**The Best New Pelargoniums of the Season.**

SALTMARSH AND SON, The Nurseries, Chelmsford, will be prepared to send out early in May the undermentioned Seedlings of their own raising, and which they can confidently recommend as being of first-class merit in their respective classes:—

**Double Zonal Pelargoniums.**

LORD E. CECIL. 7s. 6d. First-class Certificate.
MRS. ARTHUR LATTEY. 5s.
SULTAN. 3s. 6d.
The above were awarded the prize for the best three not in commerce in June last.
EARL BEACONSFIELD. 3s. 6d.
EMPRESS OF INDIA. 3s. 6d.
The set of five, 21s.

**Decorative Pelargoniums.**

MRS. H. C. WELLS. 7s. 6d.
LADY RAYLEIGH. 5s.
LADY SELWYN IBBETSON. 5s.
MARS. 5s.
The set of four, 21s.
For description and further particulars see Advertisement in this paper on April 2.
The usual discount to the Trade, and a further allowance when three sets are taken.

**Spring Planting.**

SEEDLING and TRANSPLANTED FOREST TREES.
PLANTS for GAME COVERTS,
ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c.—The immense stock of the above is in splendid condition, and special offers for large quantities will be made when desired.
CATALOGUES free on application.
The LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh.

**The Chief Bundle of the Season is now Ready.**

FORTY SEPARATE PACKETS of NEW FLOWER SEEDS, all different, for 1s.; double quantity for 1s. 9d. We thus eclipse all other offers, hoping to secure patronage for our miscellaneous seeds.
AGENTS WANTED to Canvass in spare time; liberal commission; experience not necessary.
W. H. HOWELL, Flackwell Heath, High Wycombe.

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor Lincoln.

**Rare Things.**

ACER GINNALII.—A very handsome and distinct Maple, leaves glowing crimson in autumn: 3s. 6d. each.
HAMAMELIS ARBOREA.—Nice flowering specimens of this rare and curious winter flowering tree, 5s. each.
DAPHNE BLAGUAYANA.—Hardy as a British Heath, nice flowering plants, 3s. 6d. each.
POPULUS ALBA BOLLEANA.—Habit of the Lombardy, silvery leaves, 5s. each.
VITIS STRIATA.—Sub-evergreen climbing plant, with the clinging habit of Ampelopsis Veitchii, 2s. 6d. each.
YUCCA RUPICOLA.—A very distinct and perfectly hardy Yucca, 3s. 6d. each.
For other Novelties see our new supplemental LIST, just issued.
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

Single Dahlias and French Marguerites.

THOMAS S. WARE has pleasure in announcing that his new Special LIST of the above is ready containing a fine selection of SINGLE DAHLIAS and the best of the MARGUERITES; also a number of specially choice NOVELTIES in ANTIRRHINUMS, PHLOXES, PENTSTEMONS, and CHRYSANTHEMUMS. Post-free upon application.
Hale Farm Nurseries, Tottenham, London.

ZONALS, very large collection of the finest varieties for Pot Culture; also all the best Double GERANIUMS, by selection or by dozen. See New CATALOGUE for everything.
GLOXINIAS, ready for potting on, 4s. and 6s. per dozen.
White VESUVIUS, 12s. and 15s. per 100. Package free.
GEO. GUMMOW, 114, Loughborough Road, Brixton, S.W.

WHOLESALE PRICES.—WHOLESALE PRICES.

SPECIAL OFFER.

*WOOD & INGRAM*

Have pleasure in offering :—

**PELARGONIUMS**, Show, French, Spotted, and Early Free-flowering (Market) varieties. Fine, robust plants, in bloom and coming into bloom, in 5-inch pots, 12s. per dozen, 75s. per 100.

**CALCEOLARIA, Herbaceous,** Fine Strain. Good Plants, in 5-inch pots, 9s. per dozen, 60s. per 100.

PACKAGE EXTRA.

*Special Trade Offer of Bedding Plants on Application.*

THE NURSERIES, HUNTINGDON, AND ST. NEOTS.

THE LARGEST ROSE GARDENS IN ENGLAND.

CRANSTON'S NURSERIES.
(ESTABLISHED 1785.)

*New Rose Catalogue for* 1880-81, now ready, and may be had post-free on application.

Awarded over 60 First Prizes for Rose Blooms this season.

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ONION. ONION. ONION.

NUNEHAM PARK, extra selected, per packet, 1s.
This superior variety maintains the high character we gave when it was first introduced.

For description, see our ILLUSTRATED SEED CATALOGUE, post-free, on application.

W. CUTBUSH & SON,
HIGHGATE, LONDON, N., and BARNET, HERTS.

GEO. JACKMAN & SON,
(ESTABLISHED 1810.)

Cultivators of
FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
ROSES, RHODODENDRONS,
*Conifers and Hardy Climbers.*
THE CLEMATIS
A SPECIALITY.

*Descriptive Priced Catalogues free.*
WOKING NURSERY, SURREY.

Ferns a Speciality.
EXOTIC AND BRITISH FERNS.

IN great number and variety, suitable for Stove and Greenhouse cultivation, for Outdoor Ferneries and other purposes.
*Intending Purchasers before buying elsewhere should send for our SPECIAL LIST of CHEAP FERNS, which will be forwarded free on application.*
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

CRANSTON'S NURSERIES.
(ESTABLISHED 1785.)

CATALOGUE
OF
*New English and French Roses*
for Spring of 1881,
DAHLIAS, CLEMATIS, PHLOXES, and CHOICE BEDDING PLANTS,
*Free on application to*
CRANSTON'S NURSERY & SEED CO.
(Limited),
KING'S ACRE, near HEREFORD.

NEW GREENHOUSE RHODODENDRON,
R. EXONIENSIS.

*First-class Certificate ... Royal Horticultural Society, April* 26, 1881.
*Botanical Certificate ... Royal Botanic Society, April* 27, 1881.

ROBERT T. VEITCH

Desires to direct attention to this magnificent New Greenhouse Rhododendron, which he is now offering for the first time.

It is a hybrid between R. Veitchii and R. ciliatum, and its flowers bear a resemblance to the first-named variety, and in habit and hardiness to the last-named; it is, in fact, an improvement on R. ciliatum as regards habit, and is unquestionably the best habited Rhododendron ever sent out. It is very dwarf and compact growing, and flowers most freely even in the smallest state. The flowers are sweet-scented, slightly fringed at the edge of petals, white in colour with a creamy shade in the centre, and the back of the petals faintly tinged with rose. The individual flowers average 3 to 3¼ inches in diameter, and are produced in pairs and trusses.

Nice young Plants .. .. .. .. .. .. 10s. 6d. each.
Extra size .. .. .. .. .. .. 21s. and 31s. 6d. each.

*PRICE TO THE TRADE ON APPLICATION.*

EXOTIC NURSERY, NEW NORTH ROAD,
EXETER.

SEED POTATOS for LATE PLANTING.

The following excellent sorts can still be supplied—
*SPECIAL LOW PRICES ON APPLICATION:—*

CARTERS' IMPROVED MAGNUM BONUM
BEAUTY OF HEBRON
IMPROVED RED-SKIN FLOURBALL
EARLY ROSE
SNOWFLAKE
CARTERS' SELECTED SCOTCH CHAMPION
EARLY HANDSWORTH
MYATT'S PROLIFIC KIDNEY
EARLY SHAW
CLIMAX.

JAMES CARTER & CO.,
The Queen's Seedsmen and Seedsmen by Royal Warrant to His Royal Highness the Prince of Wales,
237 and 238, HIGH HOLBORN, LONDON, W.C.

Monday Next, May 2.

ODONTOGLOSSUM CRISPUM (ALEXANDRÆ).

SHUTTLEWORTH, CARDER & CO.,
ORCHID and NEW PLANT IMPORTERS, 191, PARK ROAD, CLAPHAM, LONDON, S.W.
BEG TO ANNOUNCE THAT

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, Covent Garden, W.C., on MONDAY NEXT, May 2, at half-past 12 o'Clock precisely, a fine Importation of ODONTOGLOSSUM CRISPUM, O. PESCATOREI, O. TRIUMPHANS, O. GLORIOSUM, MASDEVALLIA HARRYANA, and EUCHARIS CANDIDA.

*On view the morning of Sale, and Catalogues had of Mr. J. C. Stevens, 38, King Street, Covent Garden, W.C.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# PELARGONIUMS IN BLOOM.

## BECKWITH & SON

Have now ready many thousands of the above, in all stages of bloom, in upwards of one hundred varieties.

*Prices, Package Free, Delivered to any London Station :—*

**£5, £6 5s., and £7 10s. per 100.**

TOTTENHAM NURSERY, LONDON, N.

# SEED POTATOS.

The Subscribers offer, at the following Reduced Prices, their Surplus Stock of Potatos, specially grown for Seed :—

| | £ | s. | d. | | £ | s. | d. |
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| SCOTCH CHAMPIONS ... ... | 3 | 0 | 0 | DUNBAR REGENTS ... ... | 3 | 10 | 0 |
| RED BOG EARLY ROUND ... | 3 | 10 | 0 | SNOWFLAKE ... ... ... | 4 | 10 | 0 |
| PATERSON'S VICTORIA ... | 3 | 10 | 0 | MYATT'S KIDNEY ... ... | 4 | 0 | 0 |
| HUNDREDFOLD FLUKE ... | 4 | 10 | 0 | MAGNUM BONUM ... ... | 5 | 15 | 0 |

*FREE ON RAILS.*

## LITTLE & BALLANTYNE,

SEED MERCHANTS and NURSERYMEN, CARLISLE.

# PELARGONIUM—EDWARD PERKINS.

This splendid New Decorative Pelargonium, offered now for the first time, is a seedling from Triomphe de St. Maude. It has the fine habit and free-flowering character of the parent, but the blooms are larger and of fine form. The colour is a warm, brilliant, orange-scarlet, with blotched upper petals, carried on strong footstalks well above dense bright-green foliage, and is quite new and distinct from any Pelargonium yet introduced.

## FREDERICK PERKINS

Has great pleasure in introducing this splendid New Pelargonium, and is quite certain that it will become a great favourite for every description of Decoration and Market Purposes, as it has no equal.

*Coloured Plate, by J. N. Fitch, free to Customers.*

**Plants, now ready, 10s. 6d. each. Usual Trade Discount.**

FREDERICK PERKINS, Nurseryman, REGENT STREET, LEAMINGTON.

# NEW SEEDLING BOUVARDIA, "DAZZLER."

*Awarded a First-class Certificate at the Royal Horticultural Society, November* 16, 1880.

This is, without doubt, one of the best Bouvardias in cultivation, its splendid floriferous character and bushy compact habit making it a Plant to be desired in every Greenhouse. Being a Seedling of my own crossing, and having grown it for several years in my Nurseries, I can guarantee its true character. The flowers are a rich scarlet, which are produced very abundantly, in fine clusters of moderately large flowers. The growth is exceedingly vigorous. To Market Growers it will be found invaluable both for pot culture and cut bloom.

See *Gardeners' Chronicle*, November 20, 1880 ; *Garden*, November 20, 1880 ; *Journal of Horticulture*, November 18, 1880.

**Well-established Plants will be ready in May, price 5s. each. Usual Discount to the Trade.**

All Orders will be booked and executed in strict rotation.

*ADDRESS :—*

## WILLIAM BALCHIN,

Hassock's Gate Nursery, Keymer, Sussex ; or 87, Western Road, Brighton.

FOR PRESENT SOWING—POST-FREE.

☞ *In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.*

Daniels' Prize Calceolaria.

Per Packet.—*s. d.* *s. d.*

**AURICULA**, Daniels' Prize Alpine .. .. .. 1 0

**BEGONIA**, Tuberous-rooted, choicest mixed .. 1 6 & 2 6

**CARNATION**, choicest double, from named flowers .. .. .. ..*1s. 6d.* 2 6 ,, 5 0

,, perpetual double, from named flowers .. 2 6 ,, 5 0

*From* Mr. Peter Sinclair, *Greenock.*

"You will observe by accompanying report of Greenock Autumn Flower Show competition that I carried off Two First Prizes for Carnations raised from your Seeds."

**CALCEOLARIA**, Daniels' Superb Prize ..*1s. 6d.* 2 6 ,, 5 0

,, new dwarf, spotted, fine .. .. .. 1 6 ,, 2 6

*From* Rev. Dr. Thomas Smith, *Edinburgh.*

"I have had a splendid crop of seedling Calceolarias from your Seed. Some of the flowers were the most beautiful I ever saw."

**CINERARIA HYBRIDA**, from a splendid strain *1s. 6d.* 2 6 ,, 5

*From* Mr. M. Moody, Gardener to J. Rendall, Esq., *Wootton.*

"I must tell you the Cinerarias, the Seed of which I received from you last year, are now in bloom, and the admiration of every one ; many of them are considerably larger than a crown piece."

**CYCLAMEN PERSICUM**, beautiful varieties, mixed .. .. .. .. .. .. 1 6 ,, 2 6

**DAISY**, choicest double, mixed .. .. .. 0 6 ,, 1 0

**GLOXINIA HYBRIDA GRANDIFLORA**, very choice, mixed .. .. .. .. 1 6 ,, 2 6

**PANSY**, Daniels' Show and Fancy .. .. 1 6 ,, 2 6

,, Prize Blotched, magnificent varieties .. 1 6 ,, 2 6

,, Daniels' improved striped, beautiful .. .. 1 6

*From* W. Marshall, Esq., F.R.S., *Dublin.*

"Every Seed of the two packets of Pansy you sent me grew, and I have now a magnificent bloom of the finest Pansies in the neighbourhood."

**PICOTEE**, choicest double, from stage flowers, *1s. 6d.* 2 6 ,, 5 0

**PRIMULA**, Daniels' choicest red .. .. .. 1 6 ,, 2 6

,, Daniels' choicest white .. .. .. 1 6 ,, 2 6

,, Daniels' choicest mixed .. ..*1s. 6d.* 2 6 ,, 5 0

,, Fern-leaved, very choice .. .. .. .. 1 6

,, Superb double-flowered, mixed .. .. 2 6 ,, 5 0

*From* M. H. Voss, Esq., *Streatham.*

"The Primula Seed you sent me last year gained my Gardener First Prize at the Brixton Hill Show. The Plants now in bloom far surpass your Catalogue Illustrations."

**PRIMROSE**, choicest mixed, from a fine collection of brilliant varieties .. .. .. .. 2 6

**POLYANTHUS**, finest gold-laced .. .. .. .. 1 0

**SWEET WILLIAM**, Daniels' superb strain .. .. 1 0

# RANSOMES' LAWN MOWERS
## ARE THE BEST.

MELBOURNE EXHIBITION, 1881, THE HIGHEST AWARD.

The "GLOBE" Lawn Mowers are intended to meet the demand for machines specially adapted for cutting long grass; and which, whilst similar to the Lawn Mowers imported from America, have the special advantages of the more accurate fitting and general durability of English manufacture and perfect adjustment.

PRICES, without Grass Box.

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| 8-in. | for Small Lawns and Edgings.. | £2 2 0 |
| 10-in. | ,, use by a Lady or a Boy | 3 3 0 |
| 12-in. | ,, ,, ,, ,, | 4 4 0 |
| 14-in. | ,, ,, Man | 5 5 0 |
| 16-in. | ,, ,, ,, on Level Lawns | 6 6 0 |

Grass Boxes extra if required.
8-in., 5s.; 10 and 12-in., 7s. 6d.; 14 and 16-in., 10s.

The "AUTOMATON" Lawn Mowers are thoroughly strong, well made, and durable machines, and the best suited for *general* work and *Gardeners'* use. They cut the grass perfectly, leave no ribs, but produce a smooth velvety surface on the Lawn, and are light in draught.

PRICES, including Grass Box.

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| 8-in. | for Small Lawns and Edgings.. | £2 15 0 |
| 10-in. | ,, use by a Lady or a Boy | 3 10 0 |
| 12-in. | ,, ,, Lad | 4 10 0 |
| 14-in. | ,, ,, Man | 5 10 0 |
| 16-in. | ,, ,, Man and Boy | 6 10 0 |
| 18-in. | ,, ,, Man and Boy | 7 10 0 |
| 20-in. | ,, ,, Two Men | 8 0 0 |
| 22-in. | ,, ,, Donkey | 8 10 0 |

Boots for Donkey, 20s. per set.

R., H. & J. also manufacture "Reversible" Lawn Mowers for Small Gardens and Amateurs, and "Horse-Power" Lawn Mowers for Large Lawns, Cricket Grounds, &c.

*Machines sent on Month's Trial, Carriage Paid. Illustrated Price Lists free by Post.*

RANSOMES, HEAD & JEFFERIES, ORWELL WORKS, IPSWICH.

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PATRONISED BY

HER MAJESTY the QUEEN. H.R.H. the PRINCE of WALES. H.R.H. the DUKE of EDINBURGH.

The British Government. The Indian Government. The Colonial Governments. 15,000 of the Nobility, Gentry, and Clergy.

IS EXTENSIVELY USED FOR ALL KINDS OF

1 Cwt. and Oil Mixture Carriage Free.

## OUTDOOR WORK.

Discount—Five per Cent. for Cash.

IT IS SPECIALLY APPLICABLE TO

WOOD, IRON, BRICK, STONE and COMPO, CONSERVATORIES, GREENHOUSES, FRAMES, &c.

*SOLD IN ALL COLOURS. PRICES, PATTERNS, and TESTIMONIALS FREE.*

WALTER CARSON & SONS,

LA BELLE SAUVAGE YARD, LUDGATE HILL, LONDON, E.C.; 21, BACHELORS' WALK, DUBLIN.

## W. CLARK'S
PATENT
## COMBINATION GARDEN IMPLEMENT.

This simple Machine will cut turf and grass at the same time cleaning the lower part of the pathway which forms the gutter, throwing the rubbish on one side, making a clean cut of the Turf and leaving a smooth bottom to the pathway; acts for Weeding Gravel Walks, Hoeing, and Gathering the Refuse. It will cut out all kinds of Ornamental Flower Beds, &c, Water-courses, and Gutters. This Patent Machine has been shown in Hyde Park, where there are upwards of twenty miles of Turf-edging, and is considered to be the best implement for the purpose ever seen. It was sent to the Crystal Palace, where there are about ten miles of Garden-edging, besides all their Ornamental Flower Beds, and gave every satisfaction, a supply being sent in at once. The Machine shows at a glance Simplicity and Lightness in Construction, and, being so cheap, is at every one's command.

It can be sharpened with a stone in the ordinary way, and is sold in three sizes:—

| No. 1. | No. 2. | No. 3. |
|---|---|---|
| 10s. | 12s. | 14s. |

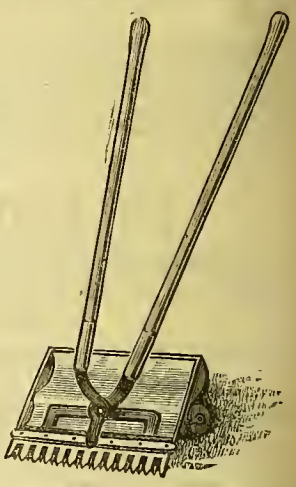
## W. CLARK'S
PATENT
## GRASS and CORN CUTTER.

This useful machine is used for Lawns, Banks, Grass Edgings, Round Flower Beds and places where the Lawn Mower cannot reach; will trim Shrubs, Ivy, and Creepers; cutting Clover, Rye, and other green crops; trimming Hay and Corn, Ricks, Thatch, &c. It is not intended to supersede the Lawn Mower but to supplement its use, and from the many and varied uses to which it can be applied will be found one of the most economical inventions ever offered to the public.

It is sold in five sizes, with or without trays.

PRICES.

| | |
|---|---|
| The 8-inch Machine, complete with Roller and Tray | 21s. |
| Ditto, without Roller and Tray | 18s. |
| The 12-inch Machine, complete with Roller and Tray | 28s. |
| Ditto, without Roller and Tray | 24s. |
| The 16-inch Machine, complete with Roller and Tray | 38s. |
| Ditto, without Roller and Tray | 33s. |



To be obtained from all Ironmongers in the United Kingdom, and from the Patentee,

W. CLARK,

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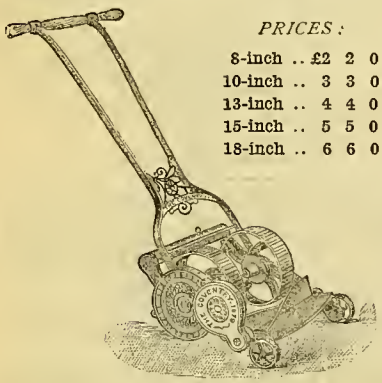

*PRICES:*

| | |
|---|---|
| 8-inch | £2 2 0 |
| 10-inch | 3 3 0 |
| 13-inch | 4 4 0 |
| 15-inch | 5 5 0 |
| 18-inch | 6 6 0 |

Awarded the First Prize at the Sydney Exhibition.

# "THE COVENTRY" LAWN MOWER

(REGISTERED). MANUFACTURED BY

## NETTLEFOLD & SONS,

54. HIGH HOLBORN, LONDON, W.C.

The great success which has attended "THE COVENTRY" LAWN MOWER during the two seasons in which it has been before the Public, enables the Manufacturers to recommend it with increased confidence as the best and cheapest yet introduced; for lightness and ease in working it cannot be surpassed.

It has all the improvements which have of late been introduced into this class of Machine, either in England or America.

It will cut wet or dry grass of any length, will turn in its own width, and is so light that a lady can use a 15-inch Machine of this make with greater ease than a 10-inch of the ordinary kind.

It is made, as it name implies, at Coventry, by skilled English workmen, and of best English Steel and Iron.

These Machines can also be supplied with ROLLERS at the same price, and with Grass Boxes at the following extra cost:—8-inch, 6s. 6d.; 10-inch, 7s.; 13-inch, 7s. 6d.; 15-inch, 8s. 6d.; 18-inch, 9s. each.

Front Wooden Rollers for cutting verges.—8-inch, 2s. 6d.; 10-inch, 2s. 9d.; 13-inch, 3s.; 15-inch, 3s. 6d.; 18-inch, 4s. each.

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The above new white Primula is of exquisite form and substance, and a great improvement on the old varieties, the habit of the plants being exceedingly compact, with deeply indented leaves of a light green colour; the flowers measure 2¼ inches in diameter, pure white, with a large bright yellow eye, each petal being deeply and beautifully fringed, and are borne in large trusses well above the foliage. Sold only in sealed packets bearing my trade mark.

Awarded a First-class Certificate by the Royal Botanic and Horticultural Society of Manchester, March 15, 1881.

**Per Packet, 5s.**

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| **Balsam**, Williams' Superb Strain .. .. 2s. 6d. and | 1 | 6 |
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| **Carnation**, finest mixed .. .. .. .. .. | 1 | 6 |
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# NEW PLANTS FOR 1881.

## MR. WM. BULL'S ILLUSTRATED CATALOGUE FOR 1881

is now in the Press,
And will be issued the end of this month; price 1s.

**It will contain Names, Descriptions and Prices of the following New Plants; which will be sent out in May:—**

ADIANTUM ANEITENSE
ANTHURIUM INSIGNE
,, SCHERZERIANUM MAXIMUM
ANTIGRAMMA BRASILIENSIS
APHELANDRA PUNCTATA
ARUNDINARIA KHASIANA
AZALEA BALSAMÆFLORA
CARLUDOVICA WALLISII
CHAMÆCLADON RUBENS
CŒLOGYNE CRISTATA ALBA
CROTON BROOMFIELDII
,, EBURNEUS
,, ELEGANTISSIMUS
,, FORMOSUS
,, KINGIANUS
,, ORNATUS
,, VITTATUS
DAVALLIA FIJIENSIS
DIEFFENBACHIA COSTATA
,, INSIGNIS
,, NITIDA
,, TRIUMPHANS
DIPLADENIA CARISSIMA
,, DELECTA
,, DIADEMA
DRACÆNA LINDENI
ERANTHEMUM EBORACENSE
HELICONIA AUREO-STRIATA
ISOLOMA HIRSUTA
IXORA BELLA
,, EXIMIA
,, ILLUSTRIS
,, ORNATA
,, PICTURATA
,, SPLENDIDA
LATHYRUS SPLENDENS
MICROSTYLIS CHLOROPHRYS
,, METALLICA
MUSA URANOSCOPAS
PITCAIRNIA BROMELIÆFOLIA
POTHOS AUREA
PRITCHARDIA GRANDIS
RHODODENDRON ASSAMICUM
SCHISMATOGLOTTIS LONGISPATHA
SPARMANNIA AFRICANA FLORE-PLENO
TECOMA ROSEA
ZAMIA PRASINA.

Twelve NEW TYDÆAS of sorts.

Six NEW GLOXINIAS, with erect flowers, of sorts.

Four NEW FUCHSIAS of sorts.

Six NEW SHOW PELARGONIUMS of sorts.

Six NEW SPOTTED PELARGONIUMS of sorts.

Six NEW FANCY PELARGONIUMS of sorts.

Twelve NEW ZONAL PELARGONIUMS of sorts.

Six NEW NOSEGAY PELARGONIUMS of sorts.

Six NEW DOUBLE-FLOWERED ZONAL PELARGONIUMS of sorts.

Eight NEW BEGONIAS, with Variegated Foliage, of sorts.

Five NEW HYBRID HANDSOME-FLOWERED BEGONIAS of sorts.

Sixteen NEW COLEUS of sorts.

Eight NEW FRINGED COLEUS of sorts.

**PRIZES FOR NEW PLANTS.**

**Twelve Handsome Silver Cups,** *specially designed by Messrs. Elkington & Co., are offered as Prizes for* **Twelve New Plants** *of Mr. Willam Bull's introduction, at the Great Summer Show of the Royal Horticultural Society, to be held at Kensington, June* 3, 4, 6 *and* 7, 1881.

**Establishment for New and Rare Plants,**
KING'S ROAD, CHELSEA, LONDON, S.W.



THE

# Gardeners' Chronicle.

*SATURDAY, APRIL* 30, 1881.


## CEYLON.

AFTER leaving the Darjeeling district, of which I have already given some account, I paid a short visit to Ceylon, where I had excellent opportunities of seeing some of the finest Coffee, Cinchona, and Cocoa plantations in the island. What struck me most forcibly at first was the very great difference in the soil, the very much higher cultivation of the plantation, and the much greater cost of all the necessaries of life than in Sikkim. If the planters of Ceylon are, as I believe, the most numerous, most energetic, and most hard-working body of planters in any of our colonies or possessions, they have also had as large a share of disappointments and losses; and though Coffee planting seems to be in the ordinary course of events a most profitable business, yet over-speculation, leaf-disease, and bad seasons have hit many of them very hard during the last two or three years. On this account much attention has been paid to the introduction and cultivation of other tropical products, among which Cinchona takes the first place, and Tea, Cocoa, Liberian Coffee, Cardamons, Cocoa-nuts, Arrowroot, and India-rubber, are all included. Though it is very difficult to estimate with any certainty the number of acres of Cinchona which are now growing in Ceylon, yet I am inclined to believe that there are from 20,000 to 40,000, and when one sees the great extent of nurseries and the number of miles of roads in Coffee estates which are planted with thriving Cinchona trees, it is hard to believe that there is not enough bark to supply the whole demand for years to come, and probably to over-stock the market. However this may be, the planters one and all declare, what is confirmed by inspection, that the growth of the trees is so rapid, and the cost of planting so small, that even if bark falls to one-half its present price, and half the trees die as well, the profits realised will be considerable.

I must premise that with the exception of low country products, such as Cocoa, Liberian Coffee, &c., and a few Tea gardens, all the plantations in Ceylon are situated in the mountains of the central province, Coffee from 1000 to 5000 feet elevation, and Cinchona from 3000 to 7000 feet, which must be nearly if not quite touched by some of the new clearings near Newerra Ellia. In some of the favourite districts the whole country, with hardly a break for miles, is under Coffee and Cinchona; and in the Dimbula district I rode for nearly 18 miles through an almost continuous field of Coffee estimated at nearly 50,000 acres.

Except in deep gorges, where some of the original forest remains, or on the open hill-tops, which are covered with grass and fed close by cattle, there is here little else but Coffee and Cinchona to be seen; but in many other districts, where the soil is not so fine and the country more rocky and broken, the estates are more scattered. The roads are, as a rule, excellent, better than in country districts in England, and now that a railway is being pushed into the very centre of the island, civilisation is making rapid strides. Owing to the unwillingness of

the native population to work as coolies, nearly if not all the work on estates is done by Tamils from Southern India, who are very well spoken of as labourers, and though their pay is much higher than in India, I believe that, under the close supervision which prevails, the work is done as cheaply, or nearly so, as in Sikkim. Owing to the difference in the soil, which is more friable and not so rich-looking as at Darjeeling, the ground can be kept much cleaner, and weeds are never allowed to get the upper hand as they so often do in Tea gardens. A great deal of Coffee on the poorer and most exposed soils has from time to time been abandoned and allowed to go out of cultivation, when it grows up into spindly and often unhealthy-looking bushes 12 or 15 feet high. All that is considered worth looking after at all is carefully weeded, manured, and pruned to about 3 or 4 feet high. Notwithstanding the much greater care and expense which the bushes receive they do not bear as they used to do in former years, and though some attribute this to bad seasons and some to leaf-disease there seems to be no general consent of opinion to anything but the fact that the general produce per acre has very much diminished.

Cinchona, however, seems to grow much more rapidly and successfully than in Sikkim, and under conditions very different from those which are considered natural to it. For as long as the soil is thoroughly porous and friable it does not seem to matter how poor it is, and full exposure to a very hot sun at 5000 feet elevation does not seem to burn up or affect the plants at all. On the contrary, I saw on the Wavendon estate numerous self-sown plants of C. Calisaya and hybrids which had sprung up on dry banks and roadsides without any protection whatever; and though for several months in the year the climate is exceedingly moist, with an annual rainfall of 100 to 150 inches, yet the dry hot winds which occur in February and March must be very trying. Of course there were many cases of death and disease among the plantations I saw, most of which, however, could be traced to poor ill-drained soil or other causes; but I am decidedly of opinion that on the average the soil, climate, and mode of cultivation pursued in Ceylon have produced better results with all varieties of Cinchona than in Sikkim. Of the different species grown, C. officinalis is by far the most abundant, and is the only one grown at high elevations. C. succirubra is also in considerable quantity, and C. Calisaya and Ledgeriana only in a few estates. There is, however, in Ceylon a much greater mixture of varieties than I was led to believe or than most planters will admit. Natural hybridisation between all the three species has evidently taken place on a large scale, and the number of different forms which are now growing together is remarkable. If things go on as they are, it will in the course of years be quite impossible to distinguish them by specific names, and the most reasonable course would be to classify them solely by their value as quinine producers, propagating by cuttings or grafts only from such trees as are proved to contain a large proportion of sulphate. Some of the more intelligent and far-seeing planters, among whom I may mention the Messrs. Campbell and Fairlie, are now taking steps to carry this out, and being in possession of a good stock of the best varieties of Calisaya, will no doubt get very valuable results.

The forest and mountain scenery of Ceylon, though fine in its way, is very inferior to that of the Himalayas in richness and grandeur, and though the island has a truly tropical climate, a fine soil, and sufficient rainfall, its forests, from what I have seen and heard of them, do not come up to those of Travancore, Java, or Borneo, either in size and grandeur of the trees, or abundance and variety of plants. Orchids, though numerous in species, are mostly local and inconspicuous in flower, and though there are many peculiar and curious plants in the island, few of them are remarkable for their beauty or horticultural value.

Dendrobium McCarthiæ and D. aureum are two of the finest Orchids; the former is found in the low country, the latter in the hills about Newerra Ellia, where, with Cœlogyne odoratissima and some others, it is not rare. These high forests are very peculiar, being composed almost entirely of evergreen trees, many of them peculiar to the island. They are very poor and stunted compared to the trees in Sikkim at similar elevations, and the undergrowth consisting in most places of a dense impenetrable herbaceous plant, 6 or 8 feet high, is very difficult to traverse. Neither Ferns, mosses, nor creepers are very numerous, but there are numerous handsome Melastomaceous plants and Balsams. In the lower hills towards the south-west end of the island are found, I believe, a much greater variety and luxuriance of vegetable life, owing to the heavier rainfall and the greater heat. These forests are now being explored by Dr. Trimen, the Director of the Botanic Gardens at Peradeniya, who seems determined to keep up the high reputation which these gardens have gained, and to make them more generally useful to the island.

At present it is very difficult for a visitor to form any idea of the number of trees and plants they contain, as there are no labels, and a great part of the garden seems to have grown up without order into a semi-wilderness, in which the same trees are too frequently repeated. There is, however, ample scope for a good horticulturist to make them nearly all, if not all, that could be wished for. The climate, soil, and position are superior to those of any of the public gardens in India, and the facility and rapidity with which tropical plants can be brought from all over the East to Ceylon and naturalised at Peradeniya is a great point in their favour. Perhaps the most striking objects in these gardens are the extraordinary clumps of giant Bamboo, which exceed anything I have seen or heard of. In some of them not less and probably many more than 200 culms of over 100 feet in height are growing as tightly packed together as possible. Some of the stems must be very nearly if not quite a foot in diameter, and the average 8 or 9 inches. This splendid Bamboo is, I believe, a native of the Malay peninsula, and is the most remarkable instance of rapid growth I know of; each of these immense stems being formed in a few months.

Some very fine Scitamineous plants also grow in these gardens, and seem to succeed to perfection. Among them is a very pretty Ginger, Amomum pulchellum, which, like most of the plants in the garden, has been beautifully drawn by a native artist, Mr. Alwis, whose family have been employed at the gardens for many years. The publication of a selection from these excellent drawings, to illustrate the flora of Ceylon, would seem most desirable, but is, I am afraid, not likely to be possible without Government assistance. Many of them are plants of great rarity and interest, and would be worthy of the island, which may certainly claim to be the most advanced in planting enterprise of any in the tropical world.

During my stay in Ceylon I had no time to visit any of the more important Tea plantations, but I saw and heard enough to convince me that however different the soil and climate may be from those of what we are accustomed to consider the growing countries, it can be grown in any quantity at a low cost. Quality will, I think, prove to be the great difficulty, and I do not expect Ceylon will ever be able to rival the finer Himalayan or China growths in this respect. Cocoa, however, seems making rapid progress, and I am happy to say that the pioneer of this enterprise in Ceylon, Mr. Tytler, who was good enough to show me his plantation, has reaped a larger profit from his venture than usually falls to the lot of pioneers. Though it had been known for years that Cocoa would flourish in the warmer districts of the island, and some trees had been planted and grown well for many years, yet owing to the depredations of squirrels and various other causes, the cultivation had never been taken up on a large scale until Mr. Tytler tried it in the Dumbara district near Kandy. Now he has a thriving plantation of 800 acres, of which part is bearing well, and has supplied seed for thousands of acres in other places. The trees, or rather shrubs, are grown either interlined with Coffee or partly shaded by Jack, Mango, and other trees, at a distance of 12 or 14 feet apart. They are slightly pruned at first, so as to keep them from branching close to the ground, and at three or four years old begin to bear their great red capsules, each of which contains from twenty to thirty seeds embedded in a soft pulp. These capsules are borne on all parts of the stem and branches, growing almost stalkless on the old wood. If not protected they are commonly destroyed by squirrels before ripening, but the constant war which has been waged on the squirrels has reduced their number so materially that the damage done by them is now trifling. Cocoa from this plantation has already made its appearance in the London market, and has realised a good price, which will probably be increased when the curing of the seed is more thoroughly understood. As Cocoa seems to be a more certain and regular crop than Coffee, and requires far less labour in cultivation, it is likely to be a source of permanent profit to the proprietors. In the country about Kandy the rainfall is less heavy than in the higher ranges (about 80 inches), and being more equally distributed through the year, the climate is very suitable for almost all kinds of tropical produce. Of Liberian Coffee I need say but little. It is now being largely planted in the hotter parts of the island, and is a strong and rapid grower, suffering but little from leaf-disease. It ripens its fruit at irregular seasons, and requires less care in pruning and cultivation, but does not seem to be thought much of in the London market, though in America it sells well. From what I heard I doubt its ever taking the place of ordinary Coffee, which, notwithstanding all losses, is still one of the most valuable crops that can be grown. *H. J. E.*

## ST. GILES', DORSET,

The seat of the Earl of Shaftesbury, K.G., is situated in a very picturesque and historical district about three miles from Cranbourne, in the county of Dorset, and is easily reached from Verwood station, on the Salisbury and Dorset railway. The town of Cranbourne has given name to the uncultivated tract of land which stretches along the north-west boundary of Dorsetshire and Wilts. The neighbourhood abounds in many rich combinations of landscape scenery, and many thrilling historical incidents are recorded as having occurred in the immediate locality of the park. It was here that the Duke of Monmouth's capture took place after his flight from Sedgmoor. He and his companions on their way from the fatal field were compelled to abandon their jaded horses on Cranbourne Chase and to seek refuge among the wild woods and morasses which then covered this part of the country.

Perhaps there is no name in the kingdom held in greater esteem as a philanthropist than the noble owner of St. Giles'. This number will come into the hands of our readers at a time when the eightieth anniversary of the birth of this beloved nobleman is being celebrated, and a brief notice of his country seat may therefore be of more than usual interest. The mansion is snugly nestled among groups of trees of much value and antiquity, and adjoining it is a fine park over two miles round. The form of the mansion approaches to a parallelogram, consisting of three parts, which seem

to have been built at different times, each of them constructed on two imbenchings. The eastern part is the narrowest and most ancient, and is said to have been the original seat of the Ashleys, who were formerly lords of a manor in Wiltshire, from which the family name is derived. The western part is broader than the east, and was built in 1651. The style of architecture is principally Elizabethan, the towers which have been added within a recent date being in the Italian style, surrounded by Renaissance turrets. The whole is embattled. The Earldom of Shaftesbury dates back to April 23, 1672, in which year Sir Anthony Ashley-Cooper was created Lord Cowper, of Pawlett, in the county of Somerset, and Earl of Shaftesbury, having been Lord-Lieutenant of the county of Dorset from January 20 in the preceding year. He was afterwards made Chancellor of the Exchequer, and one of the Lords Commissioners of the Treasury, and finally Lord High Chancellor of England. He was the leader of the famous Cabal Ministry, and was immortalised by Dryden in the following lines—

"In Israel's court ne'er sat an Abethdin
With more discerning eyes, or hands more clean;
Unbrib'd, unsought, the wretched to redress
Swift of despatch and easy of access."

The third Earl of Shaftesbury will also be remembered as the author of the *Characteristics*, and the witty essay entitled *Sensus Communis*, and was regarded in his day as the founder of a distinct school of philosophy. The first attraction upon entering the park from the Cranbourne side is the fine Beech avenue, which forms in itself a picture of imposing grandeur. The north or carriage front, which is approached from the village, with its ancient church, is bordered by fine Cedars and groups of other ornamental trees and shrubs.

The south front is terraced, and commands an extensive view of woodland scenery, broken up by groups of trees rendered famous by their great age and size. There is also a fine sheet of water which is fed by the river Allen, a small stream which takes a winding course through the grounds, and by the banks of which several pleasant retreats have been artificially made, including an Italian garden, which is now planted with Roses.

The flower garden consists of a series of oblong figures bordering the walks upon two square plots of grass, which are also dotted with ornamental trees, between the lake and the mansion.

Proceeding in a westerly direction by the side of the lake there are some notable trees, chiefly Planes and Chestnuts, apparently of great age and huge dimensions.

One, an old Chestnut tree, called "King Charles' Tree," was pointed out by Mr. Hayter as a giant of the past, the stump and one or two of its limbs being kept as a relic of its huge proportions. Here also are two round towers, and a little further on a temple in which several tablets are hung that were brought from Richmond in Surrey, where "Thomson the poet," lived and died.

The lines upon the tablets are so appropriate to the place and its surroundings that I venture to give a short quotation as an example :—

"Hail! Nature's poet, whom she taught alone
To sing her works in numbers like her own:
Sweet as the thrush that warbles in the dell,
And soft as Philomela's tender tale.
She cut her pencil too of wondrous power
To catch the rainbow and to form the flower
Of many mingling hues, and smiling said—
But first with Laurel crowned her favourite's head."

At the south-west corner of the lake the scene changes into a little fairyland because of several important and interesting features which are connected with or radiate from this pleasant spot. First there is a cataract at the point where the lake narrows into a stream and curves gently away to connect itself again with its original source.

Fig. 104.—St. Giles', Dorset, the seat of Lord Shaftesbury.

Here also is a small isthmus with a noble group of Scotch Firs, while in close proximity is the pinetum of nearly 7 acres in extent. A drive was also pointed out to me from here which describes a circle within the property of 11 miles in circumference. There is a straight walk from this point to the mansion, but I must first notice the pinetum and its occupants, many of which promise to be among the best proportioned samples in the kingdom. In the first place the geological formation is chalk, and it may be interesting, indeed it may be practically useful to a great many, to note the varieties of Conifers that succeed best on a chalky subsoil.

The pinetum has been made between twenty and thirty years, and it is noteworthy that nothing succeeds so well as Picea Pinsapo, the largest of which is close upon 50 feet high and 75 feet in circumference at the base. All the trees are perfect conical specimens,

vigorous, and luxuriating on a subsoil where Pinus Lambertiana, P. nobilis, P. Cembra and Cedrus Deodara will barely live. Upon the other hand, Pinus excelsa, P. austriaca, Taxodium sempervirens, Cedrus atlantica, and Abies Morinda (the Himalayan Spruce) are fairly good; indeed, one specimen of the Taxodium in a sheltered situation is nearly 50 feet high, and yet the Araucaria, which succeeds well in most places, cannot get away beyond the proportions of a stunted bush. These facts are, I think, worthy of mention, as indicating the influence that certain subsoils have upon certain varieties and species of trees.

Before leaving the pinetum, I would just like to make one observation affecting a class of literary gentlemen who may be experts in politics, or upon other social or public topics, but who are not well versed in horticulture. One of these gentlemen having paid a visit to this pinetum wrote a gushing paragraph to a daily paper upon the vigour of the trees, and by way of illustrating to his readers the mildness of the climate, instanced the remarkable growth of the Orange trees as an example—the supposed Orange trees being Portugal Laurels!

Returning to the straight walk already referred to on the east side of the lake I noticed several grand specimens of Beech, one of which is remarkable, not alone for its size, but also for its symmetrical proportions, which must render it a strikingly handsome object when clothed with leafage in summer. Leaving the lake on the left we next enter a broad walk, which, going eastwardly, leads to the magnificent grotto, the construction of which is said to have cost £10,000. This walk is a quarter of a mile long, and 31 yards wide—broad enough to admit of two perambulators with quarrelsome babies to pass without coming to close quarters. The grounds upon either side of this walk are adorned with fine trees, the Limes being especially conspicuous, from the fact of their being dotted with large bunches of Mistleto, chiefly upon the extremities of their branches.

Approaching the end of this walk a slight *détour* to the right takes you to the grotto to which allusion has been made, and which is one of the finest in England. It is built in two wings, the innermost and largest being furnished with a vast variety of curious shells, beautifully disposed, and resplendent to a degree that gives you the idea of a transformation scene when the door is first opened. The ante-grotto consists of ores and minerals of all kinds, collected from all parts of the country. It was begun in 1751, and the adjustment of the shells and other conglomerate substances took over two years in arrangement, the work being done in the time of the fourth Countess of Shaftesbury. Before leaving the grounds I must notice the large Cedar just outside the kitchen garden, which is 70 feet high and 16 feet 4 inches in circumference at 3 feet from the ground.

Adjoining the kitchen garden, which I must not omit to observe was the first garden in England where the Cabbage was cultivated, there is a commodious square plot enclosed by walls, usually called the framing-ground by gardeners, which contains several pits, filled with Violets, Strawberries in pots, and hard-wooded Heaths.

A sunken span-roofed house is stocked with a fine group of Bananas, planted out at one end, the centre stage being filled with good plants of Cycas revoluta, Dendrobium nobile, several specimen Ferns, a batch of Convallaria Polygonatum (Solomon's Seal), which is a capital forcing plant, and a batch of early Gloxinias in full flower, and this about the end of the third week in March. The next house is a span-roofed Pine-stove with a batch of fruiting Queens and early Cucumbers, which seem to be none the worse for each other's company. A batch of Chilis, which are in season all the year round at St. Giles', were flowering and fruiting as freely as in the month of August. The supply is kept up by a regular system of succession.

The kitchen garden, or rather gardens, are divided into four divisions, and are over 6 acres in extent, forming one of the finest walled-in gardens in this part of the country. The extent of wall covered with fruit trees in full bearing condition is as follows:—Morello Cherries, 107 yards; sweet Cherries, 102 yards; Plums, 387 yards; Pears, 315 yards; Peaches, 117 yards; Apricots, 72 yards; Figs, 34 yards; or a sum-total of 1134 yards in all. I noticed portable frames in No. 2 division for forcing Asparagus in the beds where it is growing, which is a cheap way of obtaining an early supply of this esteemed vegetable. In No. 3 division a plot of Broccoli was pointed out to me as having survived the winter. The plants were planted out at the end of last August, while not a single plant of the stock planted out for the main crop outlived the winter. In No. 4 division the vigorous appearance of a Royal Vineyard Peach elicited the fact in answer to a question, that it has the finest constitution, and is the hardiest variety; in fact, succeeds better than anything else upon the open wall at St. Giles'.

But creditable as is the condition of the wall trees to Mr. Hayter's skill as a cultivator of hardy fruits a collection of standard trained Apple trees is infinitely more so; the young trees were planted by Mr. Hayter some years ago—I forget the exact number—and are perfect samples of the system, which is saying a good deal in a climate where fruit trees in general are so liable to canker and disease. The freest fruiting kinds are Wellington, Warner's Seedling, Northern Greening, Dutch Codlin, and Hawthornden. The last portion of the garden, and not the least interesting, to which I was directed, is a kind of semi-ornamental plot where the principal forcing-houses are located. Mr. Hayter's house is snugly ensconced in one corner of the plot, and in front is a fine carpet of greensward dotted with flower-beds. A rockery at the entrance to one of the vineries, and covered with a white flowering plant, which turned out to be a healthy colony of Arabis albida, was so attractive in the sunlight at first sight as to prompt the question, What's that? The first house I entered is stocked with Peaches and Vines, bearing good crops, and a batch of Roses that have been twelve years in the same pots.

In the second vinery, which is principally Hamburghs—also bearing a good crop—was a healthy batch of Gardenias, which caused me to look significantly, first at the Gardenias and then at Mr. Hayter, who evidently read my thoughts, and proceeded to explain that there is not and never has been in his time a single living mealy-bug on the place; and notwithstanding that I am not altogether a horticultural novice, I then learned for the first time that Gardenias will not breed mealy-bug, but if it is once transmitted to them it is impossible ever to eradicate it thoroughly. I noticed a collection of Azaleas in this house also, and a fine example of Dendrobium speciosum.

The third house of the range is planted with young Muscat Vines, and is likewise doing duty as a plant-house, having trained Azaleas, Pelargoniums, and Vallottas, occupying every available nook and corner of the house. No. 4 is a late vinery, and in this house I noticed several fine plants of Chrysanthemum fruticosum, of which Mr. Hayter is loud in praise as a flowering plant for the winter.

In the plant-houses I observed a group of fine Callas and a superior strain of Cinerarias, which are perpetuated by cuttings. The show-house was filled with Chorozemas, Coronilla glauca, Azaleas, of which Apollon is a very striking variety, the flowers being pure white with red streaks, which renders it very effective. There were also Primulas, Lachenalias, and a fine Camellia planted out, which was literally drooping under the weight of its flowers. The back wall is covered with Maréchal Niel Rose "on the Brier," and Habrothamnus elegans, both in robust health, and the former swarming with flower-buds in various stages of development.

I have purposely omitted to the last to mention two fine samples of Daphne grown as pyramids, and planted out, which furnish hundreds of their charming sweet-scented flowers, which are in such great request during the winter and early spring months. The plants as usually seen grown under pot culture are rather miffy, and not at all ornamental; but here the plants are handsome in shape, and although they were cut back prior to starting into fresh growth, there was sufficient evidence of their practical usefulness and utility as winter-flowering plants to entitle them to this brief notice. *Visitor.*

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Chionodoxa nana.—This species, though not nearly so showy as C. Luciliæ, nevertheless deserves favourable mention as a perfectly hardy and handsome border plant. In habit C. nana is altogether more slender than C. Luciliæ, and the Scilla-like blossoms are smaller and less deeply coloured. It is a native of the mountains of Crete, at elevations of 5000 to 6000 feet above sea-level, and flowers in the neighbourhood of the melting snow about May. Now in bloom in the herbaceous ground at Kew.

## New Garden Plants.

### Davallia elegans polydactyla, *n. var.**

The Davallia elegans is well known as one of our best evergreen stove Ferns—one which is strikingly handsome not only in its grand contour but also in the dark glossy green of its substantial, long-enduring fronds. It has stoutish rhizomes, which sometimes creep over the surface of the soil, and sometimes elevate themselves with a shrubby kind of habit, but are always clothed with a vestiture of pointed, spreading, reddish-brown scales. The fronds are quadripinnate in cutting, triangular in outline, from 1 to 1½ foot long, and as much across the base, arching in habit, and elevated on smooth round stipites 1 foot or more in length, which are also of a brownish colour.

In its general aspect the new variety now referred to resembles its typal form—there is the stoutish brown-scaled rhizome, the smooth brown stipites, the triangular quadripinnate frond, the coriaceous texture, the glossy surface, and the dark green colour; but instead of the apex of the frond itself and the apices of the pinnæ and pinnules running out to and terminating in a narrow point, this point becomes dilated and split down into several divisions, each of which is again multifidly divided, so that the apices all become crested, or perhaps rather fingered, as the divisions are spread out flat, and not curled into a crest. The other parts of the frond are normal, and the indusium is of the half cup-shaped form peculiar to the species, with usually a lobe or tooth of the outer margin projecting beyond it like a horn.

This very ornamental Fern is of garden origin, having been raised from spores of D. elegans in the establishment of Messrs. Veitch & Sons, by Mr. Schneider, who has charge of the Ferns cultivated in the Royal Exotic Nursery at Chelsea. It was exhibited on Tuesday last at the meeting of the Royal Horticultural Society at South Kensington, and received the unanimous award of a First-class Certificate, being greatly admired for its strikingly distinct character. The whole contour of the plant is extremely ornamental. The sportive tendency thus unexpectedly developed is a very singular property, of which we have now and then a well-marked instance in certain exotic species, as in the present case. Is it a sort of mimicry of the many crested forms of Lady Fern and Male Fern, as well as of other British species, now so common in gardens? *T. Moore.*

### Phalænopsis tetraspis, *Rchb. f., Xenia*, ii., p. 146, 1870.†

This proves to be a very free-flowering species. It bears a rich panicle of ivory-white flowers in the way of those of Phalænopsis violacea. The column has a hooded anther-bed, with scarcely any teeth to it. The lip has the same shape. The lateral laciniæ are ligulate, retuse, with an outspringing tooth at the superior end and a nearly conical callus in the middle. The middle lacinia is rhombeo-ligulate, with a cushion of hairs at the apex. There are two pairs of bristle-like processes, one pair behind the other, between the side laciniæ. The flowers are said to have a delightful perfume. The foliage is very fine, and, if I may judge from two good fresh leaves at hand, it even surpasses that of Phalænopsis Lüddemanniana.

This is an old plant. It was discovered by T. Lobb. I have to thank Messrs. Veitch for a specimen. I now see it is quite a dwarf. I have several panicles, fresh leaves and a sketch at hand, and the sketch shows a little one nesting on a branch, quite as in Phalænopsis Lüddemanniana—a very agreeable sight for an orchidist. All these materials come from Mr. W. Bull, the indefatigable importer.

By the way it may, be well to say that the habit of giving names to Orchids, without any knowledge of what already exists, has provided the old Sarcochilus unguiculatus with the fresh name of Phalænopsis Ruckeri in East India. It may be well to warn orchidists not to order that species which has cost good money to various possessors of great establishments, and probably thousands have been destroyed in London, having been sent as Phalænopsis from the Philippines. An eminent orchidist took it from H. Cuming as the Phalænopsis, when Messrs. Rollisson, of Tooting, quite accidentally got the true Phalænopsis amabilis which flowered in 1838. *H. G. Rchb. f.*

### Phalænopsis speciosa, *n. sp.*‡

The nearest ally of Phalænopsis Cumingiana, with large leaves like of those of Phalænopsis Lud-

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* *Davallia elegans polydactyla*, n. var.—Apices of the fronds and of the principal pinnæ and pinnules multifidly-branched, so as to become many-fingered. *T. Moore.*

† *Phalænopsis tetraspis*, Rchb. f.—Caule paucifolio; foliis cuneato-obovatis oblongis acutis; pedunculo paniculato; flore Phalænopsidis Luddemannianæ; labelli trifidi laciniis lateralibus linearibus retusis sursum unidentatis, callo conico in medio, lacinia mediana ligulato rhombea apice pulvinata, callis biaristatis geminis per paria antepositis; androclinio marginato. —Phalænopsis tetraspis, Rchb. f., *Xenia*, ii., 146. Flos eboraceo-candidus. *H. G. Rchb. f.*

‡ *Phalænopsis speciosa*, n. sp.—E grege P. Luddemannianæ: labelli lacinia antica carnosa prope ancipiti, apice cum pulvinar

demanniana and a panicle or raceme of fine stellate flowers. Sepals and petals whitish-rose outside with rows of purple blotches, purple inside, with a few white bars at the base of the petals. Side lacinia of the lip yellow, white at the top and base; middle lacinia white with much purple, or nearly purple, and with a tuft of hairs at apex. It is remarkable that we have here once more an instance of the central blade of the lip becoming ancipitous and fleshy, and this is the distinguishing character of this species amidst its nearer allies. The column has a toothed anther-bed. The species seems to be very remarkable. It is much praised for its perfuming the air in a delightful way. It is quite a new discovery. The discoverer's name shall be given with due acknowledgment at another time. To-day I may state that I have had dried flowers and very satisfactory sketches from Mr. Bull. The plant is *en route* for England. *H. G. Rchb. f.*

Odontoglossum facetum, *n. hybr.*

This has lanceolate straight sepals, like those of the old Odontoglossum luteo-purpureum, Linden, or even more like those of Odontoglossum mulus, Rchb. f., light yellow, with very large rather cinnamon-coloured blotches. The petals are lanceolate, straight, with numerous fine teeth, light yellow, covered with numerous small cinnamon-coloured blotches. The lip is almost circular, short, finely fringed, convolute, undulate, light yellow. It has a radiating semicircle of keels, intermediate as it were between those of Odontoglossum Hallii and O. tripudians, the anterior ones being blades with numerous fringes, including a single shallow keel, the side ones—four on each side—shorter, lower, acute, with a few dorsal teeth. There is a horseshoe-formed brown marking in front of the keels, and some brown spots on and between them. The column has very multifid wings. If a guess were permitted one might believe this to be a hybrid between Odontoglossum Hallii and luteopurpureum, or Hallii and tripudians. The lip and its keel are very much like those organs in Odontoglossum Hallii.

This is an unusually fine thing, quite a dandy, among the supposed hybrid Odontoglossum, whence I deduced the name. You cannot look too much at it to see its elegance, its remarkable undulations, fine teeth, lovely keels, and rich fringes. It came from Mr. W. Bull's *stabilimento. H. G. Rchb. f.*

Saccolabium borneense, *n. sp.**

This is a botanical curiosity, very promising in its fine, broad, short, unequally bilobed leaves, as long it is not in flower; finally it produces a nodding dense raceme of Sarcanthoid flowers of a peculiar ochre-cinnamon colour. The sepals and petals are oblong acute, connivent. The spur of the lip is clavate and depressed, with an abrupt broad top. The side laciniæ are rounded and toothletted, the middle lacinia almost terete with an apiculus. It was introduced from Borneo, and has just flowered with Mr. W. Bull. It is near Saccolabium densiflorum, Lindl., and its allies. *H. G. Rchb. f.*

Cœlogyne cristata (*Lindl.*) hololeuca, *n. var.*

This is a very fine plant, which has all the crests white. The flowers are of an admirable development such as one scarcely sees in the common C. cristata. I have to thank Mr. W. Bull for six very fine fresh flowers. *H. G. Rchb. f.*

Cypripedium Bullenianum (*Rchb. f.*) oculatum, *nov. var.*

This is a curious variety of this rather rare species, which I like so very much for the delicacy of the colours of its flowers. It has its petals with a mauve disk at the top, and on the undulate margins there are some large dark sepia-brown, nearly black eye spots. The stalk of the lip is light ochre-coloured with innumerable short dark brown spots and bars, when the anterior shoe is dark sepia to reddish-brown with a green narrow margin. It is one of the recent Bornean introductions of Mr. W. Bull, who kindly sent a very good flower. *H. G. Rchb. f.*

filorum; laciniis lateralibus ligulatis retusis, extus paucidentatis, dente supremo maximo, callo in disco antrorsum progrediente aristulis geminis quadrigeminis; pari minori superiori; columnæ androclinio denticulato. — Planta speciosa. Folia cuneato-oblonga obtuse acuta. Panicula seu racemus. Flores stellati pulchri extus aquose albo-rosei seriebus macularum purpurearum, intus purpureus fasciis paucis albis in tepalorum basi. Labelli laciniæ laterales medio flavæ, apice et basi albæ. Lacinia antica alba et purpurea; seu prope omnis purpurea. Ex A-ia tropica. Misit cl. Bull. *G. H. Rchb. f.*

* *Saccolabium borneense*, n. sp.—Affine Saccolabio densifloro, Lindl.; foliis oblongis apice inæqualiter bilobis; racemo densifloro; bracteis triangulo-setaceis; sepalis tepalisque oblongis acutis; labelli trifidi laciniis lateralibus ovatis denticulatis (nec triangulis integerrimis) intus callo tabulæformi, isthmo recto a lacinia mediana separatis, lacinia mediana carnosa ligulata cum apiculo, calcari compresso apice dilatato retuso, lacinulis uncinatis geminis sub columna, callo in pariete antico calcaris mediano.. Sepala et tepala cinnamomea apice et basi ochracea; labellum lineolis quibusdam purpureis. *H. G. Rchb. f.*

## THE KEW MUSEUMS.

The erection of the new wing to the principal Museum at Kew has furnished accommodation not only to visitors on crowded days, from the much greater freedom of circulation provided by the new staircase, but also a very much needed improvement consequent upon the extra space gained for the exhibition of the valuable contents of this building. As might be expected the most crowded of the cases were generally those which contained the most interesting objects, thus the complete opium set which illustrates the growth and preparation of opium as carried on at Patna and which has always been a feature of the Museum, has been increased by various additions from the India Museum, as well as by a complete series of the alkaloids presented by Messrs. Macfarlane, of Edinburgh, a valuable set of Asiatic opiums by C. Chantre, Esq., and a complete opium smoking apparatus sent from Hong Kong, by Mr. C. Ford. Next we find a very complete collection of Indian teas, which formed part of the India Museum collection. In this series are some remarkably fine samples of the different kinds known in commerce and also a fine set of brick teas. Cotton, as might be expected, is largely represented both in the raw states and the form of native Indian cloths. Passing on to the Tiliaceæ, though it is now pretty well known to what extent jute is consumed in this country it may not be generally known to what perfection the jute manufactures are now brought; the latest application seems to be in the form of a kind of printed material known as "kalamus tapestry." This is made in large quantities at Barrow-in-Furness, and consists of a jute fabric upon which is printed various art designs suitable for window curtains and such-like purposes. Large additions have been made to the extensive order Leguminoseæ, which includes a series of specimens of lentils, numerous varieties of the small-seeded species of Phaseolus, some remarkably fine specimens of Babool gum (Acacia arabica), and the astringent extract known as cutch, prepared by boiling the wood of Acacia Catechu, and now largely used in tanning. These have all been furnished by the India Museum, but other additions have also been made, and some carefully prepared models of typical forms of Peas and Beans are amongst the set that have recently been presented to the Museum by Messrs. Sutton & Sons, of Reading. The varied applications of the hard shells of Gourds is well illustrated in the collection at Kew, where there are water-bottles, basins, and various articles of domestic use and ornament from various parts of the world; these have been enriched by the addition of some Indian stringed instruments, in which Gourds form the sounding portion.

The collection of Indian Cinchona barks has been greatly increased by those recently acquired, and they now fill one large case of three divisions. In the Solanaceæ tobacco of course forms an important item, and a very large collection is contained in the Museum, not only of raw tobaccos as known in British commerce, but of various forms in use amongst the native tribes in India, Africa, and America. This collection is arranged geographically, that is, according to the countries producing the samples, and contains some curious specimens of native tobaccos and cigars. Probably one of the most popular series of exhibits as now displayed in the Museum will be the series of cloths and other articles made in the South Sea Islands from the bark of the Paper Mulberry (Broussonetia papyrifera), and in Japan from that of B. Kæmpferi. The first, which are generally known as Tapa cloths, are made either plain or covered with various patterns, and they are used for many purposes, such as for articles of clothing, or for screens for separating rooms into sleeping and living apartments. In Japan it is well known that paper is applied to an enormous number of uses, such, for instance, as pocket-handkerchiefs, having the appearance of cambric, or a thick leather-like material used for bookbinding or waterproof clothing. All these uses are well shown in the collection at Kew. The collection of Coniferæ, which has always been a feature of the Museum, was a few years since very largely added to by the presentation of Gordon's collection by Sir Joseph Hooker. This, together with the very fine set of North American Pines collected and brought home by Sir Joseph Hooker himself, has enormously extended the Kew collection, and placed it in a position unequalled in any other museum. The enormous size of the cones of some of the North American species are well illustrated by the fine series of Pinus Lambertiana, P. Sabiniana, P. Coulteri, P. Torreyana, P. tuberculata, and others, some splendid clusters of which were presented by Sir Joseph Hooker on his return from America. Among the Cycadeæ also are some very fine cones of Encephalartos and Macrozamia.

The group of Welwitschias, which have hitherto been exhibited in the Timber Museum (No. 3) for want of room in No. 1, is now placed just inside the entrance to Museum No. 1, and very near their proper place in the arranged collection.

Museum No. 2 has also been enlarged by the addition of two rooms, a new descent staircase and a spacious passage towards an entirely new exit door. A portion of this building was opened to the public on Easter Monday. *John R. Jackson.*

## The Poultry Yard.

A Lady's Experience in Poultry-Keeping During the Late Severe Winter.—At the end of April, 1881, we look back upon the severe frosts and deep snows of January and February, and the biting winds of March, which, overstepping their natural limits, have scarcely left us, and we feel ourselves justified in saying that we have passed through a severe winter; but if the cold of January has not obliterated the remembrance of December, we shall be able to call to mind that before Christmas we were all congratulating ourselves on the unusually mild weather, as exceptionally mild for the time of year as that of January was the reverse—at least so thought the birds. Accounts appeared in the papers of their building nests, and laying, if not hatching eggs, as if the feathered tribes had fancied that Valentine's-day was passed.

Domestic birds shared in the delusion; our pigeons laid eggs, hatched them, and reared at least one young one before the return of frost convinced them of their mistake. Our hens laid well, and were ready to sit before Christmas; and in spite of our superior knowledge of the uncertainty of all English weather, we indulged them, and our first brood of chickens for the season (I cannot say for the year) was hatched out on Christmas Eve: a second followed on January 9. The first brood was, therefore, nearly three weeks old, and the second but a few days, when the cold weather came upon us. They were housed under most favourable circumstances, an unheated greenhouse being given up to their use, and an empty frame out-of-doors serving as their play-room by day, when the weather prevented outdoor exercise.

I think any one not well versed in poultry matte would have concluded that the chickens which ha reached the age of three weeks and appeared unusuall strong and well-grown birds, would have safely passed over the period of cold weather, but that the newly-hatched would have suffered. The conclusion would have been wrong. The first to suffer from cold were the oldest, and though we tried to modify its severity at night by burning paraffin lamps in the greenhouse, the greater number of them fell lame—cramped, as we supposed, by the cold—and we were obliged to bring them indoors and keep them in hampers till the weather mended. The second brood began to flag a little later, and though no deaths occurred for some time, several of the birds never recovered their strength, but fell off, drooped, and eventually died; so that of the twelve chickens with which we started only five are now alive—two from the first brood (of seven), and three from the second brood (of five). Whether the complaint which carried them off should be called "weak legs" or "cramp" I cannot decide, but we fancied that it was alleviated by the use of terebene, which was rubbed on their legs by my daughter; at any rate, if the chickens were not cured her trouble was not thrown away, for she discovered that the terebene which she rubbed on with her hands acted as a cure to the chilblains on her own fingers!

This was not our first experiment with terebene as a cure for fowl's diseases. Last autumn we lost two or three birds from roup, till one day my same young assistant told me that a bantam had its head so swollen (apparently from roup) that it could not see at all. Having faith in terebene as a cure for abscesses, cuts, &c., on the human frame it occurred to me to try it on this bird. I therefore directed that its head should be tied up in wet rags, on which terebene had

been sprinkled. The result was that in twenty-four hours the swelling had almost entirely gone down, and in a few days the bird was perfectly well. Since then we have not lost a single bird from roup, for on the first symptoms appearing an application of terebene has proved an effective cure. In less severe cases than the one just mentioned it has been found sufficient to wash the bird's face two or three times a-day with warm water in which a few drops of terebene had been mixed, in fact, substituting terebene for the usual remedy of vinegar.

I do not pretend to say that these experiments are conclusive, knowing how difficult it is in the case of a cure to be quite sure what was the active agent, or whether the illness was always what it was supposed to be; and in this particular instance I was prevented by illness from conducting the experiment myself, but I think it worth mentioning, as others may have better opportunities for testing the efficacy of my remedy, and if any cure can be found for roup it will be a blessing to poultry keepers. It is all very well to say that roup ought never to appear in a well managed poultry-yard. Circumstances are sometimes too strong for the best managers, and I have heard of its being very fatal this winter, in consequence of the over-crowding of birds during the deep snow, which prevented them from stirring out of the house in which they were only intended to sleep at night. Moreover, weather which is fatal to birds is generally unfavourable to their human masters, and illness very often prevents the poultry keepers from paying due attention to their fowls just at the very time when they require it most. So let not the best manager fancy that he can keep fowl's diseases at arm's length, but be thankful if any remedy can be discovered which shall help him in the cure of one which often proves to be a very catching and very dangerous complaint. I hope, therefore, that some will be induced to try further experiments with terebene, and to record the results for the information of others. *A. B.*

## PLANT PORTRAITS.

Agave Victoriæ Reginæ, Moore, *Illust. Horticole*, t. 413.—See *Gard. Chron.*, p. 484, vol. iv.

Calandrinia grandiflora, *Garden*, April 9, 1881.—Leaves 6 by 2 inches; lanceolate; flowers cymose, each 3 inches across; rosy-lilac.

Caliphruria subedentata, *Illust. Horticole*, t. 415.—This is the plant at one time known as Eucharis candida. It has broadly ovate leaves, and trusses of white funnel-shaped flowers, destitute of the corona of Eucharis. New Granada.

Dianthus Hölzeri, Winkler, *Gartenflora*, t. 1032.—A pretty tufted species from Turkestan. It is of short stature, with linear lanceolate leaves, and pink flowers about 1½ inch in diameter, and petals more or less deeply fringed in different varieties. Dr. A. Regel.

Hellebores, *Florist*, t. 535.—A group of the newer seedlings, some purple, others greenish; some with spots, others without. The illustration will do much to recommend these beautiful hardy flowers to the notice of gardeners and amateurs.

Masdevallia Chimæra, *Revue Horticole*, April 1, 1881.—See *Gard. Chron.*, p. 803, vol. ii.

Milla laxa, *Garden*, January 22, 1881.—A hardy Liliaceous bulbous plant, with narrow leaves and an umbel of large, lilac, bell-shaped, six-parted flowers. California.

Myosotis sylvatica var. elegantissima, *Gartenflora*, t. 1033.—A fine flowering variety of this well-known species. Haage & Schmidt.

Ostryopsis Davidiana, Decaisne, *Deutscher Garten.*, heft iv., 1881.—A hardy shrub from Mongolia, with much of the aspect of the common Hazel, but more elegant in habit.

Pelargoniums, Double-flowered Ivy-leaved Varieties, *Florist*, February, 1881.—1, Gazelle, blush-lilac; 2, Gloire d'Orleans, pale rose; 3, M. Dubus, rose-pink. Excellent as basket plants and as window plants.

Puschkinia scilloides, *Garden*, January 29, 1881.—A hardy Liliaceous bulbous plant of small stature, with broad lanceolate leaves and close erect racemes of pale lilac flowers. Mount Lebanon. Messrs. Barr & Sugden.

Sedum sempervivoides, *Garden*, April 2, 1881.—A Sempervivum-like plant, with ovate fleshy leaves and dense terminal corymbose cymes of small scarlet flowers. Caucasus.

## THE KEW ARBORETUM.

### The Maples.—XI.

Acer platanoides, L.; Loudon, *Encyclop. of Trees and Shrubs*, pp. 83, 104, 105; Koch, *Dendrologie*, thiel i., p. 529; Lauche, *Deutsche Dendrologie*, p. 455. *A. dasyphyllum*, Hort.—The Norway Maple. Southern Norway and Sweden, Denmark, Germany, Belgium, France, Switzerland, Northern and Central Italy to Greece, Central and Southern Russia.

A large smooth-barked tree of noble aspect, with the habit of A. Pseudo-Platanus, but differing widely from the common Sycamore in its yellow (not greenish) flowers, in its seed-vessels with more spreading wings, and in its olive-brown shoots, &c. The glossy dark green foliage of the typical form exhibits a marked resemblance to that of the Occidental Plane of gardens. A number of seminal varieties and sports of this—one of the finest and most ornamental of the larger Maples—are to be found in nurseries.

*Var.* albo-variegatum.

Leaves irregularly blotched with white.

*Var.* Buntzleri, Wittmack, *Monatsschrift d. ver. z. Beford. d. Gartenb.* 1880, p. 321, tab. 5.

A seedling form, which originated recently—and has so far proved constant—in a German nursery. Leaves dark green, finely marked with bright golden-yellow blotches.

*Var.* columnare, Carrière, *Revue Horticole*, 1878, p. 347.

A striking and distinct form, which was raised by Simon-Louis frères, at Metz in 1855, and first sent out in 1879. As the name implies the plant is of erect columnar habit; the leaves are somewhat smaller than those of the common Norway Maple.

*Var.* cucullatum.

In some catalogues this is given as a synonym of var. laciniatum; the two forms are, however, quite distinct. The lobes are rather deeply cut, and the edges turned downwards, so as to look like the half-closed foot of a bird.

*Var.* decussatum: A. decussatum, Hort.

A form with 3-lobed leaves, the lateral lobes being so divergent as to give the entire leaf the appearance of a cross.

*Var.* globosum: A. globosum, Hort.

A dwarf variety of compact habit, forming a small round-headed, compact tree, after the style of Robinia Pseud-Acacia var. inermis.

*Var.* heterophyllum variegatum: A. digitatum aureo-marginatum, Hort.

Leaves generally 3-lobed, lobes slightly toothed

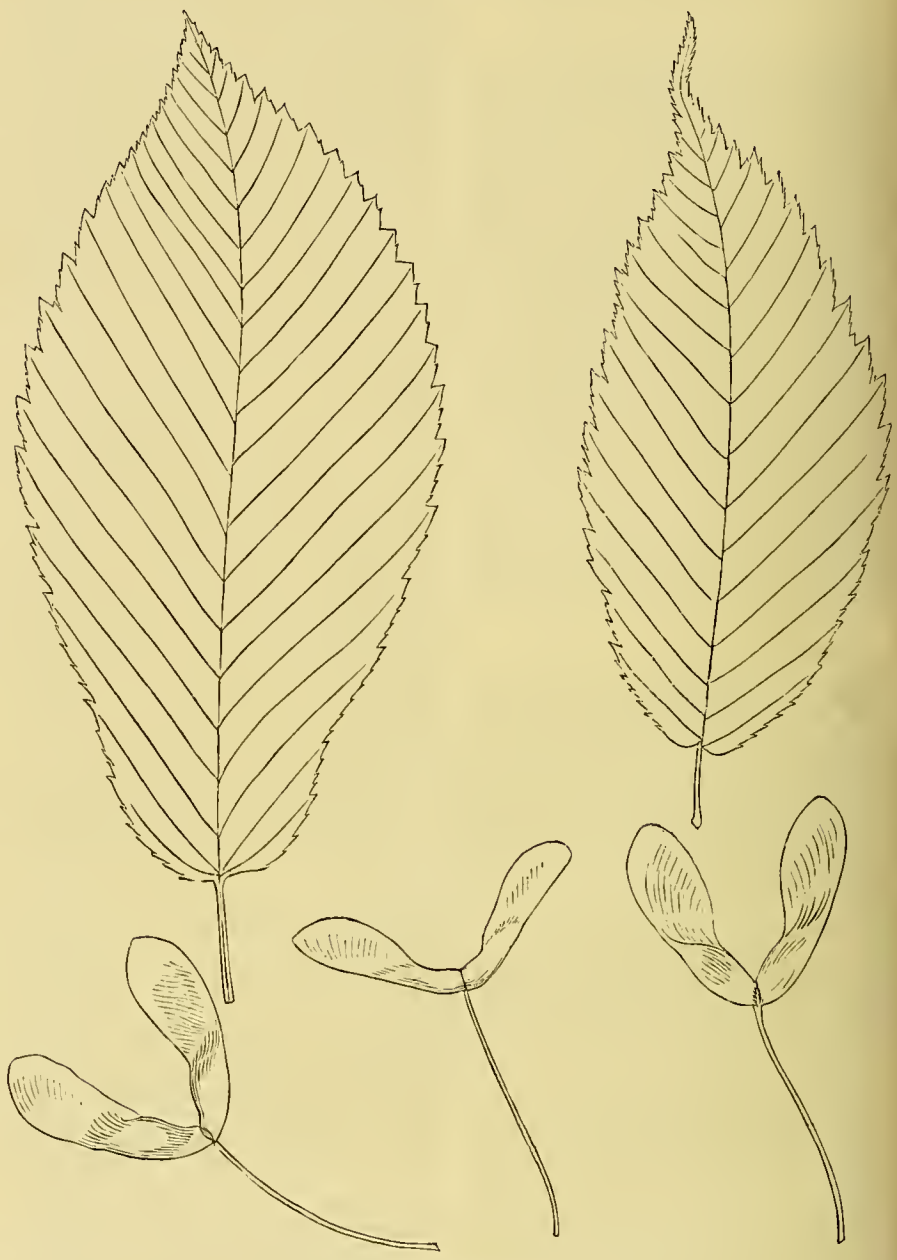

Fig. 105.—Acer carpinifolium. (see p. 565.)

or quite entire; when 5-lobed the basal lobes generally smaller than the others. Margins of leaves pale yellow.

*Var.* LACTESCENS.

I have seen no Maple under this name which is, however, given in *Arboretum Segrezianum*, by Mons. Lavallée. That gentleman writes me that his plants succumbed to the frost of 1879-80.

*Var.* LACINIATUM: A. laciniosum, Hort.; A. crispum, Hort.; Loudon, *Encyclop. of Trees and Shrubs*, p. 84, fig. 128.

A somewhat slender, sparingly branched small tree, with deeply cut leaves crowded at the ends of the shoots.

*Var.* REITENBACHII.

In many catalogues this is given as a synonym of the preceding variety, and as I have not been able so far to compare the two plants at the same stage of growth, or under the same conditions, I cannot speak positively either way. There is no doubt, however, that it is distinct from the next mentioned variety, A. p. rubrum. A. Reitenbachii originated at Plicken in Prussia, in the establishment of the nurseryman in honour of whom it was named, and Van Houtte distributed the stock. The young growths at first come out a good red which soon becomes deeper, a fine rich vinous colour. Since A. Reitenbachii has been grown by M. Van Houtte, I am informed bronzy-red foliage. [It is remarkable for the manner in which the blade of the leaf becomes bent on the stalk at various angles according to the directions of the light. EDS.]

The two following names represent plants which I have not yet seen—

A. p. *var.* CULTRIFORME.
A. p. *var.* MACULATUM.

ACER CARPINIFOLIUM, Sieb. and Zucc., *Flora Japonica*, tab. 142, p. 81; Maximowicz, *Mélanges Biologiques*, tome x., p. 595 (see fig. 105).

This very striking and interesting species, so distinct from ordinary Maples in the form and veining of its leaves, was first discovered by Siebold in the high mountains of Nippon; it was afterwards collected by Buerger in the forests at the foot of Mount Sata Foge, and by Maximowicz, near the town of Mouro, and in the neighbourhood of Yokohama. It is described as a tree 50 feet high. In all probability it will prove quite hardy, and grow freely in this country. To Messrs. J. Veitch & Sons, through their collector, Mr. C. Maries, is due the credit of introducing it to our gardens, and from a specimen supplied by them, the accompanying illustration (fig. 105) has been prepared. *Geo. Nicholson, Kew.*

FIG. 106.—ACER PLATANOIDES VAR. SCHWEDLERI.

*Var.* NANUM: A. p. var. nanum pyramidale, Hort.

A small growing form of pyramidal habit.

*Var.* PALMATUM: A. palmatifidum, Hort.; A. dissectum, Hort.; A. Lorbergi, Hort.

A very distinct form with the foliage slit down to the midrib, and each lobe again, more or less deeply divided. Not so strong a grower as the type, but with remarkably elegantly cut leaves. First introduced to this country from Belgium, by Knight of Chelsea, in 1845.

*Var.* PURPUREUM.

A variety with dull reddish-tinted leaves, by that gentleman that purpureum has been discarded by him.

*Var.* RUBRUM, Regel, *Gartenflora*, 1867, p. 163, tab. 545, same figure reproduced in *Belgique Horticole*, xviii., p. 39.

In this form the leaves are green in a young state, but towards autumn assume a fine red colour. The fruits are green, as in the type. The figure quoted represents a twig taken from one of three stately trees in the Imperial park, at Jelagin, St. Petersburg.

*Var.* SCHWEDLERI (see fig. 106).

A vigorous grower, with large handsome deep

## Orchid Notes.

Orchids in One House.—The very sensible remark as to the difficulty of growing Orchids of various character in one common structure (p. 334) has been, I fear, very disheartening to the majority of Orchid growers—to those who dearly love Orchids, but who cannot afford to have a great number of houses for want of means, space, or time, and to those who like to see their plants arranged with some picturesque effect, for a houseful of stiff Cattleyas, Dendrobiums, or even Vandas, without admixture of other Orchids and plants, is unnatural and unsightly. A description of my Orchid-house, which I have managed for the last ten years, will prove that the case is not quite so hopeless as it seems. The house is a lean-to structure 30 feet long, some 14 feet wide, and as many high, I believe, at the back wall, hidden by a dead-branched stout false Acacia tree, on which everything grows epiphytically. Cheap Orchids, such as Maxillarias, Rodriguezias, Epidendrums, Bifrenarias, &c., Philodendrons in many varieties, as pertusum, bipinnatifidum, cordifolium (a giant), Lindeni, crinipes, quercifolium, are fastened to this tree, and send down their thick pendulous roots. Bromeliaceæ, Ferns, Cyrtodeiras, Æschynanthus, a host of different plants, even Begonias, grow as epiphytes, and strive to outgrow each other, thus giving a perfect picture of an old dead tropical forest tree taken possession of by the vegetable world. The blank walls are clothed with Begonia scandens and Jasminum Sambac. The first-named plant is invaluable for this purpose, always free from insects, and of a pleasing bright green colour. The centre of the house is occupied by a bed with a partly covered water-tank, on which stand large and small Palms belonging to the genera Chamædorea, Areca, Thrinax, Caryota, Calamus, Geonoma, &c.; large plants of Fagræa obovata, Brownea grandiceps, Cochliostema Jacobianum, Gardenia radicans, Inga pulcherrima, Franciscea uniflora, Anthurium, Maranta, &c. The whole is edged in with rough rock and stones covered with the blue Selaginella cæsia. The front stage is occupied almost exclusively by Orchids, five rows of which, some thirty plants in each, hang also from the roof, with Tillandsias and other basket plants. The following is an accurate enumeration of those species and varieties only which grow well together and flower profusely every year. I bought some as mere scraps ten years ago, and they grow away in a uniform temperature of 55° at night and 68° in the daytime during the trying months of November, December, January, February, and up to the middle of March. During the growing season the temperature is kept at about 63° at night, and seldom exceeds 75° in the daytime.

Aerides odoratum, with five growths high up on a block, its roots hanging down over the water-tank, blooms every year with many spikes. A. affine roseum has every year larger racemes. A. crispum, Larpentæ, Reichenbachii, maculosum var. Schröderi, virens, Aganisia pulchella, Angræcum sesquipedale, A. eburneum (this has not yet flowered, but grows vigorously), Ansellia africana, a very large specimen, almost neglected in a corner, blooms profusely; Brassia and Burlingtonia in different varieties; Bollea cœlestis is doing very well, but has not yet flowered; Calanthes, Chysis, Catasetums, and Mormodes, in many varieties; Cattleya amethystina, amethystoglossa, bicolor, candida, Dominiana, Dowiana, gigas, guttata, Russelliana; Mossiæ, three varieties (C. Mossiæ does not grow with me so well as the rest), luteola, Harrisoniæ, maxima, Mendelii, Schilleriana, Regnelli, two large plants of Skinneri, superba, Trianæ (it strikes me that this species grows and flowers with me better than C. Mossiæ); Warneri, the best plant in my collection; Cœlogyne cristata, a large plant, is never moved from its light corner on account of its size, it is always wet overhead, and flowers freely; Colax jugosus, a small plant, coming now with its flower-spike; Cymbidium Mastersii, and others. Coryanthus macrantha has flowered twice with me, but is now out of health. Cypripedium in many varieties leave nothing to wish for. Dendrobium nobile cœrulescens has been in bloom with thirty flowers distributed on five spikes; crassinode, and Wardianum, both had about twenty flowers each; Griffithianum, densiflorum and Farmeri, with twelve to fifteen spikes pushing now vigorously; macrochilum, Dalhousianum, crystallinum, and many other Dendrobiums, all excepting D. pulchellum, grow and flower well. Dendrochilum filiforme had last year twenty, and D. glumaceum has now eight spikes. I keep them both very wet all the year round. A large mass of Epidendrum viscidum, so sweetly scented at night, does yearly duty on my Christmas tree. Ionopsis paniculata, Lælia Boothiana (Cattleya lobata), the so-called shy bloomer, has never failed to give its beautiful but short-lived flowers; the plant became so cumbersome that I divided it into many pieces, of which some are now ready with their flower-sheaths. Lælia elegans was a mite of a plant when bought; its last formed bulb measures 2 feet. Lælia Perrinii, six leads flowering yearly, and increasing in size; Lælia Schilleriana splendens flowers twice every year; there are four large plants of it grown out of two small but sound bulbs I bought some ten years ago. Lælia crispa, Miltonia virginalis or radicans, Morelliana and many others; Odontoglossum Roezlii, vexillarium, and Phalænopsis have not long been in my possession; but the first two flowered well last year, and the little O. Phalænopsis is now showing flower-spikes. Oncidium crispum, Forbesii, Limminghei, varicosum, sarcodes, with two long-branched panicles; O. Weltoni (newly imported) grows rapidly, but O. ornithorhyncum is increasing in size better than any of the genus: last year it had twenty-two branched spikes, and was a small but healthy plant when I bought it in 1878 from M. Lüddemann in Paris. O. Kramerianum, fastened to a block of Tree Fern and obtained three years ago from a collection in Palermo, has now ten flowering spikes; O. Papilio is likewise at home. Two plants of O. Lanceanum are not doing so well as I could wish; the one with the dark lip seems the more difficult to manage. The massive Phaius Wallichii comes next with two flower-spikes. Two plants of Phalænopsis Schilleriana, P. amabilis, Lüddemanni, and P. grandiflora aurea—all but the last (a small plant) flower every year, with spikes bearing a great many flowers. The plants were all bought when quite young from M. Luddemann in 1878, and belong, as is well-known, to the finest varieties. Saccolabiums give me more trouble, and do not grow so well, but my experience in Saccolabiums is small—I have only S. guttatum and violaceum: the last-named flowered once, but I believe they want more heat than I can afford to give them—at all events, more than Aerides and Vandas do. This last genus is a favourite with me—V. Batemanni, cristata, cœrulea, Hookeri, Cathcarthi, Roxburghii cœrulea, teres, Lowii (Renanthera), three plants of V. suavis, three varieties of V. tricolor. All but V. Batemanni, Cathcarti, and Hookeri grow well and flower freely. A variety of V. tricolor flowers regularly twice a year, another has now four spikes. V. suavis flowers but once, generally with three spikes each, and is well clothed with foliage. V. Roxburghii cœrulea flowered in 1879 with three spikes. Last year the plant did not flower, but it has grown considerably, and I have every reason to expect a good display of its extremely tasteful flowers. Zygopetalums, in many varieties, grow of course quite well and flower profusely. A small partition containing only cool Orchids, such as species of Odontoglossum, Masdevallia, Sophronitis, Restrepia, and others, with Filmy Ferns and carnivorous plants, was added a year ago to complete my collection.

No doubt infinitely more is attained and better culture shown where adequate divisions exist and more space is available; but as it is my little house gives me much pleasure, and contains at least some illustrations of every genus that is worth growing. Considering the inclemency of this climate, and the unfavourable position of the structure itself, Orchids seem to be really very accommodating plants. I hope this record of my experience will cheer and raise the hopes of those who think that Orchids are beyond their means. Failures are frequent everywhere, sometimes more so in large establishments than in smaller ones. Personal supervision, a knowledge of the natural habitat of the different species, so difficult to get at in some instances, and sound plants to start with, insure success in most cases. This reminds me of a plant of Vanda Roxburghii, bought at a sale in 1872: it remains in the same condition as it was when sent over; it has not grown nor flowered; it never even wanted to die. It looks quite healthy, but is quite a riddle. I remember now that Dr. Reichenbach once made a similar observation. No doubt some Orchids are slow to die. They go on making every year weaker and weaker growths, and they may sometimes last many years until they melt away, and are thrown away only when the last living eye has vanished; but many recover and get used, if I may say so, to the conditions of their new home.

I wish with many a fellow Orchidist that commercial considerations were not in the way to prevent it, but let us hope that we may live to see collectors of Orchids state distinctly where they found the plants, and give us detailed notes as to altitude, temperature, soil or support, degree of moisture and surroundings; and may we see all these notes published in the columns of the *Gardeners' Chronicle*. *A. K., Warsaw, Russia, March* 20.

### Orchids at Hutton Hall.

Many who would like to grow Orchids, if only on a limited scale, have been deterred under the impression that they are so difficult to manage that unless unusual care be bestowed upon them by attendants solely engaged in looking after their wants and peculiarities, success would be wanting. But this meets with frequent refutation by the numbers of collections to be met with, which, although small collectively as compared with the assemblages of these plants in the possession of the great growers, nevertheless contain a considerable number of species, and ample to prove that where a good knowledge of general plant cultivation exists there is little to fear as regards success. Of this the collection, or rather selection, at Hutton Hall, is an example. The plants which have attained the most size are principally species that require a high temperature, such as Vandas, Aerides, Saccolabiums, and Phalænopsis; they occupy a house where they are kept well up to the roof, and the presence of healthy stout leaves and absence of bare stems show they like their treatment. Most of the Vandas are from 2 to 3 feet high, with all their leaves down to the pots, and numerous side-breaks producing flower-spikes at almost every leaf they make. Grown with the Orchids is a very fine specimen of Utricularia montana; it is in a square wooden basket some 2½ feet across, and was pushing up about thirty spikes of its Orchid-like flowers.

### Orchids in Flower.

The houses at Mr. William Bull's, King's Road, Chelsea, are very attractive at present. Appended is a list of those now in flower. One of the Odontoglossum houses alone has upwards of 300 spikes in different stages, and in another there are between 200 and 300 spikes in flower and bud of Odontoglossum vexillarium and its varieties:—

Acanthophippium striatum
Acropera Loddigesii
Ada aurantiaca
Aerides japonicum
Arpophyllum giganteum
,, spicatum
Brassia verrucosa
Broughtonia sanguinea
Calanthe Masuca
,, pleiochroma
Camarotis purpurea
Cattleya Mendelii
,, Skinneri
,, Trianæ marginata
Caysis bractescens
Cœlogyne ocellata
Cymbidium Devonianum
,, eburneum
,, ,, maculatum
Cypripedium Argus
,, barbatum
,, ,, Crossii
,, Boxallii
,, concolor
,, Hookeræ
,, Lawrenceanum
,, lævigatum
,, Lowii
,, niveum
,, villosum
,, virens
Dendrobium Cambridgeanum
,, crystallinum
,, crepidatum
,, chrysotoxum
,, Dayanum
,, densiflorum
,, fimbriatum
,, Farmeri album
,, Fremanni
,, infundibulum
,, Jamesianum
,, Pierardi
,, Paxtoni
,, Schröderi
,, sulcatum
Epidendrum alatum
,, bicornutum
,, ionosmum
,, prismatocarpum
,, varicosum
Luisia macrotis
Lycaste cruenta
,, gigantea
,, Skinneri
Masdevallia amabilis
,, Chimæra
,, Estradæ
,, Harryana
,, ,, cœrulescens
,, ,, rosea
,, ignea
,, Lindeni
,, militaris
,, psittacina
Masdevallia Trochilus
,, Veitchiana
,, ,, gigantea
,, vivicans
,, Wageneriana
Mesospinidium sanguineum
Notylia bipartita
Odontoglossum Andersonianum
,, baphicanthum
,, cariniferum
,, Cervantesii
,, Chestertoni
,, cirrhosum
,, citrosmum
,, cordatum
,, crispum (Alexandræ), many varieties
,, cristatellum
,, facetum
,, gloriosum
,, Hallii
,, Karwinskii
,, luteo-purpureum, many varieties
,, maculatum
,, Pescatorei
,, Phalænopsis
,, Roezlii
,, ,, album
,, roseum
,, Rossii majus
,, sceptrum
,, triumphans, many varieties
,, Uro-Skinneri
,, vexillarium
,, ,, roseum
,, ,, rubrum
Oncidium ampliatum majus
,, ascendens
,, Cavendishianum
,, concolor
,, cucullatum
,, fuscatum
,, Kramerianum
,, leucochilum
,, luridum
,, Marshallianum
,, phymatochilum
,, pictum
,, primulinum
,, reflexum
,, serratum
,, unguiculatum
,, unicorne
,, varicosum
Phaius Wallichii
,, Woodfordii
Pilumna fragrans
Sobralia macrantha
Trichopilia coccinea
,, ,, nigra
,, crispa
,, suavis
Trigonidium ringens

# Garden Operations.

## KITCHEN GARDEN.

Celery Planting.—There are various modes in practice of carrying out this operation, but the most preferable, and the one which we shall here recommend, and which is as simple as it is effective, is as follows:—The trenches, which should run north and south, should be a spit deep, 16 inches wide, and 4 feet from centre to centre, should be got ready at once for an early planting; and the ridges, which are between and formed by the soil taken from the trenches, should have a good slope, in order to catch and lay the trench well open to the rain. Six or eight inches thick of the best dung that is to be had on the place should be dug into each trench, and the soil broken fine as the work of digging proceeds; then, assuming that the plants have been properly hardened off, take them up carefully with a ball of earth and manure adhering to the roots, and in the event of there being any suckers attached to the plants remove them, and plant one row in each trench at 9 inches from plant to plant in the row, taking care in doing so that the plants are not buried deeper in the soil than they were before, and that the soil is made moderately firm about their roots, which should then be watered through a long-spouted watering-pot and a rose to settle the soil around the roots. In the meantime each Celery ridge can be planted with two rows of Lettuce. Tomatos.—Preparations should be made next week for getting the earliest batch of plants which were raised for this purpose the end of February planted out. The first step to be taken in this direction is to get the necessary number of holes opened between the fruit trees under a south or west wall, and into each hole put half a barrowload of compost, consisting of three parts good loam and one of well-decomposed stable-dung. The plants, which should be thoroughly moist at the roots before being turned out of the pots and previously hardened off in cold pits, should then be planted (one plant in each hole), and in doing so the soil should be pressed firmly about the plants, which should then be made secure to the wall by shreds and nails, leaving room in doing so for the development of the shoots. This done a Spruce bough should be stuck firmly in the ground in front of each plant for protection from frosts and cutting winds. Ridge Cucumbers.—For these make a trench 4 or 5 feet wide, 16 or 18 inches deep, and in length according to the number of plants to be grown, and fill it with long stable-dung and leaves, principally the latter, and raise it about 2 feet higher than the surface. The whole should then be well trodden and subsequently covered with the ordinary garden soil, after which mounds should be formed of prepared soil at 5 feet from centre to centre along the middle of the ridge, and on which handlights, which should have been previously washed, should be placed, and the Cucumber plants planted in them watered and shaded for a few days from bright sunshine until they have established themselves; cover up at night with mats. Vegetable Marrows.—For these we prepare individual pits about 3 feet square, and the same depth and make as the Cucumber ridge, amongst the standard Apple and Pear trees. Mounds of good rich compost are made on each miniature hotbed, on which the hand-glasses are placed and the Marrows planted therein, watered and shaded, as in the case of the Cucumbers. Carrots, Parsnips, and Spinach will now require thinning out to from 6 to 9 inches in the rows, and this should be done when the ground is moist. Make a small sowing of Basil (bush and sweet), Marjoram, and summer Savory in a warm border, and subsequently plant out those raised in heat, and only hardened off for that purpose. Peas.—A good sowing should now be made of the following or allied varieties:—Champion of England, Ne Plus Ultra, Emperor of the Marrows, &c., from which sowings Peas will be fit for gathering early in August. Another sowing of Broad Beans (Seville Longpod) should also be made, and former sowings earthed-up. General work will chiefly consist in the earthing-up and sticking of advancing crops of Peas, Cauliflowers, and Potatos, Dutch-hoeing between the rows of Onions, Carrots, Parsnips, Lettuce, &c. Asparagus-beds will also require attention in regularly cutting the shoots as they become fit, taking care in doing so not to injure the crowns of the plants, nor the shoots below the surface with the knife.

Forcing Department.—Tomatos swelling their fruit should, if not already done, be top-dressed and have frequent and liberal supplies of tepid liquid-manure (not too strong) to the roots, and the shoots and leaves of the plants must be kept well pinched, and the fruit fully exposed to the sun. Attend to the watering and syringing of French Beans, which should now be grown in pits. Capsicums which are intended to be fruited in pots should be shifted into larger ones as they require more room at the roots, and those which are intended for planting out-of-doors later on should be gradually hardened off for that purpose. Mushrooms.—Maintain the temperature in the Mushroom-house, and collect horse-droppings and spread them in thin layers in a dry shed, after which, when the necessary quantity has been collected, make up a bed out-of-doors under a north wall. *H. W. Ward, Longford Castle, Wilts.*

## FLOWER GARDEN.

Of recent years that branch of flower gardening called summer bedding-out has come in for a large share of criticism, and not always of the most complimentary kind, yet the system still survives, though happily in a greatly improved form, both as to taste in design, arrangement of colours, and hardiness of plants. The criticism, therefore, that was intended to entirely obliterate summer bedding, instead of having had that effect has rather aided in its firmer establishment, and it will remain so long as we continue to progress in these directions. Over and above all we must press into service every available hardy plant, to the proportionate exclusion of tender kinds. Personally I maintain that the bedding-out system is the best way of treating a formal garden, and though I have more than once been taken to task for daring so to think, the idea refuses to desert me, and I still stand by my colours; for notwithstanding that I have an increasing affection for hardy herbaceous plants it will never reach the height of inducing me to plant them in a geometrical garden, but as we here have them—in tolerably great variety too—in isolated beds and borders about the pleasure-grounds and kitchen garden. All bedding arrangements should be decided forthwith, and the hardy varieties be planted. At this season our own plan is to mark out and label each bed and plant at leisure; by this means we in a measure escape the pressure of work usual at the bedding-out season. As to arrangement of colours, the "quieter" these are the more enjoyable will they be; sometimes, for want of suitable plants, it may be impossible to avoid "loud" colouring, and when this is likely to be the case there should be a modification of the planting arrangements: say, for instance, that yellow Calceolarias and scarlet Pelargoniums are the only plants available for use in a given circular bed, to tone down such glaring colours use a central and three other dot plants of Grevillea robusta, or Dracæna australis, or any of the Abutilons or compact growing shrubs, such as Thuya aurea, or Retinospora pisifera aurea. Indeed this manner of breaking the flat surfaces of even the most chaste colouring is worthy of adoption, in that it not only relieves the glare of high colours, but imparts gracefulness to even the most formal arrangements.

Seedlings that are to be used for bedding, such as Golden Feather Pyrethrum, Phlox Drummondii, Tagetes signata pumila, and Lobelias, should be pricked off into boxes and be afforded the shelter of a frame till well established in the soil; the former—Golden Feather—we usually transplant direct from the seed-bed to its permanent position, shading the plants with Yew spray till new roots are emitted. Asters, Stocks, Zinnias, Helichrysums, and annuals generally, that are to be used for planting in mixed borders, now need all the attention that can be afforded to bring them up sturdily by pricking them off or planting them out before there is the least danger of their injuring each other in the seed-bed. Sow on warm borders, or under hand-lights, Antirrhinums, Sweet Williams, Sweet Sultans, Wallflowers, and Lavender. Ornamental grasses should be sown thinly where they are to grow, as they do not transplant well. The commoner annuals, such as Candytuft, Eschscholtzias, Clarkias, Silenes, Saponarias, Collinsias, Larkspurs, and Nemophilas, should now be sown for flowering in June, July, and August; all of these are useful for filling in vacant spots in mixed borders, and are no trouble beyond keeping slugs off them when the seedlings first appear above-ground, and giving the plants the necessary thinning out. Sweet Peas and Mignonette, to ensure a constant supply to the end of October, should be sown at varying intervals from the beginning of March to end of May. Indoors there will now be much shifting and moving of plants; all that will withstand a degree or two of frost should now be got out and stood under the shelter of trees, walls, or in turf pits—this will give room for the potting of seedling subtropicals before there is any danger of their getting potbound. One of the most pleasing arrangements with these plants that we had last year consisted of Ricinus Gibsoni with undergrowth of Abutilon Darwinii variegatum, and edging of Gnaphalium lanatum—perhaps the more effective, because so simple. Mowing is now in full swing, and for neatness sake, as well as for the permanent maintenance of healthy bottom grasses, should be regularly done, and so should the rolling of walks after rain—the labour so expended being a good way of compounding for weeding, as weeds cannot grow well on consolidated walks. *W. Wildsmith, Heckfield, Hants.*

## FRUIT HOUSES.

Peaches and Nectarines.—The fruit in the early house will by this time have nearly finished stoning; keep the young shoots tied in close, and take off any lateral growths from strong shoots; stop the terminal shoots when they reach the top of the trellis, &c., and keep them pinched in to help the fruit as much as possible. Give copious waterings of tepid manure-water as the trees require it. Keep a sharp look-out for red-spider near the pipes, and whenever it makes its appearance take means to eradicate it at once, either by applying sulphur to the pipes or washing the leaves with soft soap and water or a weak solution of Gishurst Compound. Continue disbudding, thinning fruit and heeling down young shoots in succession-houses until all are done. If the trees are not already mulched they may be done at once, and be well watered afterwards. The latest houses will now be set, and will require the usual attention as regards disbudding, &c. Keep the "latest" as cool as possible, so as to prolong the season of indoor Peaches, for after three most severe winters in succession we cannot expect to have many fruit outdoors. *J. Wallis, Keele Gardens.*

### Melons.

The advanced state of early crops such as are approaching the ripening period will now require that a gradual change be made in the atmospheric conditions from that which has existed while the fruits were swelling. Varieties of Melons that are deeply netted are very liable to crack if the plants are vigorous and bearing but a light crop, unless the supply of water to the roots, and the state of the atmosphere, is managed with skill and judicious observation. It will therefore be necessary to dispense with atmospheric moisture at closing time, while the process of netting is going on, as a safeguard against cracking. Abundance of moisture should, however, be given while the ventilators are open, and in watering the plants at their roots the supply given to each should be determined according to the condition of the individual plant. For instance, if the bines are hard to the feel, and the leaves are of a like character and of moderate size, and plants are carrying from four to six fruits each, water may be liberally given until the first change of colour is noticed in the fruits, while in the case of plants indicating a more tender constitution by their succulent growth and shy bearing qualities, a heavy watering is sure to induce a sudden influx of sap from the roots, which may cause the fruits to split, and thus render them useless. Such things as insect pests are unknown where plants are properly nourished at the roots, and are not exposed to sudden transitions of temperature, which at the present time should not fall much below 75° through the day, nor exceed 90°, except for very special reasons. A minimum temperature of 70° will be a corresponding or proportionate figure at night, and 5° higher will do no harm in case of urgent necessity for ripe fruit. Where plants are trained upon the surface of the bed in hot-water pits the fruits will have to be elevated upon inverted pots in order that they may have the full advantage of the sun's rays while ripening. If the surface of the bed is covered with foliage it is a good plan to place empty pots at intervals over the bed into which liquid or other water may be poured to nourish the roots without drenching the leaves. Prepare beds for succession and pot on seedlings before they get crowded or drawn for summer crops. *W. Hinds, Canford, Dorset.*

### Cucumbers.

With the sun increasing in power, and the weather still unsettled, shading and ventilating are the two operations requiring most attention at present. Anything like permanent shading is baneful to the general well-being of plants from the fact of its excluding in a greater or less degree the subdued light and gentle rays from the morning and evening sun which Cucumbers enjoy after [a shower-bath from the syringe. If roller blinds are not always come-at-able some other expedient must be adopted to supply the necessary shade, which can be removed when it is not required by the exigencies of the weather. Span-roofed houses running north and south are most suitable for growing Cucumbers in summer, but very often structures of very modest pretensions are made to answer the purpose. Our Cucumber-house proper is an unequal span running east and west, and is a very good house in winter, as far as form and aspect are concerned. The Cucumber disease has got a firm grip with us, and is worst during summer. I have tried everything in the way of disinfecting without avail. This season I am going to change the summer quarters, and have now a stock of young plants that will soon be ready for planting out in pits for summer work. I would strongly advise all who are troubled with this unconquerable pest not to rely for a supply upon one batch of plants where the disease has ever been before. High cultivation and plenty of warmth and moisture seem to keep it in check, but immediately the temperature falls, and a few dull days intervene, plant after plant suddenly dies away upon the return of bright weather. Planting in fresh quarters, however, seldom fails to have the desired result. *W. Hinds, Canford, Dorset.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | May 2 | Sale of Orchids, and Stove and Greenhouse Plants, at Stevens' Rooms. |
| Wednesday, | May 4 | Sale of the third portion of Mr. Day's Collection of Orchids, at Stevens' Rooms. |
| Thursday, | May 5 | Meeting of Linnean Society, at 8 P.M.<br>Floral Fete at Bath.<br>Continuation of the Sale of Mr. Day's Orchids. |
| Friday, | May 6 | Sale of Imported Orchids, at Stevens' Rooms. |
| Saturday, | May 7 | Messrs. W. Paul & Son's Exhibition of Pot Roses commences at Regent's Park.<br>Sale of Hardy Plants, at Stevens' Rooms. |

The Pruning of Evergreen Shrubs is one of those important matters in horticulture which is for the most part much neglected. Fruit trees and such-like are pruned as a matter of course and an affair of profit—even deciduous trees and shrubs often pay for pruning—but faggots of Laurel and other shrubs barely pay for doing up, to say nothing of the cost of cutting, hence, no doubt, they often go unpruned, and yet the idea of profit seldom enters into the mind of those who plant evergreens. They are planted for shelter, cover, or for their beauty, and too often they are allowed to remain unpruned until they become worse than useless for either purpose. It is no uncommon thing to find thousands of lean, lanky, half-dead, dying evergreens disfiguring the grounds and landscapes they were meant to clothe and adorn. Timely pruning would have prevented this state of things, and skilful pruning might do much to restore them to usefulness and beauty.

In regard to the time to prune evergreens, experience has established that April is the best month in the whole year. Pruned in the autumn or winter they heal slowly, or not at all, and the frosts enter and sink deeply into the wounds. Pruned now the wounds heal at once, and the new growth follows so quickly on the heels of the cuts that little or no bleeding takes place. Pruned early in April the young growths have time to ripen before winter. This is a point of great importance. Not a few prune evergreen shrubs any time during summer, but late pruning necessitates late growth, and the latter seldom escapes the attacks of frost. During the past winter every late shoot on evergreen shrubs was killed. It may therefore be laid down as a general rule that in ordinary seasons March is too early and May too late for the pruning of evergreens, while April hits the best mean between the two. In the present backward season no harm will be done if the process be extended into May.

There are three general methods of pruning evergreens, and these may be characterised as the annual, the regular or intermittent, and the erratic. The first is no doubt the best. Those who value evergreens as they ought will mostly look over them every year and remove redundant and misplaced shoots with almost as much care as they would do in the case of fruit trees. They are thus made to grow into shapely masses without either waste of time or of vital force. Some even run over their evergreens twice a year—in April, before growth commences, and towards the middle of September—to cut back any stray or erratic branch or twig. But this applies more to banks or level masses of shrubs such as are to be seen in places like Sandringham, Dalkeith, or Drumlanrig, where acres of ground are furnished with Laurels kept by annual cutting as green as grass and well nigh as even and smooth. Those who value such banks even forbid the shears to touch them, but have them pruned over once or twice a year. But in most cases an annual overhaul in April will be sufficient. The word overhaul is used advisedly, for it is not always needful to prune evergreens annually, but only such as may require it.

The second mode of pruning is that most generally adopted: the evergreens are allowed to grow up anyhow until they get more or less crowded, they are then pruned back hard, many of them being cut back to the ground. Some allow all to rise up, grow into and continue a thicket until their lower branches lose their leaves and become unhealthy; they are then severely pruned, with the result that a good many of those cut back hard never break again. Others, again, cut down every alternate plant, or a plant here and there. If the plant beheaded is much overhung with other shrubs, the chances are it will simply refuse to grow, and so die in a few years. Where shrubberies have got into a bad state it better to cut them back rather severely tentatively, a piece at a time of sufficient area to allow the rains and dews and the air to quicken and strengthen the evergreens into new growth. In this way the whole of the evergreens may be subjected to pruning every few years, and their health, beauty and symmetry be preserved.

The erratic mode of pruning is not to be commended. It is almost sure to run into absurd extremes. Delaying pruning too long mostly carries it too far. Thousands of evergreens have been slaughtered rather than pruned by those who prune by impulse rather than principle. With shrubberies utterly neglected even wholesale slaughter may be needful to resuscitate or revive them. But meanwhile and through the process of recovery the beauty and usefulness of the evergreens are lost. Besides, these severe cuttings tend to promote gross growths that are easily killed by the first frosts, and the result is mostly unsatisfactory. The shrubbery seldom is, but alway to be beautiful, or the plants have over or outgrown their best. This the best of evergreens speedily do when left to themselves. The tendency of most of them, especially when closely planted, is to make an excess of top at the expense of their base. Evergreens bare below are the products of overcrowding or under-pruning. All pruning should therefore aim at preserving the form or developing the stature of the top, while keeping the bottom freely furnished.

Flowering shrubs, such as Rhododendrons, may be pruned in April, like Laurel or Hollies. but this, when they are well set with flower-buds, sacrifices much beauty. Such Evergreens also flower so early that, if pruned the moment the latter fades, we may enjoy the beauty of their flowers, and also ripen the wood before winter should the summer prove a good one. But where Rhododendrons have been so much neglected as to necessitate severe pruning, it will be wiser to sacrifice the bloom of a season and to prune them in April.

Neglected shrubberies may sometimes be rejuvenated quickly by a combination of pruning and layering, thus:—cut down the worst plants to the ground, leaving some of the finest and most pendulous or horizontal specimens at regular intervals; proceed to partially cut the branches of these, and bring them down to the ground and convert them into layers. What with the growth of these and the upspringing of the beheaded plants, the shrubbery will be quickly refurnished; it will likewise be made, and continue to be well nigh impenetrable—a point of great moment where evergreens are planted for the protection of game.

—— Pieris formosa.—Our figure of this very beautiful evergreen shrub (fig. 107) is taken from a specimen obligingly furnished us by Mr. Boscawen, in whose garden at Lamorran, Cornwall, it proves to be perfectly hardy, although near London it is injured by frosts. Specimens of it were also shown on Tuesday last by Mr. Boscawen before the Scientific Committee, on which occasion the exhibitor remarked that it was one of the few plants usually untouched by rabbits, a remark which elicited a statement by Mr. Edgworth that it, or a nearly allied plant, was poisonous to goats in the Himalaya. Here it forms a shrub with leathery, green, somewhat bullate leaves, lanceolate or oblanceolate acute, very finely serrated, and with terminal branching clusters of porcelain-white flowers, the general character of which is admirably represented in Mr. Smith's drawing.

—— The Blue Daisy.—Sir Joseph Hooker tells us in the *Botanical Magazine* that the blue Daisy, Bellis rotundifolia var. cœrulescens, is one of the commonest of spring flowers in various parts of Morocco, abounding in fields with a rich soil on the hills near Tangier, and occurring in great profusion by the watercourses of the valleys of the Greater Atlas, in lat. 31°, at elevations of 4000 to 11,000 feet. At Kew the plant is now flowering freely in a cold frame, and the flower-heads, with their delicate azure-blue ray florets, are very charming. The specimens which were left on rockwork in the open air have not withstood the winter, but with the protection of a cold frame the species grows well, and makes a beautiful object for cool conservatory and window decoration during the spring and early summer months.

—— Wallflowers.—One of the dwarfest of dark-coloured Wallflowers is a new variety offered by Mr. Ernest Benary, of Erfurt, under the designation of Earliest Black Brown. That it is true enough as to colour of flower may well be expected, but its habit is a little too undecided, not more than one-half of the plants assuming the true dwarf form of a dense compact kind, about 9 inches in height when in bloom. The plants have that stout woody stem which characterises the German double kinds, but none the less is thoroughly hardy, having stood the past winter unharmed in the open ground. The colour lacks that rich brightness so characteristic of our best market strains, and the petals are rather rougher though larger. Tried under exactly the same conditions it is, however, found to be quite six weeks later than our own blood-red kinds, and this is an undoubted drawback; for in the market gardens the head of the bloom from the Wallflower breadths has been taken, whilst the German Earliest is but just expanding its flowers. In height and time of bloom it promises to make an excellent companion kind to the Dwarf Belvoir Yellow, which is somewhat later always than is the dark one, or than the fine tall yellow sometimes miscalled Tom Thumb, and also known as the Golden. Whilst the Belvoir and the German Dwarf will make fine masses for beds, the Blood-red and the Golden are eminently the best to furnish cut flowers, or to give showy bunches of colour in the garden borders. The fine German doubles, though thoroughly hardy, are not nearly so largely grown as they deserve to be, and in truth are seldom met with in gardens. Perhaps as much may be said generally of the rich dark and pure yellow kinds we have, as the common Wallflower is usually a hybrid sort of a thing, the flowers rarely one thing or the other. Gardeners who are short of space for hardy flowers will find that a few hundred plants of these good strains, if put out among the bush-fruits, as the market growers do, will give a fine lot of bloom in the early spring.

—— Psychotria cyanococca.—The flowers of this plant are inconspicuous both in colour and size, but their lack of beauty is amply compensated by the clusters of splendid ultramarine-blue berries. It is an interesting and desirable stove plant, with light green leaves with wavy edges. This and P. chontalensis were discovered in Nicaragua, and sent to the establishment of Mr. Bull by the late Dr. Seemann. Specimens in fruit are now to be seen in the T-range at Kew.

—— Citrus trifoliata.—At Kew this singular Japanese shrub has passed through the severe ordeal of the winters of 1879-80 and 1880-81 without being in the slightest degree injured, and this, too, in the open ground, with no protection of any kind. At the present time its rigid, leafless, shining green branches are studded with buds which will soon expand into pretty Orange-like blossoms. In Japan this shrub is much cultivated both as a garden plant and for fences; it would certainly make a novel and interestiog fence for an English garden, and its sturdy branches, armed with formidable thorns, would enforce due respect. The trifoliate leaves are not fully developed until the end of June. The plant is far from common, but in some nurseries it is grown as Ægle sepiaria, and in others under the totally wrong name of Triphasia trifoliata.

Fig. 107.—Pieris formosa: flowers porcelain-white. (see p. 568.)

—— Mackaya bella. — This lovely Acanthad is flowering freely in the Cambridge Botanic Garden, and with seven or eight flowers open on a raceme few things are more attractive. Some other Acanthads have been very ornamental, among which may be mentioned the old Aphelandra cristata, and Thyrsacanthus rutilans, which has had pendent inflorescences reaching the bottom of the pot.

—— The Leeds Horticultural Society.—Successive seasons of unfortunate weather, culminating in three days of rain last June, have, we learn, caused a succession of losses to the committee, that of last year amounting to over £400. Leeds has always been a great horticultural centre, and a large number of good plant-growing establishments exist in the Leeds district, and their exhibition of last June was one of remarkable excellence and extent, so that it would be a source of deep regret to a very numerous body of their supporters if Leeds could not maintain a flower show. Nothing but fine weather is wanting to ensure success, and the committee have determined, with very commendable pluck, to try again, and have just issued an excellent schedule offering about £375 in prizes, of which £123 go to stove and greenhouse plants, &c., £66 to groups of plants, £20 to Orchids, £72 10*s.* to Pelargoniums in classes, £40 15*s.* to cut flowers, and £52 to fruit. It is greatly to be hoped that exhibitors will support them as usual, and that fine weather may be experienced this year.

—— Mairia crenata.—A plant of this pretty little Composite is now in flower at the Royal Gardens, Kew. It is an acaulescent perennial, with a dense rosette of deep green fleshy leaves, which are oblong-ovate in outline, tapering at the base into a petiole; the margins are distantly toothed. The scape rises from the centre of the rosette to a height varying from 1—6 inches, and is terminated by a solitary Aster-like flower-head, measuring 1 to 1½ inch in diameter, with a bright purple ray and a yellow disk. It appears to have been first introduced about the year 1824, but has probably been lost to cultivation for some years past until its present reintroduction. It ought to succeed well upon a rockwork in summer-time, since it appears to be a mountain plant, the only localities given for it in the Kew Herbarium being Table Mountain and "on the Postberg, near the village of George, in Antiniqualand, on the descent of the western ridge:" Burchell. To these localities are added, in the *Flora Capensis*, those of Langekloof and Swellendam. It is figured in the *Botanical Register*, t. 855, as Gerbera crenata, and in Loddiges' *Botanical Cabinet*, t. 901, as Arnica crenata.

—— Pandanus Veitchii. — Mr. J. Hudson, The Gardens, Gunnersbury House, Acton, has some very pretty small plants of this popular variegated foliaged stove plant that well deserve a passing notice, because the leaves are narrower than when seen on fully developed plants; so much narrower, indeed, as to give the plant the appearance of a distinct variety. Mr. Hudson states that he makes cuttings of the small growths thrown up from the roots, which come highly variegated, and when these are shrubs they remain in this distinctly variegated form for some time, and have a great value for decorative purposes.

—— Forced Roses at Lambton Castle.—To keep up with the all-year-round demand for Roses here, Mr. Hunter grows them wherever a vacant space can be found in any of the houses in which there is heat to bring them into flower from the time the outside bloom is over in autumn until they come again out-of-doors. They are mostly planted out on the back walls of Peach or other fruit houses, or bush fashion, occupying the middle of the house in one or two instances. In one of the early Peach-houses in the upper range, with the Peaches trained in the usual way on a trellis under the roof, the bed inside is planted thinly with Roses, fine large bushes 4 to 5 feet high and as much through. From these plants are cut during March, April, and May, flowers in quantity, such as are only obtainable from the most vigorous growth. They consist of the following kinds:—Isabella Sprunt, Duchess of Edinburgh, Niphetos, Madame Falcot, and Lamarque. It might be supposed that the Roses would not get the requisite sunlight under the Peaches, but Roses, especially when forced, rarely can stand full exposure to the sun without some shade, either permanent or movable, and Mr. Hunter keeps the whole of his Peaches under glass much thinner of wood than ordinary; in fact, not more than half the number of shoots are kept that many growers would consider requisite; and the summer growth is confined to no more than is looked upon as necessary for a crop, the result of which is, that here, as usual, where strong well-ripened growth is not overcropped, the fruit attains a large size, the heaviest last year reaching from 12 to 16 oz. In a hip-roofed succession Pine-house, standing east and west, with the back lights much longer than usual in this form of structure, there is a bed running the entire length enclosed in a strong slate box fixed to the back wall some 2½ feet below the glass; in this there has been a number of the Tea varieties grown for five years. The heat is never lower than 55°, and yet nothing could possibly be more vigorous and healthy in both wood and foliage than are these Roses, which, when we saw them a few weeks ago, were bearing such a crop of buds and flowers in all stages as gave evidence of their liking the treatment they get. The stems are quite as thick as they would have been out-of-doors or in a cool-house in the same time. Last autumn they were taken up and the bed remade with new soil. Kept as these Roses are in a temperature continually high as is unavoidable in company with well-grown Pines, the supposition most natural would be that they would soon get exhausted and so weak as to become a prey to mildew and insects, but there are no more signs of this than if they were grown in a cold house. Roses and all other plants that will bear a liberal application of water are treated by Mr. Hunter on similar principles to those which he adopts in Vine culture—abundant drainage, and more water during the time of active growth than many cultivators use. The supply of this most important element at Lambton is all but unlimited, and the hose-pipe is used freely for everything that will do with it. By this means the Roses under glass are kept completely free from their ever-active enemies—aphides and red-spider; neither is there a trace of mildew to be seen, which parasite might be expected to be unusually troublesome on foliage grown under heat like that here present; but all the air given is admitted at the ridge of the house at a considerable distance from the Roses, which are kept in bush form, with their heads close up to the lower portion of the back lights already spoken of; and moreover with the Pines they do not get near so much air given them as, if grown along with some other things, would be necessary. As might be imagined they are never wholly dormant, but they rest partially in the latter months of the year.

—— Hardy Spring Flowers.—The recent exhibition of Auriculas, Polyanthus, and other allied plants, naturally tends to excite a strong desire for a more representative exhibition of hardy spring flowers than comes within the province of the National Auricula Society's operations. To expect that that body could give a wider encouragement to spring flowers than is now offered is to expect more than is fair. The Society is established for a definite purpose, and whilst it finds in the prosecuting of that object an element of strength, too wide a grasp of operations may prove the road to failure. But if the Auricula Society can perform so much and do it so well with its small income we may well ask why the Royal Horticultural Society cannot supplement that work by offering prizes for *bonâ fide* hardy flowering plants, and for once put aside those groups of tender and forced flowers which constitute a regular feature at all other spring meetings. Mr. Barr has shown us what can be done with Narcissi as cut flowers. What a nice feature would a few dozens in pots prove, and with prizes offered worthy of competing for, how many might be induced to grow Narcissi? Garden Anemones present another flower of exceeding beauty and varied colour, double, semi-double, and single; blooming naturally with the Auricula and the Narcissus, they would, if shown in large shallow pots or in pans, make a superb class. Primula Sieboldi is, or should be, abundant enough to furnish a good class, and of hardy Primulas this seems to be the most fitting for exhibition in pots. Wallflowers are glorious hardy spring flowers, and lift well into pots, and, indeed, there are scores of things that make beautiful exhibition flowers. Cannot the great growers of hardy plants, Ware, Parker, Osborn, and others, be induced to exhibit, out of their wealth of early spring flowers? Some £100 or so taken from the other big summer schedule, and added to the Auricula show, would serve to bring together an unrivalled display of early hardy flowers.

—— Gardeners' Royal Benevolent Institution.—We are informed that the thirty-eighth anniversary festival of the Institution will be held on Wednesday, July 6 next, under the Presidency of the Right Hon. Lord Aberdare, President of the Royal Horticultural Society.

—— Clerodendron fragrans. — The single-flowered plant of this species appears to be rarely met with, but as flowering in the Cambridge Botanic Garden it is highly ornamental, and much more graceful than the common double. Its flowers have the same delightful odour. They are pure white, with a tinge of pink in the centre.

—— Seedling Gladioli.—The Council of the Royal Horticultural Society, having procured a quantity of corms of seedling Gladioli, are now distributing the same in packets to the Fellows on application at the Secretary's Office, South Kensington; 3½*d.* in stamps should accompany each application if required to be sent by post.

—— Saxifraga flagellaris. — This plant has received from members of the several Arctic Expeditions—nearly all of which have paid attention to botany—the appropriate name of the Spider-plant, on account of the long filiform stolons radiating from the central rosette of leaves. Each of these stolons bears a bud at its extremity, and this rooting, a colony of new individuals is established round the parent plant. The flowers are golden-yellow, about the size of those of our native S. Hirculus. The present species has a wide geographical range, being found in the Caucasian and Altaic Alps, the Rocky Mountains of North America in about lat. 42° to Melville Island in the extreme north, and Behring's Straits to the west. Unlike so many plants from great elevations or high latitudes, it seems to adapt itself easily to the ordinary treatment of rock plants. Now in flower in Saxifrage collection at Kew.

—— Publications Received.—*Tree Pruning*, by A. des Cars, translated by Charles Sargent, Professor of Arboriculture in Harvard College (A. Williams & Co., Boston, U.S.A.)—*The Land Question, Ireland*, No. 10, Mr. Gladstone's Bill (Irish Land Committee).—*Henderson's Handbook of Plants* (Peter Henderson & Co., New York).—*Walker's Art of Dining*, by Felix Summerly (Geo. Bell & Sons).

—— The Weather.—General remarks on the weather during the week ending April 25, issued by the Meteorological Office, London:—The weather has been cloudy generally, with some slight showers of rain, hail, or sleet. Thunder occurred at Leicester on the 23d, and at Shields and Stonyhurst on the 25th. The temperature has again been below the mean in all districts, the deficit being from 3° to 6° in the west and north, and as much as 7° to 8° elsewhere. The lowest of the minima were registered in most places on the 21st, when the temperature fell to 25° at Cheadle, to 26° at Strathfield Turgiss, and to between 27° and 32° at many other stations. The readings were highest towards the close of the period, when the thermometer rose to between 60° and 62° over the greater part of England. The rainfall was less than the mean in all districts. Bright sunshine was more prevalent in the west and south-west than elsewhere, the percentages ranging from 42 in "Ireland, N." to 19 in "England, E." Depressions observed:—Until the 22d pressure was lowest to the eastward and southward of our islands, the prevailing winds being northerly or north-easterly, and fresh or strong in force. On the 22d and 23d some shallow subsidiary depressions appeared over England, causing the wind to vary a good deal in direction, but these were very slight. At the close of the period, however, a large depression advanced from the south-west to the north of Norway; fresh or strong westerly winds were felt on all our coasts, and a strong westerly to north-westerly gale at some of the northern stations.

—— Gardening Appointments. — Mr. W. Whibberley, late Gardener to the Earl of Wicklow, Shelton Abbey, Arklow, has been appointed Gardener to Lady Kingston, Mitchelstown Castle, Co. Cork.

# Home Correspondence.

**Leucojum vernum and Triteleia.**—A short time since a correspondent was lamenting that there were no hardy plants yielding flowers suitable for bouquets, but if he will grow a few patches of both of the above-named, he will have such as will be fit to associate with any tender exotics, as the blooms of both are very chaste and beautiful, and just of the size and character to fit them for that kind of work. The Leucojum vernum greatly resembles the Snowdrop, but instead of the flowers being borne singly they come from three to five on stems a foot to 18 inches long, from which they depend in the most graceful manner possible, and are just the thing for dressing vases, to which they give a fine finish. Here we have been cutting from them for some time, and also the Triteleia uniflora, which in our light soil blooms profusely, and as they are so early they are doubly valuable on that account. I would also just mention Triteleia laxa, which is a perfect gem, and should be in every border where herbaceous plants are grown. This species comes on much later than T. uniflora, and bears umbelliferous heads of flowers after the manner of the well-known Agapanthus, which, in shape, they much resemble, but are smaller, and of a rich Tyrian-purple colour. Those who wish to plant either of the three should get the bulbs as soon as they are ripe, which will be towards the autumn, when they may be put into the ground at once, and slightly covered with sand before the soil is placed over them, as the sand will keep them sound and healthy by securing freer drainage around them. *J. S.*

**The Compass Plant.**—In your issue of Jan. 15, 1881, you publish a short article, taken from the *Botanical Magazine*, on the Compass-plant (Silphium laciniatum), in which considerable errors occur. I mail with this my paper on the Compass plant, published in the *American Naturalist* in August, 1877, and would also direct your attention to a short note in the September number of the same journal of that year (p. 564). The figure and account in my *Botany for High Schools and Colleges* are my own, and are not borrowed. The plants under consideration are so abundant in Iowa that I have had the best of opportunities for studying them. *C. E. Bessey, Ames, Iowa.*

'*Copy of Note in 'American Naturalist,' Sept.*, 1877.

"*Silphium laciniatum.*—Sections of fresh leaves of Silphium laciniatum, the Compass-plant, show that the parenchyma is composed of 'palisade tissue;' that is, of the tissue which occurs only immediately beneath the upper surface in most leaves. Not only are both upper and under surfaces provided with the tissue usually regarded as peculiar to the upper portion of the leaf, but the whole of the leaf-pulp, from one surface to the other, is also composed of it. There are often as many as six closely packed layers of palisade cells. *C. E. Bessey.*"

**Strawberries.**—If any one interested in forcing Strawberries would just now drop into the gardens of Bothwell Bank, Bothwell, they would be more than repaid for their trouble. A house 20 feet long by 10 feet wide, half-span, is filled with them, and the most magnificent crop I have ever seen. I took up a plant at random, and counted no less than thirty-two berries, some of which were an ounce in weight. This happened to be a plant of Bothwell Bank Prolific, a seedling raised by Mr. Chisholm, Mrs. Rintoul's able gardener, and I believe it received a First-class Certificate at the Royal Caledonian Horticultural Society's spring show, held in Edinburgh in 1879, so that I have seen it for the last two years, and can without hesitation say that it is a great acquisition to Strawberry growers either for forcing or general crop, particularly so to growers for the market. I believe Mr. Chisholm's system of culture differs somewhat from that of most writers on Strawberry forcing, but as I could only give a very fragmentary account of it I shall not attempt to do so; but let us hope that he will contribute an article on the subject on some future occasion, and at the same time send you a view of the house, as I understood that it had been photographed the day prior to my visit. *Joseph Tomlinson, Meadowbank Nurseries, Uddingston, N.B.*

**Omphalodes verna.**—Pages have been written in praise of Myosotis dissitiflora, but beautiful as that Forget-me-not is, it has a powerful rival in Omphalodes verna, which is of a deeper, richer blue, and has the additional merit of being a perennial, so that when once planted there is no further trouble about it, as it spreads and takes care of itself. For working up in bouquets the blossoms are particularly choice, and I should think it would pay well to grow largely for that purpose. Old as this Omphalodes is, it is very seldom met with, but I am sure that those who make its acquaintance will become so enamoured with it that they will not be without it again. It is a plant of most easy culture, and will grow almost anywhere, and increases readily during the spring by means of runners, which it sends out freely, or may be divided at any other season, and propagated in that way. *J. S.*

—— This lovely little plant is now to be seen in full beauty at Kingston Lacy, having established itself on a raised bed in a hardy fernery of a rather fantastic style, which is in admirable character with the coming fashion. The plant is known by the local appellation of the herbaceous Forget-me-not, but is in point of fact Omphalodes verna. It appears a raised situation suits it, and that it succeeds best when left pretty well to itself where it enjoys partial shade. If a few stones of a soft sandy nature are placed here and there amongst it, it likes to travel over them, and the surface being broken I think rather adds to the beauty of masses of this chaste little plant. *Visitor.*

**Herbaceous Plants.**—As a lover of herbaceous plants, permit me to say a few words in answer to your correspondent "H. C.," at p. 477. In his opening remarks he alludes to the disappointment which he says will be experienced among growers of herbaceous plants. This I freely admit, not only in the case of lovers of hardy plants, but of all classes of gardeners; for though indoor plants may have looked better than those outside during the late easterly biting winds, which found their way into every nook and crevice, the plants themselves were happy, as it was an impossibility to admit air to them. Judging from the sum-total given by "H.C.," I think his collection but sparely represents that which is known as herbaceous; and he may be somewhat surprised to learn that in a good selection of herbaceous and bulbous plants something may he had in flower the whole year through (weather permitting), while for at least nine months of the year the borders or beds can be made gay with these plants. The major portion of plants useful for cut flowers do not flower in the early spring months, but there are many which may be had without wasting another six weeks before they flower. Some of the best now in flower are the netted Iris, I. reticulata, and which, despite wind and cold, will last three weeks in perfection; the Siberian Squill, Scilla sibirica, Hepaticas in variety, Dog's-tooth Violets in variety, Narcissus minor, Sisyrinchium grandiflorum, and its white variety; Aponogeton distachyon, which in favoured water will flower all the year round; Hellebores of the orientalis group, of which there are many forms—antiquorum, guttatus, atrorubens, and colchicus, being some of the most distinct and cheaper kinds; Dielytra (Dicentra) cucullaria, Primula rosea, P. spectabilis, Cheiranthus alpinus, C. Marshalli, very attractive for masses; and many others. Of those which may follow there is an endless number of both species and varieties, to enumerate which would occupy too much space, so I will conclude by mentioning a few of the leading kinds:—Primula cashmiriana, P. denticulata, P. rosea (this new species will last six weeks in perfection), P. Sieboldii (amœna) in variety, the best of which are lilacina, grandiflora alba, and a host of other and newer forms; Trillium grandiflorum præcox, T. grandiflorum maximum, T. erectum, T. erythrocarpum, double-flowered Pyrethrums, Triteleia uniflora lilacina, Campanula speciosa dahurica, Doronicum Clusii, D. austriacum, Aronicum scorpioides, Senecio Doronicum, the two latter suited for damp and shady positions; Dielytra eximia, Anthericum Liliastrum major, Ranunculus aconitifolius pl., Anemone alpina, Pulsatilla vernalis, Narcissus poeticus, N. poeticus fl.-pl., and many varieties, N. incomparabilis and its forms, to say nothing of Phloxes, Delphiniums, Potentillas (double-flowered), Liliums, and a host of others equally good. My concluding advice to "H. C." is this: let "H. C." pay three or four visits to some, or all, of the London nurseries where these plants predominate, in the course of the year, and see for himself what there is in reality existing among herbaceous plants; three visits at least should be paid, during April, May, and June. *E. Jenkins.*

**School Gardening.**—I was glad to see this subject taken up by you and discussed in the way it was in last week's issue by "A. D.," but I fear from his remarks there is not much hope of anything being done to teach children the art of gardening, as it is difficult to move the powers that be. This is much to be regretted, as in rural districts, next to the three R's, a knowledge of that branch of learning is, in my opinion, the most important, as a large proportion of the boys start to get their living out of some occupation connected with the tillage of land, and any elementary scientific subject that would help them would be of far more use than history, which is of little or no value at all, and cannot in any way be turned to account. *J. S.*

**Slugs.**—As a preventive against the attacks of these troublesome pests there is nothing equal to coarse sawdust at this part of the year; a good dressing around plants when first put out will keep all safe for several weeks; it has an advantage, too, over lime or coal ashes in not being so conspicuous. Lime, to be of any use, has to be applied very often this showery weather, whereas sawdust is just as good or better after a shower than before; and no matter how many are killed by the lime there always seem to be as many left as before. It is also of great service for protecting tender plants from frost. *W. H. Divers, Burghley.*

**The Spice Apple.**—Mr. Benjamin Cant, of Colchester, so well known as a Rose grower, has recently been good enough to bring this fine Apple under my notice. It is still sound and good (April 26), though most of the authorities give its season as December to February. It is one of the most delicious Apples for this season, the flesh having that yellow tinge, an unfailing sign of quality. It is firm, crisp, sweet, juicy, and richly perfumed. The Apple is of medium size, roundish, deep yellow skin, and lightly tinged with crimson on the sunny side; stalk very short, eye open and shallow. This Apple seems different and superior to the aromatic Russet, to which in some points it bears a considerable resemblance. We have just planted half a dozen of this Spice Apple, and I trust it is not yet too late to recommend it to others. The nice trees sent are already showing fruit. *D. T. Fish.*

**Unheated Vineries.**—Those who have hitherto believed in the economy of unheated vineries must have experienced a sharp lesson on taking their morning walk on Thursday the 21st, after the frost of the previous night, when the thermometer fell to 19°, or 13° of frost. I happened to visit a friend on the Thursday afternoon, who has the misfortune to have charge of, amongst others, an unheated vinery. The house is a span-roofed structure, and the Vines have only been planted about three years, and are—or rather were, in common with everything else under glass at the place—in a robust state of health. It was a distressing sight to see the young growths of such a promising lot of Vines killed outright—not a single shoot having escaped down to the base of every Vine in the house. The situation is an exposed one, and the injury is therefore the greater. But surely if it is worth while to build glass-houses, and make expensive fruit borders, it is also worth while to take ordinary precaution against severe weather, and to have at least as much hot-water piping as will keep out frost. On the Friday and Saturday the 22d and 23d, the glass fell on the former date to 27°, and on the latter to 22°, the result being that the Pear crop in this district is all but annihilated. No doubt the showy white petals will still charm the eye of the superficial observer, but the hard fact will soon assert itself that we are once more left without a crop of Pears by severe spring frosts. The fertilising organs are killed and decay has already set in. *Dorset.*

**Florists' Specialities.**—The major part of the article at p. 536 affords me unqualified delight, but when the writer proceeds to the assumption that the points of a good flower are "arbitrary," despite the statement of the Rev. Mr. Tymons to the contrary, and the reasons for the points supplied by Mr. Horner, as he marshalled the points in their order, then the florist must part company, and say every lesson of his life has been an illusion, or that note of the writer's is false. Forty years ago the florist was probably open to the reproach of the outsider that his "properties" were dogmas, and sometimes inconsistent with intelligent interpretation; but that reproach has been long removed. In 1847 the late Mr. Geo. Hardy, popularly known as Dr. Hardy, did for the Tulips by his paper in *The Midland Florist* what in 1849 the late Rev. George Jeans, by his "Essays on the Philosophy of Florists' Flowers," published in the *Florist* of that year, and republished by the Editor in the same work in 1878, did for all flowers—demonstrating with unanswerable force, that for the preference of the florist there is ever a reason to be found in Nature, whilst every preference lacking such base has speedily passed to the limbo of untenable things. I had hoped the writer of the paper to which I am referring had carefully read these essays, but my hope is not sustained when I note his remarks. "The florists," he tells us, "lay down a standard, and one to whose advantage outsiders are largely disposed to assent. That they cannot fully do so arises from the fact that the florists as a rule do not give us the reason why." Mr. Horner "very clearly laid down" the points of the Auricula, "but their title to acceptance was not so fully pressed home." It is no part of my purpose to take up the cudgels for Mr. Horner; he is well able—more than able—to hold his own; but certainly I am surprised to be told his arguments did not press home. From the opening paragraph on the properties of the Auricula, the "mossy eye" to the one word "balance"—into which he gathers all, Mr. Horner's lecture bristles with reasons illustrative and explanatory, and I can imagine no one assuming the reasons unequal to "pressing home" the points, save

from an inadequate knowledge of the flower itself. Mr. Horner may well have assumed, I think, that fundamental principles might be taken for granted, and that in the case of the Auricula he had only to show how they applied. That I think he did most completely. In the case of the Auricula, Mr. Horner did demonstrate "why such and such a form is to be accepted as the ideal;" why "it is the form best adapted for its purpose"—"the one best calculated to please the eye of man." If it be the opinion of the writer that this was not so, will he oblige me by showing what other form he would choose, and paint the ideal more pleasing to himself? I heartily agree with him that "Nature's resources are illimitable; she knows nothing of hard-and-fast lines; her forms are the highest types of beauty, and they are so because they are the manifestations of intelligence, adaptation and purpose;" but where does he find his warrant for calling upon the florist, as he does in his succeeding sentence, "to show that the rules he lays down are an improvement upon those in accordance with which Nature herself works"?—intimating until that be done he cannot look with respect upon his "points," or assent so fully to them as the specialists do. Sure never was there so paradoxical a requirement made from man. If the writer had given any study to any one florist's flower, he would know the florist succeeds only, and knows he succeeds only, when he strictly follows Nature. He asks only that by patient, watchful, intelligent direction, he may be allowed to wait upon his mistress, and that in return for an intelligent interpretation of her purposes she will from time to time reward him with new beauty from her rich and illimitable storehouses. "Be as much like Nature to them as you can," said Mr. Horner in his instructions for growing seedlings, and in this direction you have embodied the very germ of a florist's creed. *E. S. Dodwell.*

**Potato Disease.**—I am sorry to state that I am in the same unlucky plight as your correspondent, "J. W.," with early planted Potatos. Two frames, at a distance from each other, were planted with Rivers' Ashleaf on a prepared hotbed in January. Their general appearance was very healthy until the disease began to show itself on the foliage, which eventually dried up and withered. On first observing it I picked off all I could see, but it soon destroyed the whole lot. I never knew that the disease was prevalent in early crops before. *J. Fry, The Gardens, Haydon Hall, Eastcote, Pinner.*

**Blue Wood Anemones.**—I am pleased to note at p. 539 of your last issue the discovery of the blue form of this common wood plant; it is to be hoped that too many hardy plant lovers will not fly at once to its vicinity and thus eradicate it. Some four or five years since Mr. Latimer Clark, of Sydenham, had some fine pots of this, and which, I believe, were found in Kent, "maybe from the same spot as the specimen spoken of at p. 539," by Mr. W. Elliott, whe informed me of their being at one time abundant in some parts of Kent. Of the loveliness of this plant no idea can be formed, unless it is seen. The largest patch I remember ever having seen was about 6 inches across, which was smothered with its lovely blue flowers; that sight I shall never forget as I watched them open in the morning's sun. The colour varies considerably, from light to deep cœrulean blue. At that time I was growing it under the name of A. nemorosa cœrulea; but it is now sold as A. Robinsoniana, though the plants are synonymous. [It was exhibited under this name at the last meeting of the Royal Horticultural Society.] It is also found in a wild state in the Devonshire woods, though not abundantly. *E. Jenkins.*

**Primrose (Primula vulgaris) Pin-eyed and Thrum-eyed.**—Seeing in your journal of the 16th or 23d inst. a notice of a Primrose with flower 2 inches in diameter having been sent to you from Cornwall, I turned to my edition of Sowerby's *English Botany* to make a note of it. I found in the illustration there given (the original plate "iv., 275, J. Sowerby delt., Jan. 1, 1791") that the artist had figured the flower as being both thrum-eyed and pin-eyed, the stigma and the anthers both appearing even with the orifice of the tube of the corolla. Having had my attention drawn many years ago to the distinction of the eyes of the flower, I have often sought without success for a flower exhibiting both forms. I shall be glad to know if other naturalists have observed such an arrangement of parts in any flower of this plant, or whether the correctness of the illustration may be considered doubtful. *F. R. S.* [We have a flower now before us in which both stamens and style are short, and concealed in the base of the tube, the throat of which is wide open. This is the exact reverse of what our correspondent enquires for. Eds.]

**Hardy Varieties of Broccoli.**—The following Broccolis have passed scathelessly through the past severe winter—a circumstance which, owing to the importance of the crop, and the intensely severe frosts which we have had is, I think, worthy of notice, and a fact, moreover, not to be lost sight of at planting time, viz.:—Wilcove's Late White, Richmond Late White, Cooling's Matchless, and Carters' Champion, all excellent varieties, and which are now coming in for use nicely. The plants were late planted (August 27), in a piece of ground from which Peas had been cleared, and in holes made with the crowbar. *H. W. W.*

**Chamæpeuce diacantha.**—It is not unusual for this plant to withstand even our severest winters with impunity; though used as a sub-tropical bedding plant, it may be practically said to be as hardy as Sedum glaucum, which forms many a groundwork for carpet pattern beds, and also beneath the spiny foliage of the plant in question. I have no hesitation either in expressing my opinion that Mr. Horsefield's plants will both flower and ripen seed this year. *E. Jenkins.*

**A Simple Dendrometer.**—This instrument is constructed essentially as follows:—A tube, T, about 2 inches in diameter, and nearly or quite a foot in length, is supported in a vertical position by two pins, P P, near its upper end; and these pins rest upon a ring, R, forming a simple gimbal which allows the tube by its own weight to assume an exactly vertical position. In the lower end of the tube two mirrors, A and B, are placed side by side, each occupying one half of the section of the diameter of the

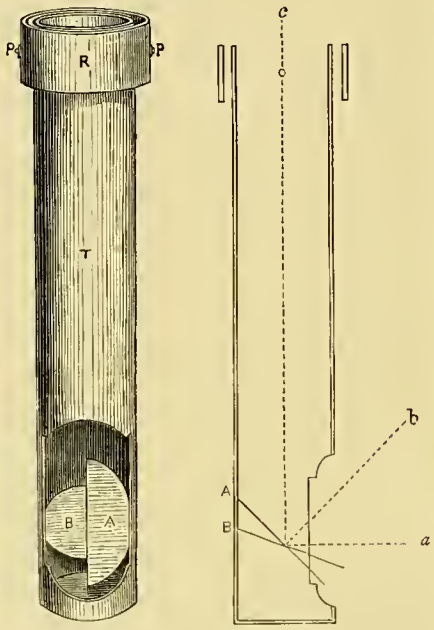


Fig. 108.—Bessey's Dendrometer.

tube. One of these mirrors (A) is inclined at an angle of 45° to the horizon when the tube is in a vertical position, and the other (B) has an inclination of 22½°. One side of the tube is properly cut away (as shown in the accompanying figure) so that when it is held vertically the mirror A shall transmit to the eye (at *c*) at the top of the tube the horizontal ray *a*, and the mirror B the ray *b*, which makes an angle of 45° with the horizontal. The method of using the instrument is simple. By holding the supporting ring R in the hand in the proper position, the centre of the mirror A can easily be brought into the same horizontal line as the base of the tree (represented by *a*); then, by moving towards or away from the tree, its apex (represented by *b*) may be brought into view as it is reflected to the eye (*c*) from the mirror B. When both apex and base of the tree are seen at the same instant the distance from the instrument to the tree along the horizontal line *x—a* is equal to the altitude of the tree.* A simple measurement of this horizontal, by placing the distance, or by other means, thus gives the height of the tree. In our illustration a front view of the instrument is shown, and a vertical section of the same, side view. *C. E. Bessey, Ames, Iowa, in the "Bulletin" of the Torrey Botanical Club.*

**Cut Flowers for House Decoration** (p. 477).—In answer to your correspondent, I beg to send a few names of flowers that have supplied the house with bouquets for numerous glasses since the new year, beginning with the Christmas Roses, which lasted more than two months. The old H. niger lives in water a long time, and much better than the newer varieties, which droop at once if the temperature rises above 53° or 54°, so they are not adapted for sitting-rooms. At this moment the Colchic Hellebore is the most beautiful, and is an abundant bloomer. (Has any one observed if this plant only flowers every other year?) H. graveolens is an attractive plant, with drooping dove-coloured cups lined with a lovely pale green; and the Olympian varieties are also pleasing. Rhododendron præcox never fails to bloom; R. Nobleanum, nominally the earliest, but very "shy"; R. caucasicum pictum is now covered with rosy bloom. Andromeda floribunda, Daphne Mezereum is over, Erica carnea, and the white variety, which is not so "free;" Jasminum nudiflorum also, and Lonicera fragrantissima on south wall. Chimonanthus fragrans is late this season. Dog's-tooth Violets are very profuse in peat, and as lovely as an Orchid. Triteleia uniflora conspicua, as sweet as they are pretty. Narcissus minor, a most useful little Daffodils, succeeded by the taller sorts. Uvularia grandiflora in peat, drooping habit. Siberian Scilla, in a dry soil, may be had in any number, and it is hard to say whether they are most beautiful in glasses, arranged with little Ferns—a harmony in blue and green, like the sea on the coast of Cornwall, where the "lovely blue is shoaling into green"—or growing in lines and knots on the borders with large patches of Golden Pyrethrum at intervals, their deep ultramarine hue transparent in the sunshine. Of the numerous Primulas, denticulata is the earliest, and never fails to bloom. P. pulcherrima purpurea, marginata, and Golden Gem, are good and constant; and a dark variety—P. vulgaris auriculæflora—to say nothing of the common Primrose seeding freely in the shrubbery beds, where some leaf-mould has been added, and the seedlings creep under the shelter of Berberis or Brier as they would do in their native woods. Anemone blanda is very early, its sapphire buds opening as soon as the frost departs, and the garden Anemones flower very freely in a warm soil as soon as the weather permits. The former should be mulched with fibre these severe winters. The forced Hyacinths of last year planted out in rich soil in a sheltered place afford early bloom for cutting, and this saves the "show" beds from the knife, to the gardener's great satisfaction. The alpine Auriculas, double Daisies, Violas, Forget-me-nots, Omphalodes verna and Polyanthus are coming, and now we have Oxlips in their cradles blowing, Grape Hyacinths with their bosses of celled and beaded blue, and if Professor Ruskin knows the white variety of this looking like little pyramids of pearls he must be charmed. The wood Hyacinths are abundant bloomers, in shades of blue, white and flesh-coloured—more properly the old French-white in tint. The Aquilegias are very attractive—A. vulgaris alba so hardy and free, so are chrysantha and canadensis; glandulosa is apt to die, and cœrulea is an unattainable treasure, for it never blooms with us. The early Tulips are opening. Perdita's Lilies and other Fritillarias will soon be here, Jonquils, and the few Wallflowers that the frost has left us. Corydalis in variety are very gay, and of the Pulmonarias P. azurea is most esteemed. Doronicum caucasicum is blooming, to be followed by D. austriacum and the three Symphytums, blue, pink and white; the latter is the oriental and least attractive of the group, the red is as lovely as a Fuchsia, and they last in water. Genista præcox is an acquisition, and the Ribes is now in bloom—at least the red variety. The most beautiful rock plant in flower is Polygala Chamæbuxus purpurea—a little gem. The most useful green for adding to the bouquets will be found in Skimmia oblata and fragrans, unscathed by the most bitter frost and east wind; also Prinos glaber, Pernettya angustifolia are good to cut from, thus saving the Myrtles, Diosmas, &c., in the houses. Rhodora canadensis is a pretty shrub, just opening its lilac bloom. I fear there are too many "common" flowers named in this list, but for that very reason they are apt to be overlooked, and with "Ouidà" one may say, "The lowliest things have ever the sweetest psalm of thanksgiving in them." P.S. May I add the earliest and most refreshing green to the eye is that of the Ferula glauca, communis and conspicua; these put in an appearance at once. F. tingitana, the most fragile looking, is more tender, and we fear it may not come at all this year. *H. M. E., April* 12.

**Lalla gul.**—The following extract is taken from the special correspondent of the *Daily News* in Central Asia (Kelat-i-Nedri), as published on the 16th inst. What can it be?—"The plain stretching away to the northward is thickly covered with a species of giant Tulip, called by the natives the *lalla gul*, that is, Tulip flower. It is of crimson colour. The bulb is edible, and is freely eaten by the Turcomans. It tastes very much like a very sweet and tender young Chestnut, only a great deal better than any Chestnut I ever tasted. The seed capsule was in some cases 4 inches in length, from which the size of the flower

* The letter *x*, accidentally omitted, is supposed to be at the point of intersection of the lines *a*, *b* and *c*.

may be judged. The seeds had fallen to the ground; but though I searched diligently I could find none, they having been all carried away by the ants and the field rats and mice which swarm in almost incredible numbers here." [To this enquiry Mr. Baker kindly sends the following reply:—"Stocks writes of the Central Asian Tulipa chrysantha:—'The bulbs are esteemed a delicacy; in my opinion they are as good as Chestnuts. They are eagerly eaten by children in the spring.' This species has yellow flowers; T. montana, also Central Asian, has red flowers, but I know no species with a capsule 4 inches long." *J. G. B.*]

**Pulmonaria Villarsii** is probably the correct name of the plant mentioned in the notice of spring flowers in the York Nurseries under the name of P. villaria, which you have queried at p. 540. I find this name—P. Villarsii—in Messrs. Backhouse & Son's recently issued catalogue of alpine and herbaceous plants. *C. G.*

**The Origin and Production of Double Flowers.**—Your leader in the *Gardeners' Chronicle* of April 16 on Dr. Heckel's discovery and conclusions in the matter of the production of double flowers is as charming reading to a lover of plants as a fairy tale is to a child. I think I may say that Dr. Heckel's arguments carry conviction with them, for we can see, and do see, in the human family the very same, or, at least, analogous results. Every student could cite innumerable instances of the decadence or production of eccentricity in families by too close breeding, and every man of years who has used his eyes and brains knows of families that by continual mating with their own close relations have produced, by this consanguineous breeding, either decrepitude, malformation, or sterility, chronic or permanent. I am very much more interested than acquainted with these matters, however, in relation to flowers, I do not know as much as I ought to know about them. A query, therefore, suggests itself to me, which may appear ridiculous to those who are more deeply versed concerning them; but acting up to the quotation from Bacon at the head of your column of queries on questioning much and knowing much, I submit this—How is it that some members of our native flora, as, for instance, the common yellow Primrose, have kept themselves so pure, lusty, and strong, if they have been fertilising themselves all this time? and, why have they not gone out into different colours and forms if they have been propagated by cross-fertilisation during the same time? Let me say again, I have enjoyed the reading of your leader immensely, and I again thank you for it. *Paul, April* 22. [Our correspondent has chosen an unfortunate illustration, because Primroses as a rule are not self-fertilising, and they have gone out very markedly into different colours and forms. Eds.]

**Fruit Prospects.**—These are in the main good. Apples—the most useful crop of the season, so welcome to all classes, almost the only fruit available for the poor—promise a full crop. Seldom have the trees been more full of buds, or the flower-buds been later—towards the end of April. Pears are irregular, but on the whole rather scant of bloom. Some of the earlier varieties have also got a good deal browned by the late biting frosts, which however, it is hoped, may not have injured or destroyed the embryo fruit. Plum and Apricot bloom also appears thin; the latter also seems weakly. Apricot wood looked well in the autumn, and the thinness in the bloom may partly arise from the extraordinary severity of the weather. The scantiness of the bloom of Plums is doubtless owing to the heavy crop of last year. Peaches and Nectarines are now in full flower, and look well; the wood has suffered far less from the severity of the winter than it did last year. A few days since there was the fairest prospect of the blossoms setting freely and the embryo plants having a fair start, but the north-east wind now—Easter Tuesday—seems as if it were charged with ice; and alas! for the delicate blooms that have to contend with it unprotected. Ours look comparatively comfortable, and are so far safe under a thick screen of Spruce boughs. Cherries have also ventured to open on the walls—with what results remains to be seen. There is a good bloom on them. Gooseberries have broken into tender leaflets, and look well, neither birds nor frosts having injured them much apparently. The birds have been less troublesome to fruit-buds than usual this spring, probably from the fact of so many of them having been killed by the severity of the weather. Raspberries appear to have suffered much in some localities, not a few of the finest canes being completely killed. Strawberries have had their old leaves cut off almost as clean as if they had been mown off close to the surface; still the crowns look strong, and it is possible the crop may prove satisfactory, but this is doubtful. Nevertheless, on the whole the fruit prospects are cheerful, and with genial weather soon, Peaches, Apples, and Cherries may yield an average crop, and Pears, Plums, and Apricots a good half crop. *D. T. Fish.*

## Foreign Correspondence.

Florence: *April* 16.—I enclose the leaf and flowers of a large tree covered with this bloom, growing by the side of the street. The fragrance is delicious. I have never seen it in England, what is the name of it? [Paulownia imperialis]. Everything is in full bloom here; Wistaria, Spiræa, Gueldres Rose, Banksia Rose—in fact all the flowers which grow in England in June. Peas we have had for a month, and Broad Beans are ready. I never was so astonished, when I looked out of the window at Marseilles nearly a month since, to find that everything was in bloom and leaf as at the end of May. We have only had one wet day since we left England; the thermometer has never been below 63° in my bedroom, night or day. It has stood at 66° until the last four days, when it went down to 64°, and it continues exactly at this degree. I never saw anything like the sunsets here; the sun goes down behind the Apennines, and then everything is in glow. On the opposite mountains the clouds are of a greenish blue, others rose-coloured, and when there are no clouds the sky is of the deepest blue, and the whole air is so soft. The Cascine gardens are beautiful, blackbirds everywhere, swallows in all directions. At Hyères a lady told me she had heard the nightingale a month since: I have only heard it once. The greenfinches in cages are of a bright green—a really beautiful bird, indeed everything is of a deeper colour in consequence of the continued and intense light; but I observe that the Stocks and Roses are not so fragrant. *S. N.*

## Reports of Societies.

**Royal Horticultural:** *April* 26.—Major Mason in the chair. *Apropos* of some Maples from Japan, exhibited by Messrs. Veitch, the Rev. G. Henslow made some remarks upon the affinities of the existing Japanese and South United States floras with that of the ancient Miocene period in Europe. He observed, that of the extinct Swiss Tertiary flora and of the existing Japanese flora there are seventy-one natural orders or families in common; fifty-one are represented by identical genera, but probably no species is still extant of that early period. The following orders and genera are characteristic of both the Swiss Miocene and the modern Japanese floras:—Coniferæ, Leguminosæ, Lauraceæ, Aceraceæ, Rhamnaceæ, Juglandaceæ, Moreæ, Proteaceæ, Palmæ, Quercus, Salix, Ficus, Liquidambar, Myrica, and Ulmus. With the existing North American flora the old Swiss Miocene had even more in common than the Japanese. There are eighty-eight genera of seventy-three orders which are represented both in Switzerland and the South United States floras. The groups which especially characterise the United States forest vegetation are Taxodium, Magnolia, Liriodendron, Hickories, Walnuts, Planera, Maples, Negundo, and Oaks. About 300 genera are common to the Southern States and Japan, while the Eastern side more nearly corresponds to the Old World vegetation than the Western side of North America. A similar flora formerly extended throughout the Arctic regions, as Taxodium, Thuyopis, Chestnuts, Oaks, Walnuts, a Magnolia and a Plum have been found fossil in Greenland, Maples and a Tulip tree in Iceland, and forests of deciduous trees seem to have flourished where land is now perpetually ice-bound. With regard to the origin of this similarity, Dr. Unger considers the emigration to have taken place from America to Europe. He thinks the living flora of the Eastern States of North America is the lineal descendant of that which gave rise—by aid of "Atlantis," a supposed submerged land, which is thought to have connected Europe with America—to the Swiss Miocene flora. Sir C. Lyell thought the route taken was the longer one—round by Japan and not by Atlantis, but still from America to Europe.

Instead, however, of regarding either Switzerland or the United States as the origin, there remains the theory of Professor A. Gray, that as the Miocene flora appears to have been uniformly spread over the whole of the regions bordering the Arctic circle, so when the northern climates became cooler in the next or Pliocene age this flora was driven southward along every meridian where it was possible, its descendants now existing in the localities above mentioned. These now form a belt, roughly speaking, between the 30th and 40th parallels of latitude. Migration to some extent might have taken place along that belt, but the greatest migration was probably from north to south.

The lecturer called attention to the forms of the leaves of different Maples, one of the prevailing forms of the Swiss Miocene species having only three lobes (Acer trilobatum), whereas, though some North American species have leaves with three lobes, yet others, as the Japanese form exhibited, there are five or more. He advanced the theory that A. trilobatum would, on that account, represent a more primitive type, for the process of division into lobes, and thence into separate leaflets, was well seen in the common Blackberry, while the first leaves of a germinating Sycamore showed how the "lobing" was gradually acquired.

The lecturer next called attention to the collection of Clematis exhibited by Messrs. Veitch, pointing out the connection of this woody and climbing genus to Buttercups, through the herb Anemone. He alluded to the calyx being coloured, and so superseding the necessity of a corolla, though this organ was present in the sub-genus Atragene. He described the British C. Vitalba, or Old Man's Beard, and the European forms introduced at the close of the sixteenth century, which are, however, eclipsed by the large-flowering Japanese forms introduced since 1830, which have given rise to numerous crossings and seedlings. The method of climbing by means of the petioles or leaf-stalks, which are sensitive to touch, formed the subject of some remarks.

A fine specimen of Cineraria from Mr. Cannell, which was named "March Past," was shown, as well as a branch of the old original C. cruenta, for comparison, which well showed what the florist's skill had accomplished.

Scientific Committee.—Dr. Maxwell T. Masters, F.R.S., in the chair.

*Petals of Sarracenia.*—Mr. W. G. Smith alluded to the fact, observed by him, that the petals of Sarracenia, which are usually pendulous, assume a horizontal position and become rigid when placed in water and kept under a bell-glass. Some discussion arose as to whether this was due to turgescence of the cells or whether it might not be connected with the necessity for insect intervention for which the flowers are in other particulars so remarkably adapted.

*Plants Exhibited.*—Hon. and Rev. J. T. Boscawen showed flowers of Rhododendron Thomsoni and R. campylocarpum, which are hardy with him in Cornwall in sheltered positions. Several seedling Rhododendrons, one an unnamed variety with white flowers, and richly rust-coloured on the under surface of the leaves, was of great beauty. Flowers of Pieris formosa were also shown, reference to which is made in another column. Wild forms of the double Primrose were also exhibited. Mr. Harpur-Crewe showed the white variety of Scilla italica, which was almost as sweetly scented as the blue form. A remarkable hose-in-hose variety of the Polyanthus was sent from Mr. Cannell, in which there were as many as three petal-line whorls enclosed one within the other.

*Potato Disease.*—The substance of a communication on this subject was read, but the conclusions of the author were not considered satisfactory.

*Books Presented.*—The following books, recently presented to the Lindley Library, were laid on the table:—Mr. Daydon Jackson's *Guide to the Literature of Botany*, the nature and scope of which were briefly explained by Dr. Masters; *Epitome of Gardening*, by Mr. T. Moore; *Report of the American Pomological Society.*

Floral Committee.—Dr. Denny in the chair. The grandest plant shown at this meeting was a specimen of the lovely Cattleya Skinneri, exhibited by the Hon. and Rev. J. T. Boscawen, Lamorran, Probus, which bore thirteen spikes, averaging nine flowers each—a glowing mass of rosy-lilac blossoms. The plant was growing in a 10-inch pot, of which it seems to have been in undisturbed possession for some years. The committee awarded a Cultural Commendation, and the Council adopted the recommendation of the committee to reward it with a Silver Flora Medal. First-class Certificates were awarded to Mr. Parker, of Tooting, for the finest and hardiest of all the Megasea type of Saxifrages, S. cordifolia purpurea, a robust growing form with large panicles of rosy-purple flowers, which resisted uninjured 11° of frost, while those of S. cordifolia and others were much cut back. To Messrs. James Veitch & Sons, for Aralia Kerchoveana, a very handsome species, with bold palmate leaves very deeply divided, and the lobes, moreover, very distinctly undulated; for a species of Asparagus much resembling A. plumosus, but having the branches more bristling with the slender branchlets, and shown as Asparagus tenuissimus; and for Goniophlebium lachnopus, an East Indian Fern, with narrow pinnate drooping fronds, and likely to prove an excellent basket Fern. To Mr. R. T. Veitch, of Exeter, for Rhododendron exoniensis ×, a fine hybrid between R. ciliatum and R. Veitchii, with numerous trusses of medium-sized, scented, white flowers, and a remarkably short, bushy, Azalea-like habit of growth, which was one of its chief merits, and one of no slight order. To Mr. Lyon, gr. to Sir E. H. Scott, Bart., Sundridge Park, Bromley, for a very well grown sample of Miles' hybrid spiral Mignonette, the plants being very strong, and having good dark foliage and grand spikes of flowers. To Mr. Heims, gr. to F. A. Phil-

brick, Esq., Q.C., Oldfield, Bickley, for Odontoglossum Alexandræ var. reginæ, the fine heavily spotted variety mentioned last week; and for Odontoglossum Ruckerianum, a very high-coloured and large-flowered variety. To Mr. R. Dean, Ealing, for Auricula Splendour (Read), "as a decorative variety," a self flower in the way of Campbell's Lord of Lorne, but inferior to that variety in its weak paste; for alpine Auricula Mrs. Moore, one of those very pretty new laced flowers of which Sensation and Distinction were the first shown—it has a primrose-yellow centre, dark body colour, and rosy-lilac lacing; and for a very good strain of the old double Auricula purpurea, "as a decorative plant." To G. F. Wilson, Esq., for Erythronium giganteum, which is believed not to have been shown before, and for which E. grandiflorum is usually sold. It is, however, very distinct in having only one flower on a stem, which is larger than in E. grandiflorum, almost pure white in colour, with a ring of orange shaded crimson surrounding the base of stamens. To Messrs. H. Cannell & Son for Cineraria March Past, a beautiful large reflexed flower measuring 2½ inches in diameter, excellent in shape, with a dark coloured disc, surrounded by a ring of white, the body colour being a rich ruby-crimson, shaded with violet in the centre. To Messrs. Fisher, Son & Sibray, Handsworth Nurseries, Sheffield, for Rhododendron Lady Alice Fitzwilliam, a very fine white-flowered hybrid variety, distinct from R. exoniensis, mentioned above, in its more lanky habit of growth and larger flowers; it was one of the many crosses between ciliatum and Edgeworthii. To Messrs. Cannell & Son a Second-class Certificate was awarded, "as a border decorative flower," for a gold-laced Polyanthus named Queen of Hose-in-Hose, a good showy flower. Messrs. James Carter & Co. exhibited cut flowers of the handsome New Zealand Glory Pea, Clianthus Dampieri, cut from a plant which bore over 100 clusters of flowers. A vote of thanks was accorded. The same firm also showed, in good form, the dwarf silvery-variegated and pale-blue flowered Myosotis elegantissima. From Swanley also came a batch of gold-laced border Polyanthuses, and cut blooms of a remarkably high-coloured scarlet Zonal Pelargonium, named Henry Jacoby. Captain Patton sent very pretty Californian Hesperochiron pumilum, accompanied by the somewhat larger-flowered H. californicum. H. pumilum is a dwarf plant, with stalked, glabrous, obovate-oblong leaves, and small bluish-spotted flowers like a Nemophila. H. californicum has larger funnel-shaped flowers of a pale blue colour.

In the large conservatory there was, for the season, a remarkably fine display of Roses in pots, contributed by Messrs. James Veitch & Sons, Messrs. Paul & Sons, of Cheshunt, and Messrs. H. Lane & Son, of Berkhampstead. The Chelsea firm staged perhaps the finest lot of standard Roses that have ever been exhibited, the plants having good heads of clean, robust foliage, and very fine flowers. The Cheshunt plants, large specimens, were in splendid condition, and no less attractive than the specimen plants were a number of Brobdingnagian cut blooms of the Maréchal Niel Rose. The Messrs. Lane's group were even better than before, and assisted by a large collection of forced Rhododendrons, as the Messrs. Veitch's group were by a fine lot of Clematises. Gold Medals were awarded to all. Messrs. Barr & Sugden again sent a choice assortment of cut blooms of Narcissus; and Mr. Aldous a group of decorative plants.

Fruit Committee.—John Lee, Esq., in the chair. The only subjects exhibited to-day were a fine dish of green and ripe Vanilla pods, from Mr. Sutton, gr. to W. J. Cookson, Esq., Worksop Manor, Notts; a sample of Paris Market Cos Lettuce, grown in cold frames, and of very fine quality, from Mr. Burnett, gr., The Deepdene; and a well-coloured dish of Strawberries, said to be Keens' Seedling, but much resembling Alice Maude, from Mr. Lyon, gr., Sundridge Park, Kent.

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Royal Botanic: *April* 27.—The second spring show, held on Wednesday, was even more extensive than the previous one, and altogether a better display than the Society has had at an April show for some time. The open class for a dozen stove and greenhouse plants brought out a more satisfactory lot of plants than was exhibited last month, and the 1st prize group, staged by Messrs. B. Peed & Son, of Streatham, was in every way satisfactory for the season. Their best plants were medium-sized, fresh, and very well bloomed examples of Pimelea spectabilis, the white Azalea Gloire de Belgique, Erica devoniana, Epacris miniata splendens, Aphelexis macrantha purpurea, &c.; Mr. G. Wheeler was a good 2d, and Mr. Butler, gr. to H. H. Gibbs, Esq., St. Dunstan's, Regent's Park, was 3d. Both trade and amateurs' classes for Azaleas were well contested, especially the latter, in which Mr. G. Wheeler came in 1st; Mr. Wiggins, gr. to H. Little, Esq., Hillingdon Court, 2d; and Mr. Ratty, gr. to R. Thornton, Esq., Sydenham, 3d. Messrs. B. Peed & Son took the lead amongst nurserymen with a neat even lot of well flowered dwarf standards; but Mr. Turner ran them close with a similar group. Mr. H. James, Castle Nursery, Lower Norwood, was 3d. The only exhibitors of Roses in pots in the competing classes were Messrs. Paul & Son, of Cheshunt, who received the 1st prize for a remarkably good group of large plants, fresh and well flowered, of such sterling varieties as Cheshunt Hybrid, La France, Victor Verdier, Madame Victor Verdier, Comtesse de Serenye, Beauty of Waltham, Madame Thérèse Levet, &c. The same firm were also awarded the 1st prize for six new varieties, the sorts staged being Edouard André, Catherine Soupert, Duke of Teck, Mdlle. Julie Dymonier, Madame Eliza Saisson, and Léon Renault. In the classes for forced Rhododendrons and Azalea mollis Messrs. H. Lane & Son had no rivals to contest their supremacy, and they received the highest award in both classes. Amongst the Rhododendrons their large and well-bloomed plants of Rosabel, Purity, Auguste Van Geert, Guido, The Queen, and Caractacus were very conspicuous objects, while the best and most telling of the Azaleas were Consul Pêcher, Baron Edmond de Rothschild, Comte de Padadopoti, Isabelle Van Houtte, Comte de Gomer, and Alphonse Lavallée. Mr. Little's gardener secured the 1st prizes for nine Cinerarias, and nine greenhouse Pelargoniums, showing in the latter class nicely flowered medium-sized specimens of such good decorative varieties as Anderson's Rose, Jackson's Kingston Beauty, Haye's Magenta Queen, Jackson's Miss Mary Gill, and Venus, &c. Mr. Wiggins also had the best half-dozen Amaryllis, fresh and nicely bloomed plants of Princess Dagmar, Fair Star, Mdlle. Titiens, and a seedling named Crimson Glory, a very deep crimson flower. Mr. E. Baxter, gr. to W. G. Parker, Esq., White Lodge, East Barnet, was 2d, and Mr. Butler 3d. For twelve Auriculas Mr. Douglas, gr. to F. Whitbourne, Esq., was 1st, and Mr. Turner 2d; the former showing a capital lot of plants including Campbell's Green-edge, Frank Simonite, Lancashire Hero, Dr. Horner (Read), C. J. Perry (Turner), Heap's Smiling Beauty, Campbell's Admiral Napier, Hilda (Douglas), a new green-edge; Headly's George Lightbody, and two seedlings.

The miscellaneous class was again of unusual excellence. The Messrs. Veitch sent the grand collection of standard pot Roses and Clematises shown the previous day at South Kensington, and received a Silver Medal. The Messrs. Lane also sent their fine Rhododendrons; and the Messrs. Paul & Son, of Cheshunt, their splendid specimen pot Roses, both receiving Silver Medals. The Hon and Rev J. T. Boscawen sent his remarkably fine specimen of Cattleya Skinneri, and received a Certificate of Merit for cultural excellence. Mr. Turner sent a nice collection of show and alpine Auriculas, including a number of plants of the attractive semi-double Auricula, Yellow Prince; and also a large group of admirably flowered small Azaleas, for which he received a Silver Medal. Mr. B. S. Williams received a similar award for a fine group of mixed stove and greenhouse plants, as also did Messrs. W. Cutbush & Son for a very attractively arranged group of flowering and fine-foliaged plants. A small Silver Medal went to the General Horticultural Company (John Wills), Limited, for a neat group of new and rare plants, including a good specimen of the singular Anthurium Williamsii and several nice Bromeliads, &c. Messrs. Barr & Sugden had a Bronze Medal for another of their showy and interesting collections of cut Daffodils; and Mr. Walker, of Thame, had a similar award for a collection of cut Roses. Hardy spring flowers were shown by Messrs. Osborn & Son; and a nice group of Spiræas, &c., by Messrs. Wiggins & Son, Waverley Nursery, Tottenham. Amongst the many other objects of interest on exhibition was a specimen of the rarely seen Cytinus Hypocistus, a parasite growing on the roots of Cistus monspeliensis, which had been collected at Gallicia by Mrs. Thomas Brassey, and by her presented to the Society.

The new plants certificated on this occasion were Asparagus tennuissimus, Aralia Kerchoveana, Dracæna Lindeni, a distinct and good new plant which may be described as a golden-variegated D. fragrans; Davallia elegans polydactyla, described in a previous column; and Goniophlebium lachnopus, noticed in our report of the meeting at South Kensington—all exhibited by the Messrs. Veitch; Odontoglossum crispum grandiflorum, a very fine form, with the two side petals clear white, and all the others spotted; Yucca Peacockii, a long, narrow-leaved species, resembling a Beaucarnea; Agave Huntii, a pale-green leaved, smooth-edged species, with a band of yellow up the midrib; and Agave Parryi—shown by Mr. Croucher, gr. to J. T. Peacock, Esq., of Hammersmith; Philodendron elegans, a distinct plant with pedately pinnatifid leaves; and Croton Lady Zetland, with long narrow, arching, crimson variegated leaves, shown by Mr. B. S. Williams; Philodendron Wallisii, Caladium Fred. Bause, a seedling from the golden Princess Royal, and very dwarf, the leaves only growing to the height of 6 inches, and a rich lustrous crimson in colour, green along the margins; Rhodea japonica aurea variegata, the leaves of which were striped with creamy-yellow; Dracæna Rossii, a rich crimson-variegated, broad-leaved, erect growing sort; D. recurva, a very broad-leaved well recurved form, of a dark bronzy hue; D. Alexandræ, a strong, robust growing white variegated, erect-leaved form; and Cyprus laxus variegatus, one of the finest of variegated basket plants—all shown by the General Horticultural Company. Floral Certificates were awarded to Mr. R. J. Veitch, of Exeter, for Rhododendron exoniensis; to Messrs. Fisher, Son & Sibray, for Rhododendron Lady Alice Fitzwilliam; to Mr. Turner for Auricula Mrs. W. Brown (Turner), a white-edged flower, with black body colour and somewhat angular paste; for alpine Auriculas, John Ball, Philip Frost, and Lizzie, a yellow-centred flower, blackish-purple shading to violet; to the General Horticultural Company for Gloxinia Mrs. Bause, a large white flower with a ring of reddish-pink round the throat; to Messrs. Paul & Son, Cheshunt, for H.P. Rose Ferdinand Chaffolte, a fine dark coloured variety; and to Mr. Douglas, for Auricula Hilda, a green-edged seedling, with black body colour, and well defined paste.

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Edinburgh Botanical Society: *April* 14.—The Society met in 5, St. Andrew's Square, Mr. A. Buchan in the chair. Mr. J. M. Macfarlane read the first part of a paper on "The Structure and Division of the Vegetable Cell," in which he stated that he had observed with the nucleolus a body which behaved, on treatment with reagents, in exactly the same way as the nucleus and nucleolus. To it he proposed applying the term "nucleolo-nucleus." First observed in young epidermal cells of Scilla peruviana, he showed that it was present in the tissues of many other plants, and seemed, as far as his observations went, to be an invariable factor in active growing cells. In such, one or two only were present, but old cells frequently contained three, four, or more. He had also proved its occurrence in the multipolar nerve cells of the cerebellum, where, however, it had been previously noticed. As a result of his examination of many plants he considered that the nucleolus also was an invariable factor. To prove if possible their function in the life-history of the cell, he had studied various plants. He proposed laying before the Society, in a series of papers, the results which he had obtained. On the above occasion he dealt with the species Scilla peruviana and bifolia. He then traced the development of the cells of the stomata and epidermis, as also the pallisade parenchyma cells of the leaf, in the whole of which it was shown that the nucleolus divided before the nucleus had passed through the peculiar changes figured by Strassburger. The former, elongated, assumed a dumb-bell shape, and finally divided, each daughter nucleus going with one of the daughter nuclei after division of the latter. Though he had only once seen what seemed like a dumb-bell-shaped division of the nucleolo-nucleus, he considered that there was a strong probability of its dividing previous to the nucleolus, since in dividing nucleoli the nucleolo-nucleus was found towards each thickened end. In conclusion he adverted to Flemming's theories of direct and indirect division, and stated that the true process was probably a combination of both these supposed distinct ones.

Professor Dickson said that, whereas division of the cell was known to be preceded by division of the nucleus, Mr. Macfarlane carried the matter further back, and showed that division of the nucleus was preceded by division of the nucleolus; and that, again, although perhaps a little additional observation was still required, he believed to be preceded by the division of the nucleolo-nucleus. It might be a question whether the nucleolo-nucleus was the most important factor, or whether it might be subordinate to the nucleolus or the nucleus; but if the matter was as Mr. Macfarlane showed, that all went to show the probability or possibility of this newly-discovered body proving of very great importance.

Mr. Buchan intimated that he had found it necessary to postpone a paper he had undertaken to furnish on "Dates of Flowering of the Spring Plants in the Royal Botanic Garden in relation to the weather of the years 1876-81." Last January, he remarked, was unquestionably over the whole of Scotland, excepting a bit of Caithness and Sunderland and the northern part of the Hebrides, the coldest month, on the mean of the month, of which we had any record. This great cold was confined to the period from the 5th to the 29th. The year opened with a temperature 4° to 6° or 7° above the average. During the week from the 7th to the 13th of January, however, very low temperatures ruled, the mean of that week being 10° below the average of those days. The following week, 14th to 20th, showed 14°.3 below the average of those days. The week following, again, showed 12°.3 below the average of that week. So that there were three weeks, January 7 to 27, in which the temperature was 12°.2 below the average of that part of the year. His desire was to see the effect upon the spring vegetation of the Botanic Garden of this unwonted state of things. There was a period of warmth about the average in the first week of February. The next week, 11th to 16th, was about 5° below the average. The period from February 19 to March 6 was considerably below the average, the first three days of March showing 11° and upwards. Then there was a warm period from March 8 to 19, when the temperature varied from 1° to 11° above the average. Then from March 20 to April 11 the temperature was very much below the average, reaching on one occasion (March 22) fully 13° below the average.

Mr. Sadler gave in his usual monthly report on temperatures at the Royal Botanic Garden.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON*
For the Week ending Wednesday, April 27, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| April | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 21 | 29.58 | −0.17 | 46.1 | 29.5 | 16.6 | 37.7 | − 9.9 | 32.2 | 81 | N.W. | 0.00 |
| 22 | 29.65 | −0.12 | 49.0 | 34.0 | 15.0 | 40.8 | − 7.3 | 33.6 | 76 | S.S.W.: N. | 0.00 |
| 23 | 29.80 | +0.04 | 53.8 | 36.4 | 17.1 | 43.4 | − 4.6 | 40.4 | 89 | N.N.W.: W. | 0.00 |
| 24 | 29.86 | +0.09 | 55.6 | 41.1 | 14.5 | 47.4 | − 0.8 | 39.3 | 74 | N.N.W. | 0.00 |
| 25 | 29.72 | −0.05 | 59.2 | 46.0 | 13.2 | 51.7 | + 3.4 | 44.9 | 77 | W.: W.S.W. | 0.03 |
| 26 | 29.77 | 0.00 | 53.8 | 41.1 | 12.7 | 46.1 | − 2.4 | 41.6 | 86 | W.S.W.: W.N.W. | 0.08 |
| 27 | 29.98 | +0.20 | 53.1 | 39.8 | 13.6 | 45.3 | − 3.4 | 3.8 | 95 | W.N.W.: W. | 0.00 |
| Mean | 29.77 | 0.00 | 52.9 | 38.2 | 14.7 | 44.6 | − 3.6 | 39.4 | 82 | N.W.: W. | 0.11 |

April 21.—Dull day; sun shining occasionally.
— 22.—Dull, cold day. Wind changed suddenly at 9.30 A.M. to N. nearly.
— 23.—Fine day: moderately bright. Small patches of blue sky.
— 24.—Fine but cloudy, dull day. Fine clear night.
— 25.—A warm day. Slight rain at times.
— 26.—Dull morning. Thunderstorm at 1 P.M., and at times afterwards.
— 27.—Sun's place visible for a short time; generally cloudy.

London: *Atmospheric Pressure.*—During the week ending Saturday, April 23, the readings of the barometer at the level of the sea, in the neighbourhood of London, decreased from 30.03 inches at the beginning of the week to 29.93 inches by the afternoon of the 18th; increased to 29.98 inches by midnight on the 19th; decreased to 29°.75 inches (the lowest in the week) by the morning of the 22d; increased to 30.04 inches (the lightest in the week) by the morning of the 23d; and at the end of the week was 29°.93 inches. The mean reading at the level of the sea was 29.90 inches, being the same as the previous week, and 0.04 inch below the average of the week.

*Temperature.* — The highest temperatures were 67°.6 on the 17th and 66°.1 on the 18th. The lowest of the seven high day temperatures was 43°, on the 19th and 20th. The mean of the seven high day temperatures was 52°.6. The lowest temperatures in the week were 29°.5 on the 21st, and 33°.8 on the 20th. The highest of the seven low night temperatures were 40°.3, on the 17th, and 39°.2, on the 18th. The mean of the seven low night temperatures was 35°.8. The greatest ranges of temperature in one day were 27°.3, on the 17th, and 26°.9, on the 18th. The least ranges were 5°.4, on the 19th, and 9°.2, on the 20th; so that we have the very remarkable fact that the range on the former of two consecutive days (the 18th and 19th) was 21°.5 greater than the range on the latter day. The mean of the seven daily ranges was 16°.8.

The mean daily temperatures were 52°.6 on the 17th, 39°.2 on the 19th, 37°.6 on the 20th, 37°.7 on the 21st, 40°.5 on the 22d, and 43°.4 on the 23d; on the 17th and 18th the mean temperatures were respectively 5°.8 and 3°.5 above their averages; from the 19th to the end of the week they were respectively 1°, 9°.8, 9°.9, 7°.3, and 4°.6 below their averages.

The mean temperature for the week was 43°.1, being 1°.8 lower than that of last week, and 4°.3 below the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo placed in the full rays of the sun were 146° on the 18th, and 133°.5 on the 17th. The lowest readings were 51°.5 on the 19th and 69° on the 20th. The mean of the seven daily readings was 95°.2.

The lowest readings of a thermometer placed on grass with its bulb exposed to the sky were 27° on the 21st, and 32° on the 20th, 22d, and 23d. The mean of the seven readings was 33°.1.

*Rain.*—0.07 inch fell on the 23d.

A very striking and remarkable change of weather took place between the 18th and 19th: the mean temperature on the 18th was 3°.5 above the average, and on the 19th was 8° below the average; the highest temperature on the 18th was 66°.1, and on the 19th was 43°. The range on the 18th was 26°.9, and on the 19th was 5°.4. The reading of the thermometer in the sun on the 19th was 146°, and on the 20th it was 51°.5. North-easterly winds blew strongly at the beginning of the week, and prevailed till the 20th; from then to the end of the week north-westerly winds were general.

England: *Temperature.*—The highest temperatures were—Blackheath, 67°.6, Cambridge, 65°.6, Plymouth, 65°.1, and Truro and Brighton, 64°. The lowest of the high temperatures were—Sunderland, 50°, Hull, 52°, Bradford, 58°.7, and Sheffield, 59°. The mean from all stations was 60°.6.

The lowest temperatures were—Wrottesley, 25°.8, Brighton, 27°, Bristol, 28°.1, Nottingham, 28°.3, and Cambridge, 28°.6. The highest of the low temperatures were—Sunderland, 35°, Liverpool, 34°.8, Leeds, 32°, and Plymouth, 31°.8. The mean from all stations was 30°.2.

The range of temperature was greatest at Blackheath, 38°.1, the next in order being Cambridge and Brighton, 37°.4, and Bristol, 35°.4. The least ranges were—Sunderland, 15°, Hull, 21°, and Liverpool, 24°.9. The mean from all stations was 30°.4.

The mean of the seven high day temperatures was highest at Truro, 55°.9, the next in order being Plymouth, 55°.2, Sheffield, 53°.3, Blackheath, 52°.6, Cambridge, 52°, and Brighton, 51°; the means were lowest at Hull, 45°.9, Sunderland, 46°, Bradford, 46°.9, and Leeds, 47°.6. The mean from all stations was 50°.6.

The mean of the seven low night temperatures was least at Wrottesley, 33°.3; the next in order being Hull, 33°.6; Cambridge, 34°.3; and Nottingham, 34°.4. The means were highest at Plymouth, 40°.2; Truro, 38°.9; Liverpool, 38°.1; and Sunderland, 37°.4. The mean from all stations was 36°.

The mean daily range was greatest at Sheffield, 17°.8; the next in order being Cambridge, 17°.7; Wrottesley, 17°.3; Truro, 17°; and Blackheath, 16°.8. The least daily ranges were—Sunderland, 8°.6; Bradford, 11°.2; Leeds, 11°.7; and Liverpool, 11°.8. The mean from all stations was 14°.6.

The mean temperature for the week was highest at Plymouth, 46°.1; Truro, 45°.7; Blackheath, 43°.1; Sheffield, 42°.9; and Liverpool, 42°.4. The lowest mean temperatures were—Hull, 38°.1, and Bradford, 39°.7. The mean from all stations was 41°.7.

*Rain.*—Some rain fell at very nearly every station, the greatest amounts being 0.28 inch at Hull, and 0.15 inch at Cambridge; the mean amount from all stations was 0.07 inch, and the average number of days on which rain fell was two. Slight falls of snow took place on the 19th, 20th, and 21st at Hull and Cambridge, on the 20th and 21st at Sunderland, and on the 19th and 20th at Liverpool and Bradford. The weather on the 19th, 20th, and 21st, was remarkable for its extreme coldness all over the country.

Scotland: *Temperature.*—The highest temperatures were Greenock, 60°, and Paisley and Glasgow, 58°; the lowest of the high temperatures was Leith, 50°. The general mean was 55°.5.

The lowest temperatures were Paisley, 30°, and Glasgow, 31°; the highest of the low temperatures was Leith, 35°.9. The general mean was 32°.5.

The mean temperature for the week was highest at Greenock, 43°.3, the next highest being Dundee, 43°.1; the mean temperature was least at Aberdeen, 40°.4. The general mean was 42°.4.

*Rain.*—The greatest amounts were—Greenock, 0.31 inch; Glasgow, 0.26 inch; and Aberdeen, 0.16 inch; at Paisley no rain fell, and at Leith only 0.07 inch. The general mean was 0.14 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

Cut Flowers.—For preserving cut flowers much longer than usual I was recommended to place a few rusty nails in the water, and found the result marvellous. Such a simple remedy should be known to all. *J. K.* [We have no experience of the plan. Eds.]

Falkland Islands.—Will any reader be so good as to tell me aught of the climate and productions of these islands? I am particularly anxious to find out the most useful European plants and flowers which may be grown by residents there, as a friend going out wishes to take with him a supply of such seeds and plants as will be most useful. Reference to any work containing an account of these islands will also be useful. Are any of the plants of the Falkland group worth introducing to English gardens? *F. W. B.*

## Answers to Correspondents.

Artificial Manures for Vines: *T. Lloyd.* The best thing you can use is crushed bones, along with a good healthy compost of turfy loam, old lime rubbish, and charcoal, placed on a well-drained base.

Blue Light: *C. J. C.* Pale blue light is practically of no detriment to the healthy growth of plants. If of a deep tint it may be injurious by over shading.

Books: *T. J. Halliday.* Cameron's *Agricultural Chemistry.*

Cucumber Disease: *Subscriber.* Yours appears to be a case of the ordinary disease, for which the best remedy is to clear out and commence anew. See some remarks on the subject at p. 567.

Dew: *W. L., Bromley.* Dew is produced by the condensation of atmospheric moisture on any surface cooled by radiation of heat. The more quickly this takes place the greater the deposit of dew.

Grass Land: *B.* Your question is hardly horticultural. Feed your cattle on cotton-cake, a substance rich in nitrogen. If you allude to your lawn, try a dressing of 5 parts of sulphate of potass, 1 of superphosphate, and 1 of nitrate of soda, well mixed, and applied at the rate of half-a-ton to the acre. The cost would be about 18*s.*

Hot-water Heating: *C. Symes.* So far as we can understand your sketch, the want of heat appears to be caused by the sluggish circulation, or the want of circulation, which would result from the absence of an air-pipe at the angle where the dip occurs, and also at the two extremities of the apparatus.

Indigo, etc.: *W. Howard.* We cannot give you the information. Apply to one of the Mincing Lane merchants.

Insects: *G. B.* The beetles which you found feeding on the flowers of Phalænopsis are the common English weevil, Otiorhynchus sulcatus. It was not imported with the Orchids. *I. O. W.*—*W. J. O.* The insects which have injured your tuberous Begonias are the larvæ of the common Otiorhynchus. The plants should be repotted, the earth carefully shaken from the roots and burnt, and fresh sifted soil introduced. *I. O. W.*—*Inquirer.* The buds of your Cattleyas are burrowed into by the larvæ of a minute Hymenopterous insect which we believe to be identical with the insect figured by us in *Gardeners' Chronicle*, 1869, p. 1230, although belonging to a family generally regarded as exclusively parasites on other insects. *I. O. W.*—*C. W. T.* Your box must have gone astray. We have no recollection of it.

Manetti Stock: *Rosa.* Rosa Manetti, a seedling raised by Signor Manetti, of the Botanic Garden of Monza, many years ago.

Mushrooms, Peaches, and Bees: *A. M. P.* In the absence of any other obvious inducing cause, it is quite likely that "the most horrible smell from the smoking-shed" used for curing bacon may be the cause of the failures in question.

Names of Plants: *T. W.* 1, Coccoloba platyclada; 2, Cornus mas (the Cornelian Cherry).—*L. A. R.* Lathræa squamaria. — *W. B.* Orobus vernus. — *W. Lewis.* Fontinalis antipyretica (the Water Moss).—*J. Morton.* 1, Ribes sanguinea; 2, Primula denticulata var. erosa; 3, Celsia cretica; 4, Claytonia perfoliata.—*Simplex.* 1, Mercurialis perennis; 2, Anthriscus sylvestris; 3, Stellaria Holostea.—*A. M.* A variegated variety of Euonymus japonicus, of which there are several.—*E. B. Lees.* Omphalodes verna. The weed is a starved plant of Ranunculus bulbosus. See answer above as to lawn-dressing. —*W. C.* 1, Oncidium altissimum; 2 and 3, send again, with leaves.—*J. E.* 1, Asplenium marinum; 2, Cypripedium barbatum; 3, Lycaste Harrisoniæ.—*H. J. Ross.* Oncidium varicosum. — *W. H. Jarvis.* One of the varieties of Odontoglossum luteo-purpureum.

Narcissus: *H. R.* It makes "i" in the genitive like dominus, and is in no way exceptional.

Night-scented [Stock. — I cannot tell your correspondent where to get seed of this Stock. The only likely place to get plants of it that I am acquainted with is Mr. B. W. Knight's, florist, Battle, Sussex. If he cannot get it there, and he will send me his address, I will send him one plant by post. *J. Clarke, Cothelstone, Taunton.*

Profitable Gardening: *Subscriber.* This result will greatly depend on the practical knowledge of cultivating and marketing garden produce possessed either by yourself or your gardener, and which cannot be learned from books—at least we know of none which will teach you.

Pumpkin Preserve.—At p. 541, for "plum" read "plain" pudding.

Rust on Vine-leaves: *W. E. T.* Probably the Vine in question is in the coolest part of the house, and has been kept too moist. Reduce the moisture, and give more air. It will not do much harm.

Vines: *W. G.* The young berries appear to have been scalded; for the Vines, though weak, are healthy, and we find no trace of disease.

Witloef: *T. C. A.* A variety of Chicory (Chichorium Intybus), the leaves of which are blanched and used as a salad.

## CATALOGUES RECEIVED.

M. Bruant, Poitiers, France—Spring Catalogue of Plants.

Thomas Imrie & Sons, Ayr—Florists' Flowers, Stove and Greenhouse Plants, &c.

Communications Received:—S. & S.—B. S. W.—J. D.—F. Sander.—P. & M.—E. D.—E. J.—John Simpson.—D. T. F.—W. B. H.—T. B.—A. F.—R. B.—A. B.—F. M.—E. R.—J. S.—G. T, New York.—E. R., St. Petersburg.—J. D. D.—H. G. Rchb. f.

DIED—At Loughton, Essex, on April 19, Fisher Godwin, formerly of Sheffield, in his seventy-seventh year.

# Markets.

*COVENT GARDEN, April 28.*

Business has slightly improved during the week, and Strawberries are readily cleared at improved prices. Grapes, with a good supply, are selling freely at the usual reductions which take place at the commencement of the season. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 2 0– 3 0 |
| Grapes, per lb. | 6 0–12 0 | Strawberries, per lb. | 4 0– 8 0 |
| Lemons, per 100 | 4 0– 6 0 | | |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Herbs, per bunch | 0 2– 0 4 |
| Asparag., Fr., bndl. | 2 0–15 0 | Horse Radish, p. bun. | 4 0– .. |
| — English, bund. | 6 0– .. | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| — Sprue, per bund. | 1 6– 2 0 | — Cos, each | 0 4– 1 0 |
| Beans, French, p. lb. | 1 0– .. | Mint, green, bunch | 0 9– .. |
| — Broad, per lb. | 1 0– .. | Mushrooms, p. baskt. | 1 6– 2 0 |
| Beet, per doz. | 1 6– 2 6 | Onions, per bushel | 8 0– .. |
| Cabbages, per doz. | 1 0– 2 0 | — Spring, per bun. | 0 6– .. |
| Carrots, per bunch | 0 4– 0 6 | Parsley, per bunch | 0 4– .. |
| — New Fr., bund. | 2 0– .. | Radishes, per bun. | 0 2– 0 6 |
| Cauliflowers, English, each | 3 0– 0 6 | Rhubarb, per bund. | 1 0– .. |
| Celery, per bundle | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| Garlic, per lb. | 1 0– .. | Tomatos, per lb. | 0 9– 1 0 |

POTATOS:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 4*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 3 0– 6 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 0 6– 1 0 | Narcissus, in variety, 12 bunches | 6 0– 9 0 |
| Bouvardias, per bun. | 1 0– 3 0 | Pelargoniums, 12 sprays | 1 0– 1 6 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 0 6– 0 9 |
| Carnations, 12 blms. | 1 0– 2 0 | Primroses, 12 bunch. | 0 6– 1 6 |
| Cyclamen, 12 blms. | 3 0– 0 6 | Primula, double, per bunch | 0 9– 1 6 |
| Daffodils, single, 12 bunches | 1 0– 2 0 | Roses (indoor), doz. | 1 0– 6 0 |
| — double, 12 bun. | 2 0– 4 0 | Stephanotis, 12 spr. | 4 0– 6 0 |
| Daisies, 12 bunches | 2 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Eucharis, per doz. | 4 0– 6 0 | Tuberoses, per dozen | 2 6– 4 0 |
| Gardenias, 12 blms. | 1 6– 6 0 | Tulips, 12 bunches | 3 0– 6 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Violets, 12 bunches | 0 9– 1 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | — Neapolitan, Fr., per bunch | 4 0– 6 0 |
| — red, 12 blooms | 1 0– 3 0 | Wallflowers, 12 bun. | 3 0– 4 0 |
| Lilac, Fr., per bunch | 6 0– 8 0 | | |
| Lily of the Valley, 12 sprays | 0 9– 2 0 | | |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Foliage Plants, various, each | 2 0–10 6 |
| Azalea, per doz. | 30 0–42 0 | Genista, per doz. | 9 0–18 0 |
| Begonias, per doz. | 6 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Cineraria, per doz. | 8 0–12 0 | Marguerite, white, per dozen | 24 0–42 0 |
| Cyperus, per dozen | 6 0–12 0 | — Yellow, per doz. | 12 0–30 0 |
| Dielytra, per dozen | 9 0–12 0 | Myrtles, per doz. | 6 0–12 0 |
| Dracæna terminalis | 30 0–60 0 | Palms in var., each | 2 6–21 0 |
| — viridis, per doz. | 12 0–24 0 | Pelargoniums, doz. | 18 0–30 0 |
| Erica, in variety, doz. | 18 0–30 0 | — tricolor, per doz. | 3 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | — scarlet, per doz. | 4 0– 9 0 |
| Evergreens, in var., per dozen | 6 0–24 0 | Roses, various, doz. | 12 0–30 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |
| Ficus elasticus, each | 1 6– 7 6 | | |

## SEEDS.

LONDON: *April 27.*—The lateness of the present season is protracting the sowing demand for farm seeds: meantime there is a good steady trade doing. With regard to some descriptions, notably Alsike, white, Lucerne, Timothy, and Rye grasses, the rapid exhaustion of stocks is exercising a hardening influence upon values. Fine red Clover is also getting into narrow compass. Of American seed, however, the supply continues abundant and prices low. Trefoil, notwithstanding its low price, meets a slow sale. In bird-seeds there is but little business passing. Moderate rates are now accepted for spring Tares. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## POTATOS.

The Borough and Spitalfields markets reports state that the demand is fair for best samples, but otherwise dull. First qualities are fairly supported. Quotations:—Scotch Regents, 80*s.* to 110*s.*; Champions, 70*s.* to 100*s.*; Victorias, 90*s.* to 120*s.*; flukes, 100*s.* to 140*s.*; Kent Regents, 100*s.* to 120*s.*; Essex, 90*s.* to 110*s.* per ton; German reds, 3*s.* 9*d.* to 4*s.* 9*d.*; Belgian kidneys, 3*s.* 6*d.* to 4*s.* per bag.—The imports into London last week were as follows:—18,348 bags Hamburgh, 1365 bags Bremen, 8660 bags Antwerp, 1298 bags Boulogne, 1300 bags Ghent, 825 bags Brussels, 1299 bags Stettin, 1419 bags Malta, and 356 bags Lisbon.

## COALS.

The following are the prices current at market during the week:—East Wylam, 16*s.* 6*d.*; Ravensworth West Hartley, 14*s.* 9*d.*; Bebside West Hartley, 14*s.* 9*d.*; Walls End—Lambton, 17*s.*; Original Hartlepool, 17*s.* and 17*s.* 6*d.*; Wear, 15*s.*; Tunstall, 15*s.*; Thornley, 16*s.* 9*d.*; Hetton, 17*s.*; Hetton Lyons, 15*s.*; Hawthorns, 15*s.* 3*d.*; Lambton, 16*s.* 6*d.*; South Hetton, 17*s.*; Tees, 16*s.* 9*d.*

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Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight, and all Parasites affecting Plants, without Injury to Foliage.

*It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.*

**Especially adapted for the Destruction of Blight on the Coffee Plant.**

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general INSECTICIDE.

It has now undergone a thorough test by some of the most Practical Men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with PERFECT SAFETY TO FOLIAGE.

It may be used as a Dip or Wash for any description of Out or Indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

Some hundreds of Testimonials lately received from men of considerable experience throughout the Kingdom.

**Sold in Jars, 8 oz., price 1s. 6d.; 20 oz., price 3s.; and in Tins, 14 lb. price 15s. 6d.; and Drums, 28 lb. price 25s.; 56 lb., price 50s.; 112 lb., 95s. Full directions for use on each package.**

**And 2 ounce Sample Jars, 6d. each.**

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ALPINE AURICULA SEED, from choice collection of 200 pot plants; also grand strain Fancy POLYANTHUS SEED, 1*s* each per packet.

W. CAUDWELL, F.R.H.S., The Ivies, Wantage.

To the Trade.—Large Plants in 48's of GERANIUMS—viz., Vesuvius, Wonderful, Madame Thibaut, Master Christine, and Madame Vaucher, in quantities of not less than two dozen, at 4*s.* per dozen. These are the same size and quality as sent to Covent Garden Market. Terms cash. Packages free.

GEO. POULTON, Fountain Nursery, Angel Road, Edmonton.

Rare and Valuable Orchids, cheap.

J. H. LEY, Croydon, can offer fine plants, imported a few months since, but all rooting and growing freely, at greatly reduced prices:—

CATTLEYA MOSSIÆ, extra fine, will produce plenty of flower, 42*s.* and 60*s.* per dozen.
,, INTERMEDIA, 42*s.* per dozen.
,, CITRINA, finest ever imported, 3 to 5 new growths, 42*s.* and 60*s.* per dozen.
LÆLIA MAJALIS, 20 or more bulbs, growing well, 30*s.* per doz.
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,, HOOKERI, strong new growths, 42*s.* per dozen.
,, CAMBRIDGEANUM, strong new growths, 60*s.*
,, FREEMANI, 42*s.* per dozen.
CŒLOGYNE OCULATA (rare), 42*s.* per dozen.
CYPRIPEDIUM NIVEUM (established), 60*s.* per dozen.
MASDEVALLIA HARRYANA, 60*s.* per dozen.
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CABBAGE, East Ham and Enfield Market, selected Stock.
CAULIFLOWER, Walcheren (English saved), selected.
,, Veitch's Autumn Giant.
CELERY, Covent Garden Red—the best grown.
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RADISH, Red and White Turnip.
SPINACH, Extra Large Round.
VEGETABLE MARROW, Long White Ribbed.

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FUCHSIAS, 12 best Exhibition varieties, 1*s.* 6*d.*; 12*s.* per 100.
,, 12 new Exhibition varieties, 2*s.* 6*d.*; 20*s.* per 100.
COLEUSES, 12 new varieties, 2*s.* 6*d.*; 20*s.* per 100.
,, 18 new varieties, 3*s.* 6*d.*
AGERATUM, Dwarf, 12 for 1*s.* 3*d.*; 8*s.* per 100.
IRESINE, 12 for 1*s.* 2*d.*; 8*s* per 100.
VERBENAS, 12, in 4 varieties, 1*s.* 2*d.*; 6*s.* per 100.
,, 12, in 8 varieties, 1*s.* 4*d.*; 8*s.* per 100.
CHRYSANTHEMUMS, 12, in 12 varieties, 2*s.*
,, 100, in 50 varieties, 12*s.*
PELARGONIUMS, 12 Show and Fancy varieties, 2*s.* 6*d.*; 18*s.* per 100.
,, 100 Show and Fancy, in 25 varieties, 20*s.*
GERANIUMS, Bronze, Beauty of Calderdale, 12 for 2*s.* 6*d.*; 18*s.* per 100.
,, ,, Maréchal McMahon, 12 for 2*s* 6*d.*; 18*s.* per 100.
,, ,, mixed varieties, 12 for 2*s.*; 15*s.* per 100.
,, Variegated Bijou, 12 for 2*s.*; 12*s* per 100.
,, Double, 12 new varieties, 2*s.* 6*d.*; 20*s.* per 100.
,, Zonal and Scarlet, 12 varieties, 2*s.* 6*d.*; 18*s.* per 100.
,, ,, ,, mixed, 12 for 1*s.* 6*d.*; 10*s.* per 100.
CALCEOLARIAS, Golden Gem, 12 for 1*s.* 3*d*; 8*s.* per 100.

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Flowers nearly white, very sweet-scented, medium size; footstalks long, the foliage very small and dwarf, like the common hedge Violet, which gives the flowers a very beautiful appearance from the end of February to the end of April, rising as they do some 3 or more inches above the foliage, and presenting a mass of greyish-white—some say white in viewing them from a distance—but they do not become white till they are some days old. This Violet will be a great acquisition on account of its hardy constitution and its almost perpetual-flowering habit, especially for planting near woodland paths, &c., as it spreads and survives under neglect, and continues blooming from February till December.

**OPINIONS OF THE PRESS.**

The *Garden*, November 1, 1879—"Mr. G. Lee has sent us from Clevedon a new Violet bearing the name of 'argentæflora.' Its blooms are large, pale purple, but in winter nearly white, and deliciously fragrant. It is said to be very prolific, and almost a perpetual bloomer."

The *Garden*, March 6, 1880.—"Violet argentæflora.—We have received from Mr. Lee of Clevedon a bunch of this beautiful Violet. Its flowers, which are white and of moderate size, emit a remarkably strong aromatic perfume. The foliage, Mr. Lee remarks, is exactly similar to that of the common hedge Violet. It is an excellent kind for cutting purposes, as the stalks are long and the blooms last a long while in water."

The *Gardeners' Chronicle*, March 13, 1880.—"Violet argentæflora.—Much the finest single white Violet we have yet seen, and very fragrant."

The *Gardeners' Magazine*, March 20, 1880.—"Lee's Silver Violet, of which a nice boxful of flowers has been forwarded by Mr. Lee of Clevedon, Somerset, is a charming white-flowered variety, very pure in colour, long-stemmed, and with leafage as neat as the common hedge Violet. When the box was opened the room was quickly perfumed by the sweet breath of the flowers."

The *Journal of Horticulture*, March 25, 1880.—"Violet argentæflora promises to be a great acquisition. The flowers are very pretty, not so large as Victoria regina, shining blush some flowers nearly white, with purple spurs. In bunches they are effective, and contrast well with the purple forms. The leaves are small, about the size of the common hedge Violet, and not the least of its merits are its long footstalks and delicious fragrance.

The *Florist and Pomologist*, April, 1880.—"Mr. G. Lee, of Clevedon, sends us blossoms of his Violet argentæflora, the Silver-flowered Violet, which is one of the best single flowered whites we have seen. The leaves are small and elegant, like those of the hedge Violet, and have none of the coarseness of those of the large blue-flowered sorts. The flowers, though delicately feathered with pale purple on the outside, are practically white, with a purple spur, and have very long footstalks, which throw them well up above the foliage and render them well suited for bouquets and for bunching. They are regularly and neatly formed, with blunt broadly-oblong petals, and measure when fully open three-quarters of an inch across, the petals being fully half an inch long. The scent is delicious, resembling that of the hedge Violet. Mr. Lee suggests that it will be a good sort for growing under glass in winter, as it remains so long in season (seven or eight months), and is a most profuse bloomer."

The *Gardener*, April, 1880.—"George Lee, Clevedon.—The bunch of Violet argentæflora arrived in good condition. The flowers are very sweet, and must be a hardy useful sort."

*Journal of Horticulture*, August 5, 1880.—Violets in June and July.—During June I gathered several flowers of Violet argentæflora, and to-day (July 26) I gathered enough blooms to make a bunch 6 inches in diameter from three dozen small plants. What I have long been desiring appears to have been obtained at last—viz., a variety that would supply sweet-scented Violets all the year round. Argentæflora appears to be a continual bloomer, producing flowers from every joint of the stems, and the young runners throw flowers directly the crowns are formed. It is a very sweet Violet, and has capital footstalks, admitting of the flowers being made up into large bouquets.—G. Abbey."

*Journal of Horticulture*, Sept. 9, 1880.—"Through the courtesy of Mr. Lee, who sent me a bundle of plants in spring, I have been able to test the merits of his new Violet argentæflora. Like Mr. G. Abbey I have found it a continuous summer bloomer. Of course the quality of the flowers is not what one would be satisfied with in the spring, still they are fairly good, and very sweet and acceptable, coming as they do at a time when the scent of a Violet is a luxury often unattainable.—R. W. Beachey."

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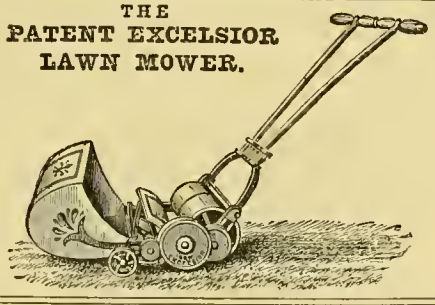

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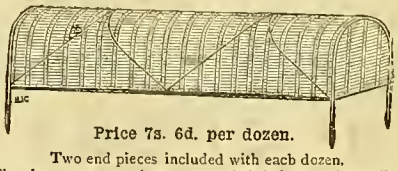

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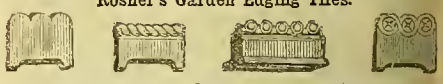

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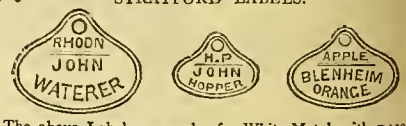


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| To cover 20 loads | 20 feet | by 24 feet, | £2 | 13 | 2 |
| To cover 25 | ,, 24 ,, | by 30 ,, | 3 | 15 | 2 |
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All other sizes at proportionate rates. Carriage paid to any railway station in England. Terms, cash. Samples on application.
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Manufacturers of ROPES, TWINES, SACKS, TARPAULINGS, HORSE-CLOTHS, COCOA MATS and MATTINGS, SADDLERS and HARNESS MAKERS, ARCHANGEL and PETERSBURG MATS, RAFFIA FIBRE, NETTING, &c. COCOA-NUT FIBRE REFUSE, single sacks, 1s. each; 15 sacks, 12s.; 30 sacks, 20s.; truck-load, delivered to any station in London, 25s. Try our HEMP SASH-LINE, made especially for Greenhouses and Heavy Sashes—the best in the Trade.
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Toope's Asbetos Covering Company
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Manufacture an easily fitted and removable Patent Covering for Hot-water Pipes of any diameter, which effectually prevents any loss of heat in pipes passing from the boiler to the Glass-houses, no matter what the distance.
*It will be found invaluable where used.*
**Price 10d. per superficial foot.**
NUMEROUS TESTIMONIALS.
Send circumference of pipe, and length required, to the Factory,
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THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

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| 15-oz., | 6 × 4 to 7½ × 5½, | 9s., | 10s., | 11s., | 12s. | Per 100 ft. Box |
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| | 20 × 12 to 24 × 16, | 11s 6d, | 13s 6d, | 14s 6d, | 15s 6d. | |
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| 21-oz., Orchard House, | 20 × 12, | 20 × 15, | 16s., | 17s. 3d., |
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15-oz., for Cutting up, 34s., 41s., 42s. 6d., 53s. per 300 feet case.
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LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.
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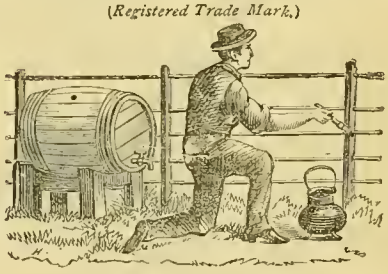
HILL AND SMITH'S BLACK VARNISH,
for Preserving Ironwork, Wood, or Stone.
(*Registered Trade Mark.*)



This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.
Sold in Casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.
UNSOLICITED TESTIMONIAL.
"*Piercefield Park, June* 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Piercefield Park, Chepstow.—I am, Sirs, yours respectfully, WM. COX."
*CAUTION.*—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.
H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.
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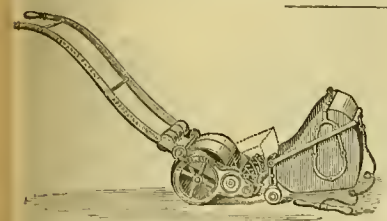

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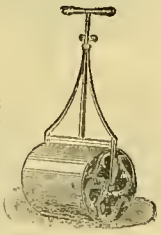

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STOVES and HOT WATER APPARATUS.
THE AMATEURS' GREENHOUSE, price £7.

LAWN MOWERS.
15 per Cent. for Cash off MAKERS' PRICES.
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16-in., 32s.; 18-in., 35s.; 20-in., 45s.; 22-in., 52s.

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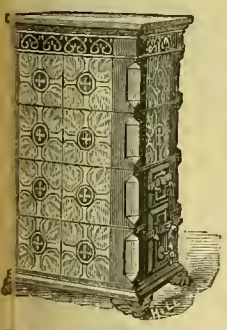
SPECIALLY ADAPTED FOR CONSERVATORIES.



MAKE NO DUST.
MAINTAIN A WARM AND MOIST HEAT.
NEED NO CLEANING.
CAN BE EASILY REMOVED.
MADE IN ALL COLOURS AND SIZES.
ARE VERY DECORATIVE, AND BLEND WELL WITH THE SURROUNDING FOLIAGE.

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May be had of the principal Ironmongers.

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UPPER GROUND STREET,
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Have the largest and most complete stock in the Trade to choose from.

HOT-WATER BOILERS, PIPES, and CONNECTIONS,
And all CASTINGS for HORTICULTURAL PURPOSES.

*Their New Illustrated Catalogue,* 10*th Edition, now ready*
(*price One Shilling*).

**Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.**
*Price List on application free.*

## HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet,
**Carriage Paid to any Railway Station in England.**
*Price Lists on application.*
**ALFRED SYER,** Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

## BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities of
**BETHAM & SON,**
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B. & Son have always a large stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. and 21-oz.; and also large sizes in all qualities for cutting-up purposes, in 200-ft. and 300-ft. cases.

## PARISIAN GREENHOUSE BLINDS

Made of Wood and Iron only.

Sole Agents for Great Britain—
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**No Greenhouse Perfect without one.**

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Greenhouses, Conservatories, &c., will last for years, and is fast superseding all other apparatus or contrivance for the purpose; requires no attention when once lit; no fear of flaming, no waste of material, every particle being given off in dense smoke. Price 3s., 4s 6d.; large size, 7s. 6d. each; packing extra.

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REGISTERED JULY 2, 1877 Wholesale of CORRY, SOPER, FOWLER, AND CO. (Limited), 18, Finshury Street, E.C.

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Will sow every description of Farm and Garden Seeds.

There is no spring and slide to get out of order and damage the seed, being worked by a brush. The rows can also be put in at equal distances without a line.

Price, with 2 wheels, 20s. each.
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For larger Manual and Pony Drills, see Illustrated List free from F. BIRD & CO., 11, Great Castle St., Regent St., London, W.

## ADIE'S PATENT LAWN EDGER.

THIS Machine constantly employed will pay itself in two days. Dr. Hogg, in the *Journal of Horticulture*, says—"This Edge Clipper we have tried, and know not which to admire most—its simplicity or efficiency." Mr. Moore, in the *Florist*—"This new machine does its work rapidly and admirably, the grass being cut with precision, and" he further adds, "the use of it willl, we have no doubt, become general." Prices 25s. and 30s.

LAWN EDGER CO., 15, Pall Mall, London, W.

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**American Lawn-Mower,**

is, without question, the best in the world, and its sale exceeds any other. The makers challenge competition on the following points: Mechanical Construction, Excellence of Material, Workmanship, Finish, Simplicity, Durability, and Lightness of Draught when Cutting Long or Short, Wet or Dry Grass. See it and try it before you buy any other. Every Machine is unconditionally warranted.

Awarded twenty-four First-class Gold, Silver, and Bronze Medals at the Principal Exhibitions and Trials in America and Europe.

**New Pony and Horse Mowers,** Carriage paid to any Station. Hand sizes—8-in., 42s.; 10-in., 63s.; 12-in., 84s; 14-in., 105s.; 16-in., 126s.; 18-in., 147s.; 22 in., 189s.

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## PIPES and FITTINGS,

FOR HEATING APPARATUSES.
The largest stock in the Kingdom. 4-inch pipes, 1s. 7d. per yard.
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**HEATING and LIGHTING STOVES.**

*Silver Medals awarded at Wolverhampton Exhibition, 1878; and Brussels International Exhibition, 1880.*

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| No Smoke | No Dust |
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| For Conservatories | For Offices |
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Prices from £3 3s. to £10 10s.

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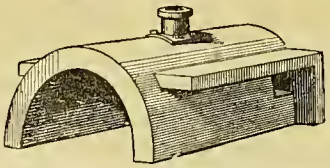
WEST END SHOW ROOMS 40, Albemarle Street, Piccadilly, W.

3 feet 6 inches, 5 feet, and 6 feet.

**Silver Medal, 1874. First-class Certificate, 1867.**
Highly Commended, 1873. First-class Certificate, 1875.



Mr. W. THOMPSON, Tweed Vineyard, has written the following letter to a gentleman who inquired respecting this Boiler:—

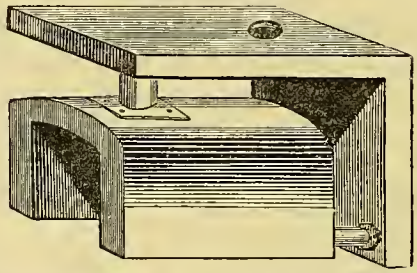
"Galashiels, February 4, 1881.

"The Terminal Saddle Boiler is BY FAR the best one we have here, and we have had all sorts. It does its work well, and with less fuel than most Boilers. It is the most economical and efficient Boiler we have, and has not cost sixpence since we fixed it some eight years ago."

Illustrated Prospectus Post-free.

**THOS. JONES, Temple Street, Manchester.**

## JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. | | | To heat of 4-in. Pipe. | Price. | | |
|---|---|---|---|---|---|---|
| High. | Wide. | Long. | Feet. | £ | s. | d. |
| 20 in. | 18 in. | 18 in. | 300 | 7 | 0 | 0 |
| 20 " | 18 " | 24 " | 400 | 8 | 0 | 0 |
| 20 " | 18 " | 30 " | 500 | 9 | 0 | 0 |
| 24 " | 24 " | 24 " | 700 | 12 | 0 | 0 |
| 24 " | 24 " | 30 " | 850 | 14 | 0 | 0 |
| 24 " | 24 " | 36 " | 1000 | 16 | 0 | 0 |
| 24 " | 24 " | 48 " | 1400 | 20 | 0 | 0 |
| 28 " | 28 " | 60 " | 1800 | 25 | 0 | 0 |

Larger sizes if required.

*From* Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

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When ordering Boilers please refer to the above advertisement.

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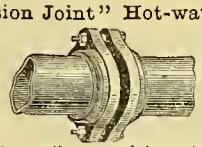
*DENNIS PARK IRONWORKS, STOURBRIDGE,*
MANUFACTURER OF
**HOT-WATER PIPES,**
IMPROVED "EXPANSION JOINT" PIPES,
**BOILERS,**
SPOUTING, PUMPS, TANKS, WROUGHT-IRON TUBING,
And every description of Ironwork for Horticultural and Building Purposes.

**SOCKET HOT-WATER PIPES.**

| | s. | d. | | s. | d. | | s. | d. | |
|---|---|---|---|---|---|---|---|---|---|
| Pipes (6 ft. long)—2-in., | 1 | 6 | 3-in., | 2 | 8 | 4-in., | 3 | 4 | each. |
| " (9 ft. long)— " | — | | " | 3 | 9 | " | 4 | 6 | " |
| Elbows (No. 12)— " | 1 | 1 | " | 1 | 8 | " | 2 | 0 | " |
| Tees (No. 33)— " | 1 | 5 | " | 2 | 4 | " | 3 | 3 | " |
| Syphons (No. 23)— " | 1 | 3 | " | 2 | 0 | " | 3 | 0 | " |

**"Expansion Joint" Hot-water Pipes.**

The "Expansion Joint."



The Best and Quickest Made.

*This Joint, being easily removed, is specially adapted for Tenants.*

| | s. | d. | | s. | d. | | s. | d. | |
|---|---|---|---|---|---|---|---|---|---|
| Pipes (6 ft. long)—2-in., | 1 | 5 | 3-in., | 2 | 3 | 4-in., | 2 | 11 | each. |
| " (9 ft. long)— " | — | | " | 3 | 4 | " | 4 | 3 | " |
| Elbows (No. 3)— " | 0 | 8 | " | 0 | 10 | " | 1 | 0 | " |
| Tees (No. 13)— " | 0 | 11 | " | 1 | 2 | " | 1 | 4 | " |
| Syphons (No. 16)— " | 1 | 0 | " | 1 | 4 | " | 1 | 6 | " |

Joint complete, with Rubbers and Pins, 2-in., 10d. each; 3-in., 1s. 2d.; 4-in., 1s. 4d.

Delivered into Trucks or Boats. Illustrations and Price Lists free.

*Terms—Cash against Invoice less 2½ per Cent. Discount.*

Estimates for Heating given from Plans.

ALL CASTINGS SUPPLIED OF FIRST QUALITY ONLY.

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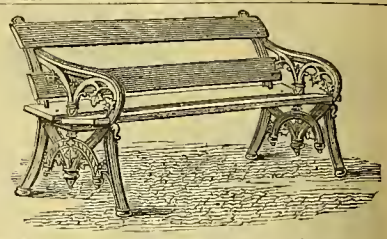
**B. W. WARHURST** PRICES FREE
HIGHGATE ROAD, LONDON, N.W.



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Garden Seats, Awnings and Tents, Rustic Tables, Chairs, and Flower Stands, Lawn Mowers, Garden Rollers, Water Barrows, Wheelbarrows, Garden Tools, Summer-houses, Sun Dials, Fancy Wirework, Weather Vanes, Hammocks, and all kinds of Garden Furniture at lowest marked prices. *Catalogues post-free.*

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HORTICULTURAL BUILDER,
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Horticultural Work of every description executed in the very best manner.

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Applied to Conservatories and Greenhouses.
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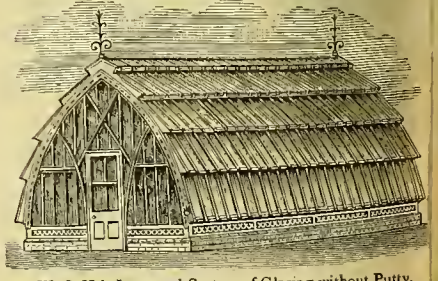
PRACTICAL HORTICULTURAL BUILDERS and HOT-WATER ENGINEERS.



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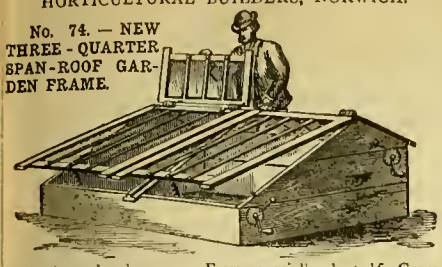

This Illustration shows a new Frame, specially adapted for Growing Cucumbers, Melons, &c., and for Storing Plants, giving greater height, more convenience, and better access to all the plants inside than our ordinary Melon and Cucumber Frame, No. 75.

PRICES—CARRIAGE PAID.

| Size. | Long. | From front to back. | Gearing extra to 8 ft. size and upwards. | Packing Cases. |
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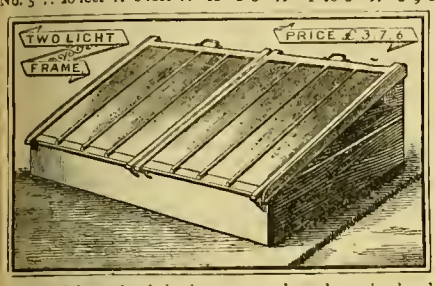
| No. 1 | 4 feet | 6 feet | £3 0 0 | — £0 4 0 |
| No. 2 | 8 feet | 6 feet | 4 15 0 | £0 15 0 0 5 0 |
| No. 3 | 12 feet | 6 feet | 6 10 0 | 1 2 0 0 6 6 |
| No. 4 | 16 feet | 6 feet | 8 5 0 | 1 10 0 0 8 6 |
| No. 5 | 20 feet | 6 feet | 10 0 0 | 1 16 0 0 9 6 |




Our stock is made of the best seasoned wood, ready glazed with 21-oz. English glass, painted three coats of best colour, and easily put together in a few minutes.

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| 2-light Frame | 8 feet by 6 feet | £3 7 6 | 4s. 6d. |
| 3-light " | 12 feet by 6 feet | 4 17 6 | 4s. 6d. |
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| 5-light " | 20 feet by 6 feet | 7 17 6 | 6s. 0d |
| 6-light " | 24 feet by 6 feet | 9 7 6 | 6s. 6d |

Lights only, 6 feet by 4 feet, unglazed and unpainted, 6s. each glazed with 21-oz. sheet glass and painted three coats, 16s. each. All Orders amounting to 40s. Carriage paid to any Railway Station in England and Wales; also to Edinburgh and Glasgow, Dublin and Belfast.

Any damage in transit made good if advised immediately.

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And WIRING for WALLS.

Materials always in Stock. Orders executed promptly.

*Illustrated CATALOGUE free by Post.*

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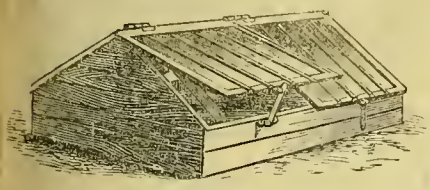

**Portable Plant Frames.**

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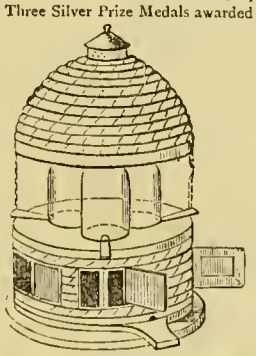

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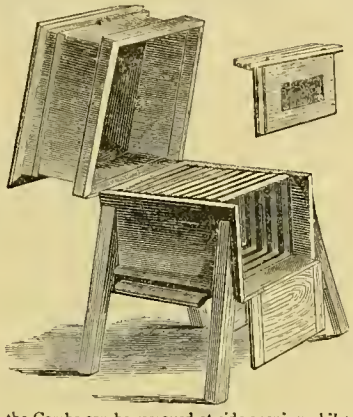

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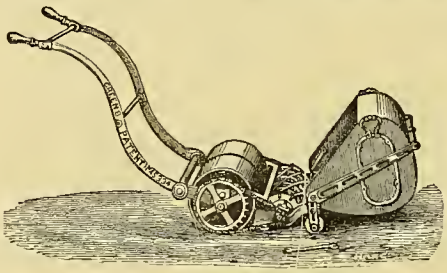
Can be worked by a strong Youth.

To cut 12 inches ... ... ... 4 10 0
Can be worked by a Man.

To cut 14 inches ... ... ... 5 10 0
Can be worked by a Man.



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By a Man and Boy.

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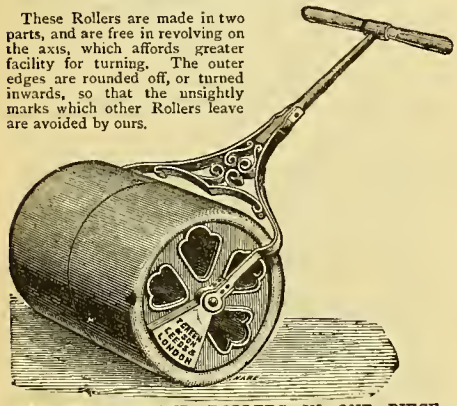

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| 20 in. by 22 in. .. | 4 0 0 | 30 in. by 32 in. .. | 9 0 0 |

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| 30 in. by 36 in. .. | 13 0 0 | 30 in. by 60 in. .. | 19 0 0 |
| 30 in. by 42 in. .. | 15 0 0 | 30 in. by 72 in. .. | 22 0 0 |

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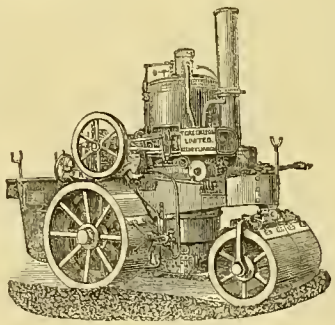

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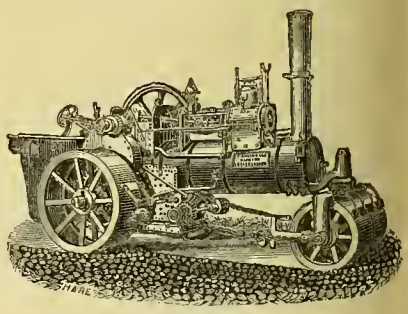

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Editorial Communications should be addressed to "The Editors ;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, April 30, 1881.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 384.—Vol. XV. { New Series. } SATURDAY, MAY 7, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE!—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific at 1 P.M.; General Meeting for the Election of Fellows, &c., at 3 P.M., on TUESDAY next. May 10
N.B.—An Exhibition of Choice FLOWERS and FRUITS will be held in connection with the Meetings of the Fruit and Floral Committees in the Conservatory.
Band of the Royal Horse Guards from 3.30 o'Clock P.M. Admission 1s.

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Or by Tickets purchased before the day by Fellows, for the first day, 3s. 6d.; second day, 2s.
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ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
SUMMER EXHIBITIONS of PLANTS, FLOWERS, and FRUIT, WEDNESDAYS, May 25 and July 6, 2 to 7 o'Clock.
Tickets, to be obtained at the Gardens only by vouchers from Fellows of the Society, price 5s., or on the day of Exhibition, 7s. 6d. each.
Schedules of Prizes, and all particulars, may be obtained by post.

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H.P. ROSES, extra strong.—Very fine strong plants, in 9, 10, and 11-inch pots, of all the leading kinds, coming into bud; suitable for exhibition. For LIST of sorts and price, apply to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

**Seedling Thorns and other Forest Trees, Hardy CONIFERS and SHRUBS, CHEAP.**
MESSRS. LEVAVASSEUR and SON, NURSERYMEN, Ussy, Calvados, France.—CATALOGUES post-free on application to them, or to their Agents, Messrs. R. SILBERRAD AND SON, 25, Savage Gardens, London, E.C.

**Tricolor Bedding Geraniums.**
ALFRED FRYER offers a large stock of the best varieties. Priced LISTS post-free.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

**Pelargoniums—Pelargoniums.**
JAS. HOLDER AND SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties, 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

HOLLYHOCKS. — Strong plants now ready. List of varieties and price upon application.
L. WOODTHORPE, Glazenwood Nursery, Braintree.

FINEST GRASS SEEDS, specially prepared for LAWNS, BOWLING GREENS, CRICKET GROUNDS, &c., comprising the very best dwarf evergreen kinds, quality not to be surpassed, 1s. per pound, 20s. per bushel; 3 to 4 bushels required per acre.
RICHARD SMITH AND CO., Seedsmen and Nurserymen, Worcester.

GLOBE ARTICHOKES.—Nice plants now ready, 6s. per dozen, 40s. per 100. Prices to Trade on application.
HOOPER AND CO., Covent Garden, London, W.C.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS, are requested to communicate with
W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

**Cut Flowers.**
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of HOT-HOUSE and OUTDOOR FLOWERS. Cash by return of post if desired. Where money is objected to ORCHIDS, &c., MAY BE HAD in EXCHANGE.

**Wanted to Purchase, Seedling Adiantum cuneatum.**
WISE AND RIDES are prepared to receive Consignments of Cut Flowers, Choice Fruits, Cucumbers, &c., in quantity.
3, Tavistock Court, Covent Garden, W.C.

WANTED, Thirty CAMELLIAS, from 4 to 5 feet in height. State sort and lowest price to
R. F., Les Douvres, Guernsey.

**Wanted, Geraniums.**
W. F. BOFF, 203, Upper Street, Islington, is a buyer of good Stuff, in large 60's—Vesuvius, Pink, Bicolors, &c.

WANTED, a quantity of BRITISH BOX (True) EDGING. Sample Yard and Price to
J. NOBLE, Nurseries, Lower Clapton, London, E.

**Tall Palms.**
WANTED to PURCHASE, for Cash.—Send description and price to
Mr. ROBERT GREEN, 28 and 29, Crawford Street, Bryanston Square, W.

WANTED, FRUITING CANES of the following VINES:—Buckland Sweetwater, Foster's Seedling, Black Hamburgh, Muscat of Alexandria, &c. State lowest trade price to
D. McFARLANE, The Gardens, Olive Mount, Wavertree, Liverpool.

WANTED, BLACK CURRANTS, for Autumn, 500 each Lee's Prolific and Black Naples; at least two years old, and well furnished. Also Warrington GOOSEBERRIES, RASPBERRIES, DAMSONS, and Victoria PLUMS, in quantity; good market sorts. Apply to
F. IMPEY, Longbridge, Northfield, near Birmingham.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes in the Trade. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

WILLIAMS' for ORCHIDS either for the Cool-house, Mexican, or East India-house, either in Specimens or small plants. The largest Collection of Specimens suitable for Exhibition in the Trade.

WILLIAMS' for CHEAP ORCHIDS.—B. S. W. having recently purchased several Collections of Orchids in this country, in addition to the large consignments he is constantly receiving from his collectors abroad, is thus enabled to offer a large assortment of these plants, at exceptionally low prices. Price List upon application.

WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSEYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

ALTERNANTHERA PARONYCHIOIDES MAJOR AUREA.—The new Alternanthera, as seen in Battersea Park last year; strong plants from store-pots, 3s. 6d. per dozen, 25s. per 100. Cash with orders.
JOHN CHARLTON, Summervale Nursery, Tunbridge Wells.

**Notice.**
AUCUBA JAPONICA.—Splendid plants for immediate effect, 2½ to 3½ feet high, 24s., 30s., 36s., and 42s. per dozen. A few extra large specimens, 5s. to 7s. 6d. each.
W. RUMSEY, Joyning's Nurseries, Waltham Cross, N.

**Orchids, &c.**
THE NEW PLANT and BULB COMPANY'S SPECIAL LIST (No. 51) is just published. Post-free on application.
Lion Walk, Colchester.

SEEDLING HOLLIES.—Several thousands of the above, extra fine. Apply
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

**Tea-scented Roses.**
EDWIN HILLIER'S Pot ROSES are now fit to send out. Fine healthy bushy plants, on Seedling Briar Stock, by the dozen, 100, or 1000.
LISTS free. ROSE BLOOMS throughout the year.
The Nurseries, Winchester.

**Verbenas—Verbenas.**
JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other varieties of good strong Spring-struck Cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included, for cash with order.
Queen's Road Nursery, Markhouse Common, Walthamstow.

FOR SALE, TREE FERNS, in full foliage; trunks measure from 3 to 5 feet. Price reasonable.
H. S. PYNE, York Nursery, St. Anne's Road, Stamford Hill, N.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

LAPAGERIAS.
WHITE, extra strong, 42s. each; do., 31s. 6d. each; smaller, 21s. each
RUBRUM, strong, 10s. 6d. each.
ROSEA, strong, 7s. 6d. each.
Price to the Trade on application.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

**To the Trade.**
SCARLET RUNNERS.
JAMES CARTER AND CO. will be pleased to quote very low prices, on application to
237 and 238, High Holborn, London, W.C.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Cauliflower Plants—Cauliflower Plants.**
R. MAY, The Nurseries, Leyburn, Yorks., has a few thousands of good autumn sown plants of WALCHEREN CAULIFLOWER, for immediate disposal at 4s. per 100. Apply as above. Cash to accompany all orders.

## SALES BY AUCTION.

**Exhibition Crotons, Latanias, Tree Ferns, and HALF SPECIMEN ERICAS.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, May 10, at half-past 12 o'Clock precisely, by direction of a Gentleman giving up exhibiting large plants, a splendid lot of Specimen and Half Specimen Plants, in fine condition; they comprise CROTONS, 3 to 4 feet high and 3 to 4 feet across; LATANIA BORBONICA, splendid leaves, spreading 8 to 9 feet; the beautiful CIBOTIUM SCHIEDEI, DRACÆNAS, and the finest varieties of ERICAS in Half and Quarter Specimens.

On view morning of Sale, and Catalogues had.

**Tuesday Next.**
ORCHIDS in FLOWER and BUD.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY NEXT, May 10, at half-past 12 o'Clock precisely, Specimen CYPRIPEDIUMS, DENDROBES, ODONTOGLOSSUMS, ONCIDIUMS, CATTLEYAS, &c., in flower; also sixteen cases of ODONTOGLOSSUM ALEXANDRÆ, from Bogota; STOVE and GREENHOUSE PLANTS, &c., and a fine plant, in flower, of CATTLEYA SKINNERI "VARIETY"—received medal at Royal Horticultural Society's last meeting.

On view after 2 o'Clock the day prior and morning of Sale, and Catalogues had.

**Tuesday Next.**
16 CASES of ODONTOGLOSSUMS from BOGOTA.

MR. J. C. STEVENS' will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY NEXT, May 10, at half-past 12 o'Clock precisely, 16 cases of ODONTOGLOSSUM ALEXANDRÆ as imported; many fine varieties appear to be amongst this lot, which is well worth attention.

May be viewed the morning of Sale, and Catalogues had.

**Thursday Next.**
VALUABLE IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, May 12, at half-past 12 o'Clock precisely, a large importation of ONCIDIUM VARICOSUM ROGERSI—this is one of the most beautiful species; a fine lot of CATTLEYA REGALIS, very magnificent species; ODONTOGLOSSUM ALEXANDRÆ, in specially fine varieties; ODONTOGLOSSUM ALEXANDRÆ LEHMANNI; a superb lot of CYPRIPEDIUM VITTATUM BREVE, Rchb. f.—the plants are in the finest condition, full of green foliage and breaks; ONCIDIUM DASYTILE, CONCOLOR and FORBESII; CATTLEYA TRIANÆ in largest masses—one of these measures 12 feet in circumference; CATTLEYA VELUTINA, LÆLIA PERRINII and CRISPA, and other Orchids.

On view morning of Sale, and Catalogues had.

**Monday Next.**
ORCHIDS IN FLOWER, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, 150 lots of Established ORCHIDS, in Flower or in Bud; 250 lots of Established Orchids, amongst which will be found many rare and fine Plants; and 100 lots of various Imported Orchids

On view morning of Sale. Catalogues at the Mart, and 8, New Broad Street, E.C.

**Ryde's Hill, near Guildford.**
CLEARANCE SALE, by order of W. Whitley, Esq., who is leaving the neighbourhood.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Ryde's Hill, about two miles from Guildford Station, on TUESDAY, May 10, at 12 o'Clock precisely, the whole of the valuable collection of STOVE and GREENHOUSE PLANTS, including many fine specimens; several handsome FERNS and PALMS, 7000 Bedding Plants, 4 Half-bred Alderney COWS, a capital LANDAU (for one or a pair), by Offord; a well-made WAGGONETTE, by Kelley; Light Spring CART, 4-wheel TRAP, 100 Head of POULTRY, and sundry items of HOUSEHOLD FURNITURE.

May be viewed the day prior to the Sale. Catalogues had of Mr. MEARING, the Gardener, on the Premises; and of the Auctioneers and Land Agents, 8, New Broad Street, E.C., and Leytonstone, E.

**Fulham, S.W.**
IMPORTANT SALE.—EXPIRATION OF LEASE.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Osborn & Sons (who are removing their Glass Erections to new premises) to SELL by AUCTION, at the Nurseries, Fulham, S.W., on TUESDAY and WEDNESDAY, May 17 and 18, at 12 o'Clock precisely each day, a valuable and choice assortment of STOVE and GREENHOUSE PLANTS, in great variety—specimen and half-specimen Palms, a quantity of Azalea indica and Camellias, Exotic and Hardy Ferns, and other Stock.

May be viewed. Catalogues obtained on the Premises, or at the Auctioneers' Offices, 8, New Broad Street, E.C., and Leytonstone, E.

**At The Gardens, "Oakwood," Crayford, Kent.**

MR. DANN has received instructions to SELL by AUCTION, on TUESDAY, May 17, at 12 for 1 o'Clock, on the Premises, the valuable Collection of 30,000 BEDDING, STOVE, and GREENHOUSE PLANTS, comprising 10,000 Bedding Geraniums of the leading varieties, 3000 Calceolarias, also Verbenas, Ageratum, Lobelia, Pyrethrum, Mesembryanthemum, Alternanthera, Coleus, Iresine, Echeveria, 250 Pelargoniums, 300 Chrysanthemums, 200 Coleus, 500 Ferns, 50 Dracænas, valuable Orchids, Camellias, Crotons, &c.

May be viewed the day previous and morning of Sale. Catalogues had of Mr. A. TOMALIN, at The Gardens, "Oakwood," and of the Auctioneer and Estate Agent, Bexley, Kent.

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TO BE SOLD, with Immediate Possession, a First-class Old-established NURSERY and SEED BUSINESS, in thorough working order, in the leading thoroughfare, five miles south of London; owing to failing health of proprietor. Any one with a fair amount of capital will find this a profitable investment. Apply, in first instance by letter only, to

B. F. S., Messrs. Nutting & Sons, Seed Merchants, 60, Barbican, London, E.C.

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TO BE LET or SOLD, a NURSERY (small Freehold) and SEED SHOP, five minutes' walk from Station. For particulars apply

P. SIMPSON, Victoria Nursery, Romford, Essex.

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TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are 8½ Acres of deep rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business. For particulars apply to

J. WATSON, 38, Crown Street, Bury St. Edmund's.

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TO BE LET, from Michaelmas Next, CASTLE HILL FARM, Addington, comprising 138 Acres of Arable and Pasture Land, with good House and Buildings, &c. The Farm being only 4½ miles from Croydon and 12 from London, is well suited for Market Gardening purposes. Would be let on moderate terms.

For further particulars apply to GEO. GRAHAM BELL, Land Agent and Valuer, Pall Mall East, S.W.

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**Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.**

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 8, New Broad Street, E.C.

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INTERNATIONAL POTATO EXHIBITION.

President, the Right Hon. the Lord Mayor of London.

The SEVENTH ANNUAL EXHIBITION will take place at the Crystal Palace on SEPTEMBER 20 and 21, 1881. Schedules of Prizes and all particulars may be obtained on application to J. A. McKENZIE, Secretary.

Tower Chambers, Moorgate Street, London, E.C.

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BURTON-ON-TRENT FLORAL and HORTICULTURAL SOCIETY.—The First Exhibition of the Season of Plants, Flowers, Fruit, and Vegetables, will be held in the Hay, Burton-on-Trent, on WEDNESDAY, June 22. £20, £10, £5, for the best Twelve Stove or Greenhouse Plants, &c.

Schedules of Prizes and any information may be obtained from the Secretary, to whom Nurserymen and others wishing to Exhibit should apply. R. B. BARRATT, Secretary.

Abbey Cottage, Horninglow Street, Burton-on-Trent.

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PELARGONIUM SOCIETY.—NOTICE IS HEREBY GIVEN that the ANNUAL EXHIBITION of the PELARGONIUM SOCIETY will be held, by permission of the Council of the Royal Horticultural Society, in the Gardens, at South Kensington, on TUESDAY, June 28. Members only can compete for the Prizes offered.

The PELARGONIUM SOCIETY'S CERTIFICATE of MERIT will be awarded, on the conditions already announced in the Schedule of Prizes for 1880, to deserving Seedlings exhibited at the Annual Exhibition, and also to those produced at the meetings of the Royal Horticultural Society to be held on June 14 and July 12. Both Members and Non-members may compete for this honorary award on giving the notice required by the Schedule, a copy of which may be obtained on application to

Mr. SHIRLEY HIBBERD, Hon. Sec.

15, Brownswood Park, London, N.

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LIVERPOOL HORTICULTURAL ASSOCIATION.—The THIRD GRAND SUMMER EXHIBITION of Plants, Flowers, Fruit, and Vegetables will be held in Sefton Park on SATURDAY, July 30, and MONDAY, August 1, when Prizes to the value of over THREE HUNDRED and FIFTY POUNDS will be offered. Schedules on application to EDWARD BRIDGE, Secretary.

White Brooke Cottage, Hayton, near Liverpool.

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**Parish of St. George, Hanover Square, W.**
TO CONTRACTORS, MARKET GARDENERS, and OTHERS.

THE VESTRY of the PARISH of ST. GEORGE, Hanover Square, W., are prepared to RECEIVE TENDERS from persons who may be willing to undertake the REMOVAL of STABLE MANURE and COW DUNG from any Mews, Yards, or other places within the portions of the Parish known as the In Wards and Out Wards respectively, in accordance with a Specification and Agreement, which may be had on application to the Surveyor, at his Office, 1, Pimlico Road, S.W., and from whom any further information may be obtained.

Sealed Tenders, endorsed "Tender for the Removal of Stable Manure," and addressed to the undersigned, must be sent in on or before MONDAY, the 16th inst. The Vestry do not bind themselves to accept the lowest or any Tender.

(Signed). J. H. SMITH, Vestry Clerk.

Vestry Offices, Mount Street, W., May 3.

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FERNS, STOVE, and GREENHOUSE PLANTS.—The whole stock, having to be cleared out by July, will be sold in lots to suit Purchasers, at a considerable reduction for Cash.

The Fernery, Finchfield, Wolverhampton.

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FERNS from Devonshire, Cornwall, and Somerset. Best time to plant. Instruction Book for Making Rockery, Planting Ferns, &c., with each 5s. order. 14 named varieties, 7s. per 100; small (post), 30, 2s.; fine Asplenium fontanum, Septentrionale and Holly Ferns, 1s. each; the three, 2s. 6d. 1000 varieties of British and Exotic Ferns. CATALOGUE, 2d. Established 25 years.

E. GILL, Lodging House Keeper, Lynton, Devon.

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CYCLAMENS for Winter Flowering.—Nice young plants of the famous Covent Garden strain, 1s. 6d. per dozen; two dozen, 2s. 6d.; extra strong, 2s. per dozen; 10s. per 100; Seed, 1s.

TELEGRAPH CUCUMBER Rollisson's variety, 20 seeds, 1s.

Choice ANEMONE, 1s. All post-free for cash only.

G. CORNHILL, Byfleet, near Weybridge Station.

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LEE'S ARGENTÆFLORA VIOLET (for full description of which see April 30).—This nearly white, very sweet, long-stemmed Violet can be recommended, for its almost perpetual flowering showy habit, as a great acquisition. Plants now ready by post at 15s. per doz., 8s. 6d. per half-doz., 4s. 6d. per quarter-doz. Also Lee's VICTORIA REGINA, and Lee's ODORATISSIMA, 6s. per doz., 3s. 6d. per half-doz.—GEO. LEE, F.R.H.S. Market Gardener, Clevedon, Somerset.

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**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.

Bardney Manor, Lincoln.

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**To the Trade.**
MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.

Seed Growing Establishment, Wisbech.

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**Roses for 1881.**

WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, beg to offer strong plants of the undermentioned first-rate English raised novelties, 7s. 6d. to 10s. 6d. each:—

PRIDE OF WALTHAM (H.P.), delicate flesh colour; Two First-class Certificates.
LADY SHEFFIELD (H.P.), brilliant rosy-cerise; First-class Certificate.
RED GAUNTLET (H.P.), bright scarlety-crimson.
English raised ROSES of 1879 and 1880.
COUNTESS OF ROSEBERY (H.P.), brilliant carmine-rose; Three First-class Certificates. Price 2s. 6d. each.
CROWN PRINCE (H.P.), bright purple-crimson, 3s. 6d. each.
DUCHESS OF BEDFORD (H.P.), dazzling scarlet-crimson; First-class Certificate, 2s. 6d. each.
LITTLE GEM (Moss), crimson, beautifully mossed, 3s. 6d. each.
MASTERPIECE (H.P.), rich rosy-crimson, 3s. 6d. each.
A large general stock of ROSES for all purposes.
ROSES, in pots, for Outdoor Planting, 10s. 6d. to 30s. per dozen.
" " Climbing, 10s. 6d. to 30s. per dozen.
" " Pot Culture, 12s. to 30s. per dozen.
Half Specimen and Specimen ROSES, in pots, 5s. to £5 5s. each.
Priced Descriptive CATALOGUES free by post on application. Paul's Nurseries, Waltham Cross, Herts.

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**New Bedding Plants.**

ACHYRANTHES ATROPUPUREA VIOLACEA.—A cross between A. Wallisii and A. brilliantissima; leaves flat, roundish, velvety-purple with violet sheen. A quite new type. Price 4s. each, 20s. for six, 30s. for a dozen.

ALTERNANTHERA ENSIFOLIA.—Dwarf habit, leaves lanceolate, tinted with yellow and carmine on a metallic ground. Price 2s. each, 10s. 6d. for six.

ALTERNANTHERA ROSEA.—Fine variety, with a tint resembling that of amœna, very effective in beds, and more hardy than the preceding. Price 2s. each, 10s. 6d. for six.

COLEUS REINE DES BELGES.—The richest coloured of all the Coleus. Price 2s.

CATALOGUE of Plants suitable for Carpet-bedding sent free on demand

ED. PYNAERT VAN GEERT, Ghent, Belgium.

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**Specially Cheap Offer of Bedding Plants.**
VERBENAS.—50,000 now ready for Sale.

S. BIDE is now prepared to supply his numerous customers, as in previous seasons, really good, strong, spring-struck plants of Purple, Scarlet, White, and Pink Verbenas, at 6s. per 100; 50s. per 1000. Best Exhibition Varieties, 8s. per 100.

Strong healthy Cuttings of the above at half price. Free by post.

DAHLIAS, true to name, well established, in 60-pots, 25s. per 100.
GERANIUM, Flower of Spring, strong autumn-struck plants, 12s. per 100.
AGERATUM, dwarf varieties, 6s. per 100.
IRESINE, Lindenii, 6s. per 100.
HELIOTROPE, light and dark, 6s. per 100.
COLEUS, Verschaffeltii, 8s. per 100.
CALCEOLARIA, Golden Gem and other varieties, strong autumn-struck plants, 8s. per 100.

Packages free. Cash must accompany all Orders. List of varieties of all the above free by post on application to

S. BIDE, Alma Nursery, Farnham, Surrey.

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ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

### Cheap Bedding Plants.

H. I. HARDY, F.R.H.S., offers fine strong and healthy autumn-struck Plants of the following :—

GERANIUMS, Vesuvius and other best scarlets, from single pots, 2*s.* per dozen; stores, 12*s.* per 100. Master Christine and Madame Vaucher, single pots, 2*s.* 6*d.* per dozen, 15*s.* per 100. New Life, Crystal Palace Gem, and May Queen, from single pots, 3*s* per dozen.

CALCEOLARIA, aurea floribunda, from single pots, 1*s.* 6*d.* per dozen ; 10*s.* per 100.

VERBENAS, 1*s.* 9*d.* per dozen from single pots, 8*s.* per 100 from stores.

LOBELIAS, Emperor William, proved the best dwarf blue for borders, 10*s.* per 100 from single pots, 6*s.* per 100 from stores. Seedlings, 2*s.* 6*d.* per 100, 20*s.* per 1000.

DAHLIAS, fine named Show varieties, in single pots, 4*s.* 6*d.* per dozen.

Terms cash. Package free, and extra Plants for carriage. A reduction made for quantities. CATALOGUE free by post.

STOUR VALLEY SEED GROUNDS, BURES, SUFFOLK.

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NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.

Near 6000 species and varieties of plants are included in this List of eighty to ninety pages. No illustrations are given, nor any exaggerated descriptions to induce purchasers to buy varieties, which on proving they generally find so woefully disappointing. Special attention is given to the undermentioned classes, and purchasers selecting from our Catalogue may feel assured that our firm possesses large collections of the finest sorts :—

CHRYSANTHEMUMS, GERANIUMS, FUCHSIAS, and other Soft-wooded Plants for Garden or Greenhouse.
DAHLIAS, PANSIES, PYRETHRUMS, CARNATIONS, and other Florists' Flowers.
HERBACEOUS and ALPINE PLANTS, many hundreds of the finest and most useful varieties.
BEDDING PLANTS, all the varieties required for any style of Bedding.
SPRING FLOWERING PLANTS, the most reliable sorts, in thousands of strong plants.
STOVE and GREENHOUSE PLANTS, Flowering and Ornamental Foliage varieties, various sizes, from quite young plants to quarter specimens, to suit various classes of purchasers.

The prices and plants need only to be compared with those of other firms, to prove that in no instance can buyers of plants who study both price and quality be supplied more advantageously than by ourselves.

The undernamed Collections are all of the finest sorts, and as varied in colour as possible, fine for exhibition or home decoration, and as certain to be satisfactory to purchasers as collections can be. All are our selection.

| | Per doz.—*s.* | *d.* | | Per doz.—*s.* | *d.* |
|---|---|---|---|---|---|
| Abutilons, in variety .. | 3 | 0 | Ivies, Irish .. .. | 3 | 0 |
| Achimenes, in variety .. | 3 | 0 | Lantanas .. .. .. | 2 | 6 |
| Ageratums, small plants, per 100, 5*s.* .. .. | 1 | 0 | Lobelias, small, per 100, 4*s.* .. .. .. | 1 | 0 |
| Ageratums, in pots, per 100, 15*s.* .. .. | 2 | 6 | Lobelias, in pots .. | 2 | 6 |
| Antirrhinums .. .. | 3 | 6 | Mesembryanthemum fol. var., per 100, 10*s.* | 2 | 0 |
| Begonias, Tuberous, from 4*s.* to .. .. | 18 | 0 | Mimulus, in variety .. | 3 | 0 |
| Other sorts .. .. | 3 | 0 | Myosotis, per 100, 6*s.* .. | 1 | 6 |
| Bouvardias, 4*s.* to .. | 6 | 0 | Pæonies, white, blush crimson, and other shades .. .. .. | 6 | 0 |
| Caladiums .. .. | 9 | 0 | Pansies, show, per 100, 25*s.* .. .. .. | 3 | 6 |
| Carpet Bedding Plants (see Catalogue). | | | Pansies, Bedding, about 20,000 to select from, per 100, 12*s.* .. .. | 2 | 0 |
| Carnations and Picotees, 12 plants .. .. | 7 | 0 | Phloxes, per 100, 25*s.* .. | 3 | 6 |
| 12 pairs .. .. | 12 | 0 | Pelargoniums, Show, Fancy, and French, 6*s.* to .. .. .. | 9 | 0 |
| Chrysanthemums, in great variety, per 100, 15*s.* .. .. | 3 | 0 | Pinks, per 100, 25*s.* .. | 3 | 6 |
| Clematis to name .. | 9 | 0 | Potentillas, Double .. | 6 | 0 |
| Coleus .. .. .. | 3 | 0 | Polyanthus, Seedlings, per 100, 5*s.* .. .. | 1 | 0 |
| Dactylis elegantissima, per 100, 6*s.* .. .. | 1 | 0 | Polyanthus, named sorts (see Catalogue). | | |
| Dahlias, per 100, 20*s.* .. | 3 | 6 | Primroses, Double, 4*s.* to .. .. .. | 9 | 0 |
| Epiphyllum .. .. | 9 | 0 | Primroses, old Double Velvet, 1*s.* 6*d.* each. | | |
| Ferns, Stove and Greenhouse, 6*s.* to .. .. | 9 | 0 | Primroses, Single, assorted colours .. | 2 | 0 |
| Fuchsias, per 100, 15*s.* .. | 3 | 0 | Pyrethrums, Double .. | 6 | 0 |
| Gardenia florida .. | 6 | 0 | Rock Plants, per 100, 15*s.* .. .. .. | 3 | 0 |
| Greenhouse Plants .. | 9 | 0 | Salvias .. .. .. | 3 | 0 |
| Geranium, Variegated .. | 3 | 6 | Saxifrages .. .. | 3 | 0 |
| Geranium, Double .. | 3 | 0 | Sedums .. .. .. | 3 | 0 |
| Geraniums for Bedding | 3 | 0 | Sedum acre aurea, elegans, and glaucum, per 100, 8*s.* .. .. | 1 | 6 |
| Geraniums for pot culture, 3*s.* to .. .. | 6 | 0 | Stove Plants, 6*s.* to .. | 9 | 0 |
| Gladiolus, splendid seedlings, per 100, 20*s.* .. | 3 | 0 | Succulents, 4*s.* to .. | 6 | 0 |
| Gladiolus Brenchleyensis, per 100, 6*s.* .. | 1 | 0 | Tropæolums .. .. | 3 | 0 |
| Gloxinias, 6*s.* and .. | 9 | 0 | Violas (immense stock of best sorts), per 100, 8*s.* to 12*s.* .. .. .. | 2 | 0 |
| Hardy Climbing Plants, in great variety, 6*s.* .. | 9 | 0 | Violets, sweet .. .. | 3 | 0 |
| Hollyhocks, Seedlings .. | 4 | 0 | Strawberry Runners (our collection containing varieties), per 100, 2*s.* 6*d.* | | |
| Helianthemums .. .. | 2 | 6 | | | |
| Herbaceous Plants, per 100, 20*s.* .. .. | 3 | 0 | | | |
| Heliotropes .. .. | 2 | 6 | | | |
| Hepaticas .. .. | 4 | 0 | | | |
| Iresine Lindeni, per 100, 10*s.* .. .. .. | 2 | 0 | | | |
| Iris, German .. .. | 3 | 0 | | | |
| Ivies, in variety .. | 6 | 0 | | | |

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

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GEORGE SMITH begs to call attention to the beautiful COLEUS raised by Dr. Sankey. The set of seven, a splendid collection in themselves, for 21*s.*

G. S. has also strong plants of two first-class Seedling FUCHSIAS, President and Magnum Bonum, the most unique Fuchsias that have been offered for years. 7*s.* 6*d.* each.

For description see back Advertisement, or a LIST on application.

Post-office Orders to accompany all orders from unknown correspondents.

Tollington Nursery, Hornsey Road, London, N.

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### Named Auriculas in Flower.

POPE AND SONS, having a surplus stock of a few sorts of AURICULAS, will send six plants, named, including two Green-edges, all in flower, package free, on receipt of Post-office Order for 10*s.*

King's Norton Nurseries, near Birmingham ; 120, 121, 122, Market Hall, Birmingham.

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FOR PRESENT SOWING—POST-FREE.

*☞ In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.*

Daniels' Prize Calceolaria.

| | Per Packet.—*s.* | *d.* | *s.* | *d.* |
|---|---|---|---|---|
| **AURICULA**, Daniels' Prize Alpine .. .. .. | | | 1 | 0 |
| **BEGONIA**, Tuberous-rooted, choicest mixed .. | 1 | 6 | & 2 | 6 |
| **CARNATION**, choicest double, from named flowers .. .. .. ..1*s.* 6*d.* | 2 | 6 | ,, 5 | 0 |
| ,, perpetual double, from named flowers .. | 2 | 6 | ,, 5 | 0 |

*From* Mr. PETER SINCLAIR, *Greenock.*

"You will observe by accompanying report of Greenock Autumn Flower Show competition that I carried off Two First Prizes for Carnations raised from your Seeds."

| | | | | |
|---|---|---|---|---|
| **CALCEOLARIA**, Daniels' Superb Prize ..1*s.* 6*d.* | 2 | 6 | ,, 5 | 0 |
| ,, new dwarf, spotted, fine .. .. .. | 1 | 6 | ,, 2 | 6 |

*From* Rev. Dr. THOMAS SMITH, *Edinburgh.*

"I have had a splendid crop of seedling Calceolarias from your Seed. Some of the flowers were the most beautiful I ever saw."

| | | | | |
|---|---|---|---|---|
| **CINERARIA HYBRIDA**, from a splendid strain 1*s.* 6*d.* | 2 | 6 | ,, 5 | 0 |

*From* Mr. M. MOODY, Gardener to J. Rendall, Esq., *Wootton.*

"I must tell you the Cinerarias, the Seed of which I received from you last year, are now in bloom, and the admiration of every one ; many of them are considerably larger than a crown piece."

| | | | | |
|---|---|---|---|---|
| **CYCLAMEN PERSICUM**, beautiful varieties, mixed .. .. .. .. .. .. | 1 | 6 | ,, 2 | 6 |
| **DAISY**, choicest double, mixed .. .. .. | 0 | 6 | ,, 1 | 0 |
| **GLOXINIA HYBRIDA GRANDIFLORA**, very choice, mixed .. .. .. .. | 1 | 6 | ,, 2 | 6 |
| **PANSY**, Daniels' Show and Fancy .. .. | 1 | 6 | ,, 2 | 6 |
| ,, Prize Blotched, magnificent varieties .. | 1 | 6 | ,, 2 | 6 |
| ,, Daniels' improved striped, beautiful .. .. | | | 1 | 6 |

*From* W. MARSHALL, Esq., F.R.S., *Dublin.*

"Every Seed of the two packets of Pansy you sent me grew, and I have now a magnificent bloom of the finest Pansies in the neighbourhood."

| | | | | |
|---|---|---|---|---|
| **PICOTEE**, choicest double, from stage flowers, 1*s.* 6*d.* | 2 | 6 | ,, 5 | 0 |
| **PRIMULA**, Daniels' choicest red .. .. .. | 1 | 6 | ,, 2 | 6 |
| ,, Daniels' choicest white .. .. .. | 1 | 6 | ,, 2 | 6 |
| ,, Daniels' choicest mixed .. ..1*s.* 6*d.* | 2 | 6 | ,, 5 | 0 |
| ,, Fern-leaved, very choice .. .. .. .. | | | 1 | 6 |
| ,, Superb double-flowered, mixed .. .. | 2 | 6 | ,, 5 | 0 |

*From* M. H. VOSS, Esq., *Streatham.*

"The Primula Seed you sent me last year gained my Gardener First Prize at the Brixton Hill Show. The Plants now in bloom far surpass your Catalogue Illustrations."

| | | | | |
|---|---|---|---|---|
| **PRIMROSE**, choicest mixed, from a fine collection of brilliant varieties .. .. .. .. | | | 2 | 6 |
| **POLYANTHUS**, finest gold-laced .. .. .. | | | 1 | 0 |
| **SWEET WILLIAM**, Daniels' superb strain .. .. | | | 1 | 0 |

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### New and Choice Plants.

JOHN H. LEY, Royal Nursery, Croydon, can supply splendid young plants, now growing freely, and fit to pot on for spring, as follows :—

| | Each—*s.* | *d.* |
|---|---|---|
| PAULLINIA ARGENTEA, very elegant .. .. | 5 | 0 |
| ,, THALICTRIFOLIA .. .. .. .. .. | 1 | 6 |
| ADIANTUM AUREUM (new Golden Maidenhair) .. | 5 | 0 |
| ARALIA GRACILLIMA .. .. .. .. .. | 3 | 6 |
| ,, VEITCHII .. .. .. .. .. | 3 | 6 |
| ,, ELEGANTISSIMA .. .. .. .. .. | 3 | 6 |
| ,, FILICIFOLIA .. .. .. .. .. | 2 | 6 |
| ,, LACINIATUS .. .. .. .. .. | 3 | 6 |
| BERTOLONIA VAN HOUTTEI .. .. .. | 3 | 6 |
| SONERILLA ARGENTEA .. .. .. .. | 2 | 6 |
| TORENIA BAILLONI .. .. .. .. .. | 2 | 6 |
| ,, FOURNERI .. .. .. .. .. | 1 | 6 |
| ,, EDENTULA SUPERBA .. .. .. .. | 2 | 6 |
| MARANTA MASSANGEANA .. .. .. .. | 1 | 6 |
| LASIANDRA FLORIBUNDA .. .. .. .. | 1 | 0 |
| SELAGINELLA AUREA .. .. .. .. .. | 1 | 0 |
| NEPHROLEPIS DUFFEI .. .. .. .. | 1 | 6 |
| VUCCA FILAMENTOSA VARIEGATA .. .. | 3 | 6 |
| PHYLLANTHUS PURPUREUS .. .. .. | 2 | 6 |
| CARYOTA TEYSMANIANA .. .. .. .. | 2 | 6 |
| GLAZIOVA INSIGNIS .. .. .. .. .. | 2 | 6 |
| LATANIA GLAUCOPHILA .. .. .. .. | 3 | 6 |
| MUSA ZEBRINA .. .. .. .. .. .. | 7 | 6 |
| TERMINALIA ELEGANS .. .. .. .. | 5 | 0 |

The collection of twenty-four choice plants for £3 3*s.*, package included, and other plants gratis to pay for carriage.

J. H. LEY, Royal Nursery, Croydon.

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SPECIAL OFFER of CHOICE PLANTS.

FUCHSIAS, 12 best Exhibition varieties, 1*s.* 6*d.* ; 12*s.* per 100.
,, 12 new Exhibition varieties, 2*s.* 6*d.* ; 20*s.* per 100.
COLEUSES, 12 new varieties, 2*s.* 6*d.* ; 20*s.* per 100.
,, 18 new varieties, 3*s.* 6*d.*
AGERATUM, Dwarf, 12 for 1*s.* 3*d.* ; 8*s.* per 100.
IRESINE, 12 for 1*s.* 2*d.* ; 8*s* per 100.
VERBENAS, 12, in 4 varieties, 1*s.* 2*d.* ; 6*s.* per 100.
,, 12, in 8 varieties, 1*s.* 4*d.* ; 8*s.* per 100.
CHRYSANTHEMUMS, 12, in 12 varieties, 2*s.*
,, 100, in 50 varieties, 12*s.*
PELARGONIUMS, 12 Show and Fancy varieties, 2*s.* 6*d.* ; 18*s.* per 100.
,, 100 Show and Fancy, in 25 varieties, 20*s.*
GERANIUMS, Bronze, Beauty of Calderdale, 12 for 2*s.* 6*d.* ; 18*s* per 100.
,, ,, Maréchal McMahon, 12 for 2*s.* 6*d.* ; 18*s.* per 100.
,, ,, mixed varieties, 12 for 2*s.* ; 15*s.* per 100.
,, Variegated Bijou, 12 for 2*s.* ; 12*s.* per 100.
,, Double, 12 new varieties, 2*s.* 6*d.* ; 20*s.* per 100.
,, Zonal and Scarlet, 12 varieties, 2*s.* 6*d.* ; 18*s.* per 100.
,, ,, ,, mixed, 12 for 1*s.* 6*d.* ; 10*s.* per 100.
CALCEOLARIAS, Golden Gem, 12 for 1*s.* 3*d.* ; 8*s.* per 100.

All well rooted and package free.
Terms—Cash with all Orders.

FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

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### Rare and Valuable Orchids, cheap.

J. H. LEY, Croydon, can offer fine plants, imported a few months since, but all rooting and growing freely, at greatly reduced prices :—

CATTLEYA MOSSIÆ, extra fine, will produce plenty of flower, 42*s.* and 60*s.* per dozen.
,, INTERMEDIA, 42*s.* per dozen.
,, CITRINA, finest ever imported, 3 to 5 new growths, 42*s.* and 60*s.* per dozen.
LÆLIA MAJALIS, 200 more bulbs, growing well, 30*s.* per doz.
DENDROBIUM DEVONIANUM, strong new growths, 42*s.* and 60*s.* per dozen.
,, HOOKERI, strong new growths, 42*s.* per dozen.
,, CAMBRIDGEANUM, strong new growths, 60*s.* per doz.
,, FREEMANI, 42*s.* per dozen.
CŒLOGYNE OCCELLATA (rare), 42*s.* per dozen.
CYPRIPEDIUM NIVEUM (established), 60*s.* per dozen.
MASDEVALLIA HARRYANA, 60*s.* per dozen.
,, TOVARENSE, 60*s.* per dozen.

100 choice and valuable ORCHIDS, 50 sorts, for 210*s.*, established plants, flowering size. Worth 50 guineas at London Catalogue prices. All packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

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### To the Trade.—Large Plants in 48's of

GERANIUMS—viz., Vesuvius, Wonderful, Madame Thibaut, Master Christine, and Madame Vaucher, in quantities of not less than two dozen, at 4*s.* per dozen. These are the same size and quality as sent to Covent Garden Market. Terms cash. Packages free.

GEO. POULTON, Fountain Nursery, Angel Road, Edmonton.

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SPRING FLOWERS.

POLYANTHUS, choice varieties, including Gold and Silver Chaio, Hose-in-hose, &c.
PRIMROSES, double white, lilac, yellow, crimson, and choice single varieties.
COWSLIPS, Giant and other sorts.
AURICULAS, Alpine and double dark varieties.
HEPATICAS, red, white, and blue.
CHRISTMAS ROSES, in variety.
SWEET WILLIAMS, very choice sorts.
WALLFLOWERS, yellow and dark.
MYOSOTIS DISSITIFLORA, spring Forget-me-not.
COLEUS, in first-class varieties.

Mr. COOPER, Calcot Gardens, Reading, Berks.

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### Bothwell Bank Prolific Strawberry.

DICKSONS AND CO., Pilrig Park Nurseries, Edinburgh, have acquired the entire stock of this new Strawberry, which was awarded a First-class Certificate at the Royal Caledonian Horticultural Society's Spring Show in 1880, and which has taken First Prizes wherever exhibited as a Forcing Strawberry. A correspondent in the *Gardeners' Chronicle* of April 30 writes : "I took up a plant at random and counted no less than thirty-two berries, some of which were an ounce in weight . . . I have seen it for the last two years, and can without hesitation say that it is a great acquisition to Strawberry Growers either for forcing or general crop, particularly so to growers for the market."

Plants, established in pots, 1*s.* 6*d.* each, 12*s.* per dozen, 75*s.* per 100.

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FLOWER SEEDS in PENNY PACKETS.—One hundred of the most showy, popular, and beautiful varieties, including finest double ASTER and Ten-week STOCK, Scarlet LINUM, MIGNONETTE, NEMOPHILA, SWEET PEAS, CONVOLVULUS, Dwarf NASTURTIUMS, CLARKIA, COLLINSIA, CALLIOPSIS, &c., post-free, 8*s.* 50 packets, including as above, post-free, 4*s.* 2*d.* ; 25 ditto, 2*s.* 2*d.*

Each packet contains sufficient seed for making two or three nice patches. Excellent for distribution amongst cottagers or children. All the varieties are easy of cultivation.

DANIELS BROS., The Queen's Seedsmen, Norwich.

STRONG PLANTS.
100 Choice ZONAL GERANIUNS, all the best kinds, for 24s.
100 Choice BRONZE ditto, the best, 25s.
100 Choice SILVER-EDGED, Fancy flowering ditto, 16s.
100 Choice PHLOX, well rooted, 16s.
100 Pot Roots of the best DAHLIAS, 20s.
1000 CUTTINGS of the best GERANIUMS, Zonal, Bronze, Tricolor, and Silver-edged, for £5.
No charge for packing. Cash with order.
CHARLES BURLEY, Brentwood.

POT ROSES and CLEMATIS.—A large and very extensive Collection of the above, including the finest varieties, ready for delivery in June. Early orders solicited.
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

Special Cheap Offer.—Surplus Stock of
SEED POTATOS.—All the leading varieties. To clear out very low prices will be accepted. LIST of kinds and quantities on application.
KERR AND FOTHERINGHAM, Royal Seed Establishment, Dumfries, Scotland.

DAHLIAS and TEA ROSES. — Show, Fancy, and Bouquet DAHLIAS, very fine plants of the best varieties, at £1 per 100.
Well established, strong healthy plants, of the finest TEA ROSES, 12s. per dozen, £4 and £5 per 100. Lists on application.
J. HOUSE, Eastgate Nurseries, Peterborough.

NEW ROSES for 1881, in pots. TEA and NOISETTE ROSES, in pots. Price Lists free.
CLEMATISES, best new and old sorts. New List to be ready (D.V.) by end of May.
EWING AND CO., Eaton, Norwich.

Verbenas—Verbenas.
WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff. 6s. per 100, 50s. per 1000; strong plants from single pots, full of cuttings, 12s. per 100; 100 rooted cuttings, in twelve best show kinds, 8s., packing included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

50,000 Pelargonium Vesuvius.
WILLIAM BADMAN is sending out VESUVIUS, from store pots, 8s. per 100, 75s. per 1000, packing included. Send cash with order.
Cemetery Nursery, Gravesend, S.E.

Now is the Best Time to Transplant Hollies.
HOLLIES, STANDARD, GOLD and SILVER, perfect Specimens, from 10s. 6d. to 31s. 6d. each.
PYRAMIDS, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each.
GREEN HOLLIES, for Hedges, 12 to 15 inches, 21s. per 100; 15 to 18 inches, 30s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.—New Roses for 1881.
LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,
Gratis and post-free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

CHOICE FERNS.—100 new, rare, and beautiful Ferns for 63s., in fifty distinct varieties, many of which are rarely to be met with. At London catalogue prices could not be bought under £15. All strong plants, fit to pot on and make a good show when bedding plants are cleared out. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

To the Trade.
PELARGONIUMS, Show, Fancy, and Decorative, best named sorts, good plants, to flower next month, in 48-pots, 8s. per dozen, 60s. per 100; in 32-pots, 12s. per dozen, 80s. per 100.
CHRYSANTHEMUMS, best sorts, large-flowered Japanese and Pompon, in thumb-pots, 25s. per 100.
DAHLIAS, best varieties, in small thumbs, 20s. per 100.
DOUBLE PYRETHRUMS, best named sorts in variety, 25s. per 100.
GARAWAY & CO. offer the above: their own selection.
GARAWAY & CO., Durdham Down Nurseries, Clifton, Bristol.

ILLUSTRATED CATALOGUE of PERENNIALS.—The present year's issue of this Catalogue, containing many rare and choice Hardy Perennials, also Selections of Hardy Terrestrial Orchids, Primula Sieboldii, Climbing and Trailing Plants, Aquatics and Bog Plants, Ornamental Grasses and Bamboos, Sarracenias, &c., may be had post-free upon application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

PETUNIAS (magnificent new double fringed). We beg to offer the above in good strong plants, 9s. and 12s. per dozen.
ROSES (Tea-scented), on own roots, 4½-in. pots, 10s. per doz.
PELARGONIUMS (show and fancy), 4½-in. pots, strong plants.
" Zonal, single and double, Pearson's, of 1880.
PANSIES and VIOLAS, in large quantity, 2s. to 4s. per doz.
ERICA, best hard-wooded sorts, in half and quarter specimens, and smaller plants.
AZALEA INDICA, in choice variety.
CATALOGUES on application.
Executors of HENRY WALTON, Edge End Nursery, Brierfield, near Burnley.

Vines—Vines—Vines.
J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

To the Trade.—Seed Potatos.
H. AND F. SHARPE have still to offer all the principal kinds of SEED POTATOS, at considerably reduced prices, in order to clear out. Special quotations on application.
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NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties are now ready, 2s. 6d., 3s. 6d. and 5s. each. Full particulars and testimonials free on application to
Messrs. JONES AND NORTH, Hope Nursery, Lewisham, Kent.

# ARTHUR VEITCH MEMORIAL

A Fund, to be called the "ARTHUR VEITCH MEMORIAL FUND," the proceeds to be dispensed through the GARDENERS' ROYAL BENEVOLENT INSTITUTION, for the benefit of aged and infirm GARDENERS, or their WIDOWS.

Subscriptions for the above object (not to exceed One Guinea from Head, or Half a Guinea from Under Gardeners) are respectfully solicited from all classes of Horticulturists.

Intending Subscribers are informed that the Fund will be CLOSED on SATURDAY, May 21, and the Committee hope the movement will continue to receive support from young Gardeners in all parts of the Kingdom, who lost in the deceased a sincere friend.

Subscriptions may be paid to any of the Collectors advertised in the *Gardeners' Chronicle* of February 5, or to either of the undersigned:

Mr. T. MANNING, Royal Exotic Nursery, King's Road, Chelsea, S.W.

Hon. Treasurer. { J. ROBERTS, Gunnersbury Park, Acton, London, W.

Hon. Secretaries. { W. WILDSMITH, Heckfield Gardens, Winchfield, Hants.
J. HUDSON, Gunnersbury House, Acton, London, W.
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CRANSTON'S NURSERIES.
(ESTABLISHED 1785.)
CATALOGUE
OF
*New English and French Roses*
for Spring of 1881,
DAHLIAS, CLEMATIS, PHLOXES, and CHOICE BEDDING PLANTS,
*Free on application to*
CRANSTON'S NURSERY & SEED CO.
(Limited),
KING'S ACRE, near HEREFORD.

Ferns a Speciality.
EXOTIC AND BRITISH FERNS.
IN great number and variety, suitable for Stove and Greenhouse cultivation, for Outdoor Fernteries and other purposes.
*Intending Purchasers before buying elsewhere should send for our SPECIAL LIST of CHEAP FERNS, which will be forwarded free on application.*
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

GEO. JACKMAN & SON,
(ESTABLISHED 1810,)
Cultivators of
FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
ROSES, RHODODENDRONS,
*Conifers and Hardy Climbers,*
THE CLEMATIS
A SPECIALITY.
*Descriptive Priced Catalogues free.*
WOKING NURSERY, SURREY.

WHOLESALE PRICES.—WHOLESALE PRICES.
SPECIAL OFFER.
*WOOD & INGRAM*
Have pleasure in offering:—
**PELARGONIUMS**, Show, French, Spotted, and Early Free-flowering (Market) varieties. Fine, robust plants, in bloom and coming into bloom, in 5-inch pots, 12s. per dozen, 75s. per 100.
**CALCEOLARIA, Herbaceous,** Fine Strain. Good Plants, in 5-inch pots, 9s. per dozen, 60s. per 100.
PACKAGE EXTRA.
*Special Trade Offer of Bedding Plants on Application.*
THE NURSERIES, HUNTINGDON, AND ST. NEOTS.

Spring Planting.
SEEDLING and TRANSPLANTED FOREST TREES.
PLANTS for GAME COVERTS,
ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c.—The immense stock of the above is in splendid condition, and special offers for large quantities will be made when desired.
CATALOGUES free on application.
The LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh.

Cheap Plants.—Special Offer.
WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denoy, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.
" TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.
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COVENT GARDEN NEGRO DWARF FRENCH (English saved). The best and most prolific variety grown.
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GEORGE SMITH begs to call the attention of his friends and the Public to this grand flower. It is in advance of all other White Zonals, the habit is as good as can be, remarkably free in flowering, with large truss of pure white, of great substance, and fine form. This, for Cut Flower and all purposes that WHITE PELARGONIUMS are grown for, appears all that can be desired. G. S. has it now in bloom, and will be pleased to show it to any one who may be in the neighbourhood. Strong plants, 5s. each.
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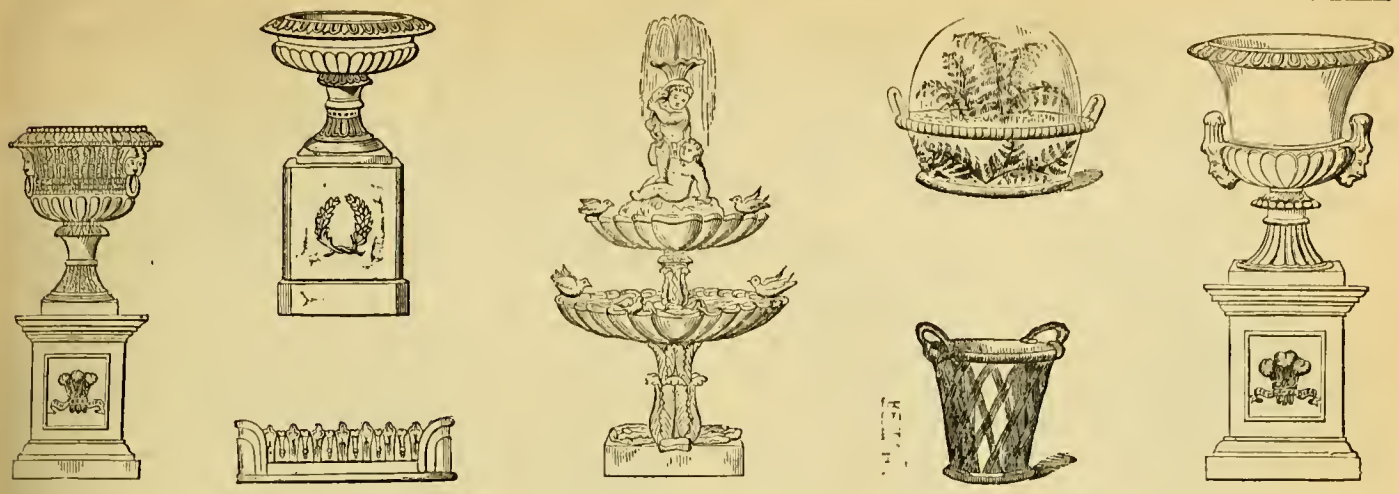

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**Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.**

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

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"The 'Archimedean' did the best work of any Lawn Mower exhibited."
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This simple Machine will cut turf and grass at the same time cleaning the lower part of the pathway which forms the gutter, throwing the rubbish on one side, making a clean cut of the Turf and leaving a smooth bottom to the pathway; acts for Weeding Gravel Walks, Hoeing, and Gathering the Refuse. It will cut out all kinds of Ornamental Flower Beds, &c, Water-courses, and Gutters. This Patent Machine has been shown in Hyde Park, where there are upwards of twenty miles of Turf-edging, and is considered to be the best implement for the purpose ever seen. It was sent to the Crystal Palace, where there are about ten miles of Garden-edging, besides all their Ornamental Flower Beds, and gave every satisfaction, a supply being sent in at once. The Machine shows at a glance Simplicity and Lightness in Construction, and, being so cheap, is at every one's command.

It can be sharpened with a stone in the ordinary way, and is sold in three sizes :—

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## W. CLARK'S
PATENT
## GRASS and CORN CUTTER.

This useful machine is used for Lawns, Banks, Grass Edgings, Round Flower Beds and places where the Lawn Mower cannot reach; will trim Shrubs, Ivy, and Creepers; cutting Clover, Rye, and other green crops; trimming Hay and Corn, Ricks, Thatch, &c. It is not intended to supersede the Lawn Mower but to supplement its use, and from the many and varied uses to which it can be applied will be found one of the most economical inventions ever offered to the public.

It is sold in five sizes, with or without trays.

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| The 8-inch Machine, complete with Roller and Tray | 21s. |
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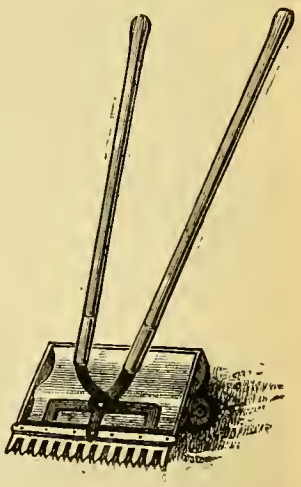

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*Plant Gladiolus during the Month of May for Autumn Decoration and to Cut for Vases, also the companion plants, the Flame and Orange-yellow coloured spotted Tiger flowers.*

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| 1 root each of 25 varieties | 10s. 6d., 15s., 21s., and 30s. |
| 1 root each of 50 varieties | 30s., 42s., and 63s. |
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The following Mixed Varieties of GLADIOLUS, in many colours :—

Unnamed choice seedling varieties of the highest types, 30s. per 100, 4s. 6d. per dozen.
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New Double-flowering PYRETHRUMS, in pots, ready to plant out. These flower during May and June.

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Hardy ANNUALS, Half-Hardy ANNUALS, BIENNIALS and PERENNIALS, each in selections, 2s. 6d., 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., 12s. 6d., 21s., 30s., and 42s.

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| 1 each in 30 vars. | 10 6 | to | 15 0 | 5 each in 30 vars. | 30 0 | to | 42 0 |
| 1 each in 50 vars. | 15 0 | to | 21 0 | 5 each in 50 vars. | 63 0 | to | 84 0 |
| 3 each in 12 vars. | 8 6 | to | 12 6 | 10 each in 12 vars. | 15 0 | to | 25 0 |
| 3 each in 20 vars. | 12 6 | to | 21 0 | 10 each in 20 vars. | 25 0 | to | 30 0 |
| 3 each in 30 vars. | 21 0 | to | 30 0 | 10 each in 30 vars. | 42 0 | to | 63 0 |
| 3 each in 50 vars. | 42 0 | to | 63 0 | 10 each in 50 vars. | 84 0 | to | 105 0 |

Choice Mixed DAFFODILS, in Mixture for Naturalisation, per 1000, 63s. ; per 100, 7s. 6d.
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SURPLUS STOCK of NEW SEEDS, &c. —Carrots, Altringham, 2s.; Long Surrey, 1s. 3d.; White and Yellow Belgian, 9d. per pound. Parsnip, Hollow-crowned, 9d. per pound. Longpod Beans, 5s.; Green Longpod, 6s. per bushel. White Spanish Onion, 7s. 6d. per pound. Purple Sprouting Broccoli, 2s. 9d. per pound. Blood-red Beet, 3s. 6d. per pound. ARCHANGEL MATS, 12s. per dozen.
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Two 100-feet Houses full of Plants now ready for harvesting.

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# ODONTOGLOSSUM CRISPUM (ALEXANDRÆ).

## SHUTTLEWORTH, CARDER & CO.,

ORCHID and NEW PLANT IMPORTERS, 191, PARK ROAD, CLAPHAM, LONDON, S.W.,

BEG TO ANNOUNCE THAT

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, May 11, at half-past 12 o'Clock precisely, a fine Importation of ODONTOGLOSSUM CRISPUM, O. GLORIOSUM, and ONCIDIUM KRAMERIANUM. Also several small collections of ESTABLISHED ORCHIDS, including many fine plants of rare and valuable species.

*On view morning of Sale, and Catalogues had.*

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# Thursday Next, May 12.

## VALUABLE IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 12, at half-past 12 o'Clock precisely, by order of Mr. F. SANDER, St. Alban's, a large Importation of ONCIDIUM VARICOSUM ROGERSII—this is one of the most beautiful species ; a fine lot of CATTLEYA REGALIS, very magnificent species ; ODONTOGLOSSUM ALEXANDRÆ, in specially fine varieties ; ODONTOGLOSSUM ALEXANDRÆ LEHMANNI, a superb lot of CYPRIPEDIUM VITTATUM BREVE, Rchb. f.—the plants are in the finest condition, full of green foliage and breaks ; ONCIDIUM DASYTILE, CONCOLOR, and FORBESII; CATTLEYA TRIANÆ in largest masses, one of these measures 12 feet in circumference; CATTLEYA VELUTINA, LÆLIA PERRINII and CRISPA, and other Orchids.

*May be viewed the morning of Sale, and Catalogues had.*

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## PATENT HAND GARDEN PLOUGH and CULTIVATOR.

This capital little Implement is now coming into general use. It consists of one light but strong Steel Shovel for marking out rows to plant, or for loosening up the ground after the plants are up. Also a small Steel Plough to be used for hilling-up the rows when desired, and a Cutter for exterminating weeds, and Rake for pulverising the ground. These pieces are made separate, and attached or detached in a moment by means of a simple fastening. Its construction enables the user to push it readily and easily through the ground, stirring the earth, if required, to a depth of 6 inches. It is exceedingly light, strong and tasty, and fully adapted to the purpose designed.

*Price complete, with Shovel, Plough, Weed-cutter and Rake, £2 2s. If with Seed Drill attachment, extra, 13s.; if with Pony attachment, extra, 10s. 6d.*—Illustrated CATALOGUE, containing numerous Testimonials, post-free on application.

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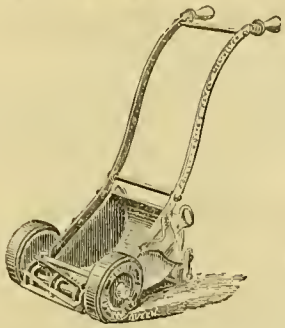
# LAWN MOWERS



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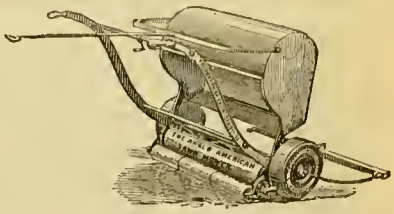

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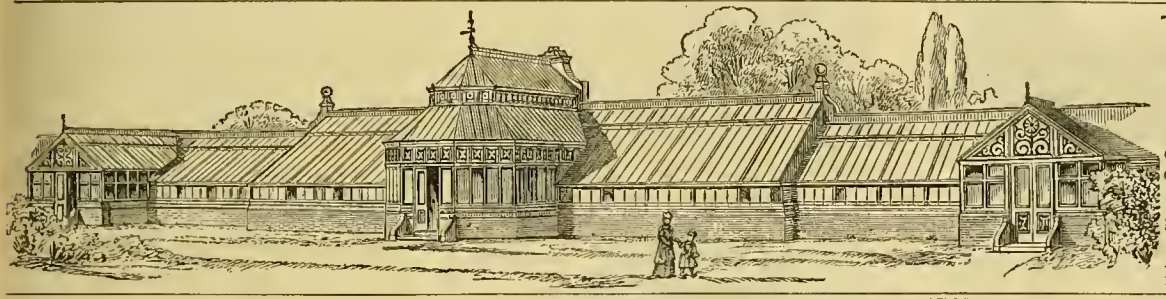

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ALL OTHERS ARE IMITATIONS.

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CANNOT CLOG.
CUTS THE BORDERS.
DOES NOT RIB THE GRASS.
THE LIGHTEST IN DRAUGHT
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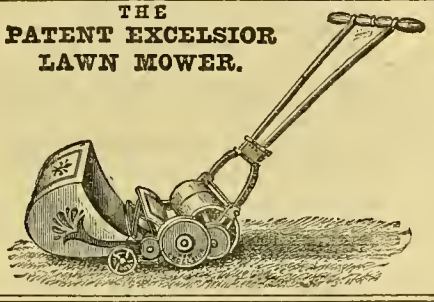

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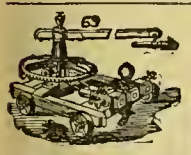

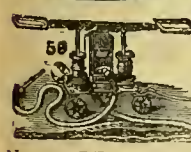

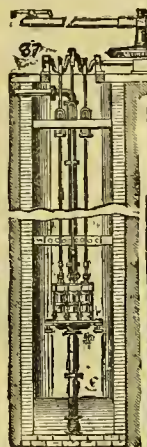

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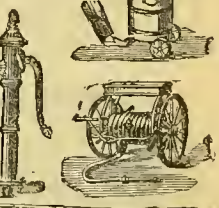

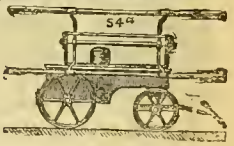

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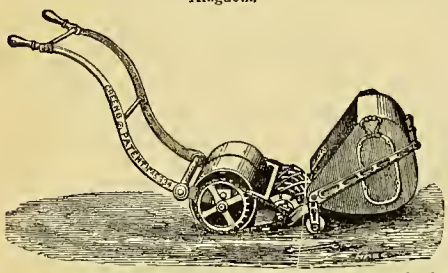

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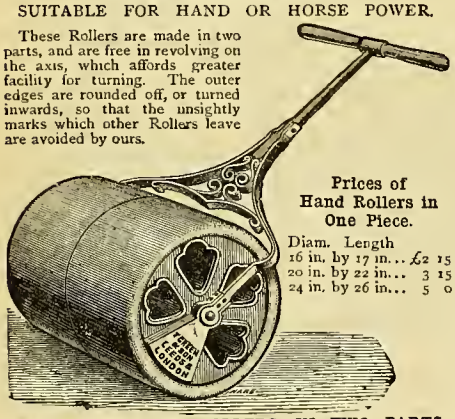

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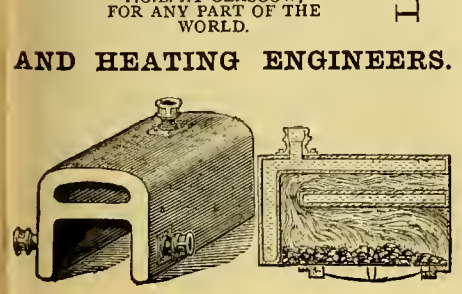

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THE
Gardeners' Chronicle.
*SATURDAY, MAY* 7, 1881.

## FLOWER LORE: MAY.

"ROSY-FOOTED May" has always been a favourite month, and there is scarcely a poet who has not sung its praises, for now the sky is radiant with sunny smiles, and the country, bedecked with its myriads of sweet and fragrant flowers, is, to quote the words of Thomson—

"One boundless blush, one white empurpled shower
Of mingled blossoms."

Spenser, too, has spoken of May as a lovely maiden arrayed in her fairest attire, and scattering flowers "out of her lap around;" and Milton and Chaucer have both described in glowing language the beauty of Nature at this time. A tree which has from time immemorial been associated with the present month, and especially May-day, is the Hawthorn or May, known also as the "Haythorn" and "Albespine," although it is rarely to be seen in bloom at the commencement of May. In days gone by it was in request for the village Maypole, and in some places it was customary for young men to place at the doors of their sweethearts early on May morning a branch of "May," repeating the following lines—

"A branch of May we have brought you,
And at your door it stands;
It is but a sprout,
But it's well budded out
By the work of our good Lord's hands."

According to an old custom kept up in most of the farmhouses in Suffolk, any servant who could bring in a branch of Hawthorn in full bloom on May-day was entitled to a dish of cream for breakfast. In Athens, we are informed, the "May" still graces most doorways on May-day; and an Italian proverb characterises the universal lover, "as one who hangs every door with May." We may further mention that the Hawthorn is one of the trees that lays claim to have been used for the sacred Crown of Thorns.

Again, the flowery month of May produces no plant of more exquisite fragrance than the Lily of the Valley, with its snow-white blossoms half hidden in the dark green leaves. In many parts of England it is called the "May Lily," under which term Bishop Mant speaks of it as—

"Our England's 'Lily of the May,'
Our Lily of the vale."

Among its popular names are "Ladder to Heaven," and "Lily-Convally." The Germans call it "Mai Blume," a name which they also apply to the Kingcup. It has been dedicated to the Virgin; its flowers being nicknamed "Virgin's Tears." There are various superstitions associated with it, as, for example, in Devonshire, where it is considered unlucky to plant a bed of Lilies of the Valley, as, it is said, the person doing so will probably die within the ensuing twelve months. Again, in some parts of St. Leonard's Forest, Sussex, it formerly grew freely, and the following legendary story is not yet forgotten:—It is said to have sprung from the blood of St. Leonard, who once encountered a mighty worm, or "fire-drake" in the forest, and fought with it for three whole

successive days. Although the saint came off victorious yet he was severely wounded in the struggle with his assailant, and wherever his blood fell there sprang up a profusion of Lilies of the Valley. In Hanover it is largely gathered by the people on Whitsun Monday, and towards evening there are few houses to be found without it. The Lily of the Valley, too, has been much used in folk medicine in former years. Thus, the water distilled from the flowers was once in such great repute that it was kept in vessels of gold and silver, and called Golden-water, being esteemed as a preservative against all infectious distempers.

Among the handsome flowers which blossom in the present month may be mentioned the Pæony. It owes its name to Pæon, a famous physician of antiquity, who is said to have cured with this plant the wounds which the gods received during the Trojan war. One of its popular nicknames is "Chesses," a term that by some mistake, says Dr. Prior, has been transferred to it from the Poppy, which, from the shape of its capsule, was called "Chasses" and "Chese-boules." It is a matter of dispute whether this plant is alluded to by Shakespeare in the *Tempest* (iv., 1):—

> "Thy banks with pionied and lilied brims
> Which spongy April at thy best betrims
> To make cold nymphs chaste crowns"

—some commentators being of opinion that the word "pionied" is equivalent to "digged." The context, however, of the passage seems to imply that the Pæony is referred to, as otherwise the reading would be comparatively tame. This plant is not without its superstitions. Thus in Sussex a necklace of beads turned from the root of the Pæony is worn by children to prevent convulsions, and to assist the cutting of teeth.

The Columbine, or Dove Plant, begins to flower about the latter end of the month, a plant which has derived its name from the resemblance of its nectaries to the heads of pigeons. Its Latin name, according to some, comes from Aquila, on account of the fancied resemblance which the same parts of the flowers have to the claws of the eagle; although others think it is from Aquilegus, a water-carrier, in allusion to the water-holding powers of this plant. Gerard tells us that it was formerly called "Herba Leonis," from a notion that it was the favourite plant of the lion. It has been made the emblem of folly from the shape of its nectaries, which turn over in a similar manner to the caps of the ancient jesters. In days gone by it was the badge of a deserted lover: and was also termed "a thankless flower," in allusion to which Chapman says:—

> "What's that—a Columbine?
> No! That thankless flower grows not in my garden."

The medicinal virtues of this plant were in high esteem among old medical writers—every part of the plant, from the root to the seed, being considered efficacious for some complaint.

Another plant that now flowers is Solomon's Seal, or "Seal-wort," so called, says Dr. Prior, "from the flat round scars on the root-stock, resembling what is called a Soloman's Seal—a name given by the Arabs to a six-pointed star, joined by two equilateral triangles intersecting each other, and of frequent occurrence in Oriental tales." In the days of Queen Elizabeth it appears to have been a plant of some celebrity, for a medical writer of her day informs us that "The root of Solomon's Seale, stamped while it is fresh and green, and applied, taketh away in one night, or two at the most, any bruise." Amongst its other popular names may be mentioned "Lady's Signet," and "White Root."

There is also the "Leopard's Bane," a plant that was supposed to cause the death of any animal that ate it, and was on this account mixed with flesh to destroy leopards. One of its names is "Herb Truelove," because its four leaves are set together in the form of a true lover's knot. For the same reason it has been called "Herb Paris," *i.e.*, herb of a pair.

In many parts of the country a superstitious notion exists that there is some mysterious connection between the plant Broom and death—an idea embodied in the following rhyme—

> "If you sweep the house with blossomed Broom in May,
> You're sure to sweep the head of the house away."

Mrs. Latham, in her "West Sussex Superstitions" (*Folk-Lore Record*, i. 52), records how a poor girl who was lingering in the last stage of consumption, but whose countenance had always lighed up at the sight of flowers, appeared one morning so unhappy after a nosegay of gay spring flowers had been laid on her bed that she was asked if their scent was disagreeable to her. "Oh, no!" she exclaimed, "they are very nice indeed to smell; but yet I should be very glad if you would throw away the piece of yellow Broom; for they do say that death comes with it if it is brought into the house in bloom during the month of May." An immense deal of curious folk-lore has clustered round this interesting plant. It is said to have an intoxicating influence if eaten. Hence Allan Ramsay, in his address to a landlady who was famous for brewing a heady ale, tells us:—

> "Some said it was the pith of Broom,
> That she stow'd in her masking-loom,
> Which in our heads rais'd sic a soom;
> Or some lur'd seed,
> Which oft the chaping stoup did toom,
> But filled our head."

Without entering into its historical associations, we may just note that in years gone by it was much esteemed on the Continent. In the year 1234, St. Louis made the Broom the insignia of a new order of knighthood, the members of which wore a chain composed of blossoms of Broom in gold, entwined with white enamelled Lilies, from which was suspended a golden cross, with the motto, "God exalteth the lowly." In the North of England besoms are called brooms, having until late years been made of the twigs of this shrub.

The common purple Iris, which is one of the most prominent attractions of many a cottage garden, is supposed to be the "Fleur de luce," a corruption of "Fleur de Louis." It is now generally spelt either "Fleur de lys" or "Fleur de lis." It is reported to have derived its name from Louis VII., who chose this flower as his heraldic emblem when setting forth on his crusade to the Holy Land. It had, however, been already used by the other French kings, but it is still a much disputed question amongst antiquarians as to what it was originally intended to represent. Some are of opinion it was a flower, others either a toad or a halbert head. One of the common English names for the Iris is the "Roast Beef Plant," because its leaves, when bruised, yield a very disagreeable smell, which some, curious to say, have compared to roast beef. In ancient times it was one of the plants considered sacred to the Virgin Mary.

## BRITISH GUIANA.

### Aspects of Plant-Life.

The appearance of a scantily inhabited country depends, in very great measure, upon its vegetation. Much has lately been written on the real, as opposed to the commonly conceived appearance of tropical vegetation. But men in temperate regions still picture to themselves tropical plant-life as blazing with gorgeous colour, and composed almost exclusively of quaint forms. Two fallacies, as to colour and as to form, are involved in this conception. The spread of the colour fallacy is due to the fact that the more gorgeous plants are selected from an infinitely greater number of less brilliant hue, and are grouped together in our glasshouses. The form fallacy has arisen partly from a similar cause, but chiefly from the fancy sketches made by artists of tropical scenery. This latter source of error may be well studied, for example, in certain pictures of Guiana scenery by a German named Carl Appun, a botanist and a draughtsman of some merit, who lived for some years in the interior, and who has furnished almost the only attainable pictures, drawn on the spot, of that scenery. In these pictures Palms and other plants of forms strange to temperate regions, occupy the whole scene. Appun knew how to draw plants; and even in his most crowded compositions it is possible to recognise the species of each individual plant; but his pictures are no true records of the scenery, because in them, much as the gardener does in his hothouse, he grouped only the most striking plants, and entirely omitted all such as are but little distinguished in character or size of foliage, from the plants of temperate regions. In correction of the false views thus spread Mr. Wallace's careful analysis of tropical scenery in general, in his admirable essay on tropical Nature, is of great value. The purpose of the present paper is, as far as may be, to supplement that general account by representing the most characteristic aspects of the special plant life of Guiana.

The forests and woods of Guiana are mainly composed of trees and shrubs of much the same general type, as regards both form of growth and of foliage, as our own Spanish Chestnuts, Oaks, Acacias, and Laurels. Three things must, however, be remembered in thus transferring in imagination our own forms of vegetation to the tropics; and these are, in the first place, that in the tropics the trees and plants of all sorts are generally on a much more gigantic scale, and that the absence of smallness and neatness gives an impression of weediness; secondly, that the light under which these are seen is much more intense; and, thirdly, that scattered among these familiar forms a large number of novel forms occur.

Starting with this general idea of the vegetation, it will be convenient, first to consider the three special points, of the occurrence of colour, of novel and striking forms and of scents, and then to draw, as far as may be done in words, a few typical scenes of vegetable life in the forest and on the savannah.

The colouring of the trees depends more upon the various shades of their leaves than upon the presence of flowers. At no time is the Guiana leafage as splendid as in an ordinary English wood, either in the early spring or in the glorious golden autumn time. But, on the other hand, the forest in the former place is throughout the year more variously coloured in this respect than is the English wood, except in spring or autumn. This peculiarity of the tropical forest is due, partly to the fact that, there being in it no special season either for the bursting or the falling of leaves, there are always throughout the year trees both putting out new leaves delicately tinted with green, white, or pink, and others dropping leaves with red, yellow, and bronze colours burned deeply into them by the sun, and partly to the fact that in it trees of innumerable kinds, each with foliage at least slightly distinct in colour, grow intermingled, and not, as is usual in temperate lands, in more or less distinct groups. As regards colour afforded by flowers, tropical and temperate trees are probably equally rich. But with flowers, just and for the same reasons as with leaves, those in temperate climates are all gathered into the springtime and into particular spots, whereas in Guiana they are scattered throughout the year and on single trees through the forest; so that in the latter place, though no sheet of flower such as decorates an Apple or Cherry orchard or a Hawthorn thicket in spring is ever seen, yet throughout the year, though more frequently in the wet than in the dry season, trees as full of flowers as any individual Apple, Cherry, or Hawthorn, may be seen scattered, like huge nosegays, in the leafy, otherwise unflowery forest. It must be added that this description of the flowers of Guiana refers only to those of the trees or shrubs, and that there is never there a growing carpet of flowers, such as those in England of Primroses and Anemones, or of wild Hyacinths and Dog Violets in the woods, or of marsh Marigolds and red Fritillary bells in the water meadows, or of Heather and Gorse on the moors.

The splendour of colour of many single trees, heightened by contrast with the green of the surrounding forest, is most vividly present in my mind. No effect of colour could be more brilliant than a Hackia tree which has covered and weighed down its branches with dense masses of golden-yellow flowers, gleaming with a wonderful and almost dazzling brilliance against a pale, clear blue sky, or a Long John (Triplaris surinamensis) loaded with flowers, arranged in great plumes,

like, but much larger than, Lilac bunches, at first of creamy-white, but afterward, as they grow old, taking a beautiful red tinge; or than the same tree when each floweret, shaped like a tiny parachute, falling with many twirls to the ground, fills even the air with flowers; or than another large tree (Parkia pendula), the most beautiful I ever saw, its branches arranged in tiers after the manner of the Cedar of Lebanon, its Acacia-like foliage very dark in colour, while from the end of each branchlet hangs at the end of a long pliant whip, 3 or 4 feet long, a globe of crimson flowers—these flowers, because of the regular strata-like arrangement of the branches, hanging in deep even fringes from the outer edge of each shady branch; or than another tree, of a kind unknown to me, covered with a dense mass of pale mauve flowers, which I once saw in strangely harmonious contrast against a grey, rainy-looking sky; or than a purple pea-flowered climber (Calopogium cœruleum) which grows and flowers so rampantly over some small trees that it appears from a distance like an odd, blue-smoke-coloured light; or than another creeper (Norantea guianensis) which runs over the highest trees, throws out many spikes of dense scarlet flowers like flames, 2 or 3 feet long; yet it must not be forgotten that these are only widely separated spots of colour in a huge forest generally green.

It will perhaps be noticed that this account of the distribution of flowers in Guiana hardly agrees with such statements of Mr. Wallace,* applied apparently to tropical forests in general, as that in which he says that "conspicuous masses of showy flowers are so rare that weeks and months may be passed without observing a single flowering plant worthy of special admiration." That a man, if he confined himself quite strictly to the shadiest parts of the forest, might pass weeks or months without seeing a single plant of striking beauty might be just possible, yet, in Guiana at least, he must never during this period go near the many open spaces formed by rivers and streams, or by the fall of large trees, or he will be in danger of seeing on an average at least one beautiful mass of flowers in each twenty-four hours.

The beauty of individual flowers, as distinct from masses, is more frequently noticeable in Guiana; for not only are all those flowers which have been described above, and many others which might be added to the list, beautiful individually as well as in the mass, but there are others, and far more, which, though distributed too sparingly on their plants, or growing in a too unfavourable light to make any great show, are individually as delicately beautiful or splendid as any that are arranged in a florist's bouquet. For example, a man may, as I know, pass by a Posoqueria shrub without noticing that it is in flower, probably because the white flowers are not very distinguishable among the many small flecks of intense light which make their way into the deep shade under the forest; but if he does notice this, he will find amongst its Laurel-shaped leaves the most beautiful white flowers, of wax-like texture, like but larger than those of Jasmine, each at the end of a very long white tube. This is only one out of innumerable instances that might be found even under the shade of the forest; while at the sides of the river openings, in the forest glades, and on the savannahs, the number of individually beautiful flowers is very far greater. *Everard im Thurm.*

(*To be continued.*)

## RHODODENDRONS.

(*Continued from p. 466.*)

Any one who studies the genus Rhododendron will very soon find a foliar distinction which will strike him forcibly. He will learn to divide his species into those with scaly leaves, and those with leaves without scales. There is perhaps also an intermediate class, containing those which bear scales on the under, but not on the upper surface of the leaf. The student will find that geographically these classes can be only roughly divided. They are united in the Himalayas on perhaps a fair equality. The scaly type prevails in the Malayan region, the scaleless in America, where, however, R. punctatum and others of the different type are found. The tropical and alpine species are mostly scaly, the temperate mostly scaleless. The arborescent Rhododendrons are, I believe, scaleless, while the shrubby ones, and the dwarfs, and the epiphytes are very often scaly. As to the annually deciduous species they are, I think, all scaleless. Although the nature of these scales is by no means the same, yet they present a tolerable uniformity, and afford certainly a very valid character, all the more because they have a tendency to spread to the flower-stalk, the calyx, and even the corolla. Most interesting to the naturalist, they are useful to the hybridiser, for they may reveal the tale of a successful cross in the first development of the plumule of a seedling.

For the present it must suffice to say that these scales differ from the hairs, tomentum, glands, and bristles which beset the leaves of so many Rhododendrons at various stages of growth, and which last give so singular an appearance to R. barbatum and R. Championæ. They furnish, moreover, an excellent illustration of the desirability of examining younger leaves and younger plants than are often found in a herbarium, for the older leaves and the older plants are apt to shed their scales in a misleading way, as is very accurately pointed out by Beccari in his *Malesia*. I venture to think, for instance, that R. Nuttallii would not have been excluded from Maximovitch's "Lepidota" had the young, and, indeed, the old, leaves of small seedling plants been examined, as I am now examining them, under a lens, and the profusion of beautiful crimson, brown, and green scales observed on the upper surface of the leaf, as well as underneath (the *Botanical Magazine* says the leaves "are much paler beneath, and these partially covered with numerous minute circular peltate resinous scales"), been seen. If embryology is important, so is the observation of the condition of young plants and young leaves, and the greenhouse may well supplement the herbarium; but awaiting the forthcoming number of the *Flora of British India*, I will not venture to say more.

R. Edgeworthii, which I wish to discuss with your readers, must plead my excuse for this long introduction. In no botanical description have I found any indication that it belonged to the scaly type of Rhododendron, as from its breeding affinities was clearly to be surmised. In the case of other species the scales are always treated as an important character—and properly so; but with R. Edgeworthii it is the rugosity of the leaves, the profusion of tomentum, so that in breeding between it and R. formosum, for instance, it might have been inferred from the books that a cross had been effected between a scaleless and a scaly species. Nevertheless, on carefully rubbing away the tomentum from the under surface of a mature leaf, and placing the leaf under a microscope, I found plenty of scales; and, further, on examining the young leaves of seedling plants I found also scales on the upper surface. When I come to describe the hybrids raised from this species, the importance of these facts will be apparent.

But first, a few more words of description for the species itself, which bears a name classical for Englishmen. It is in fact named, not after the well-known authoress herself, but after her brother, an Indian civilian of botanical tastes and acquirements, whose book on pollen and other writings are probably known to my readers. The character of the foliage of R. Edgeworthii has already been partly indicated. The leaves are comparatively small, rugose or wrinkled, covered underneath with a thick rusty tomentum, which spreads to the stalks and branches. They have been compared to those of R. pendulum and R. rugosum, and are highly ornamental as well as the flowers. These last are very large for a plant of so dwarf a habit—as large, or nearly so, as those of R. Dalhousiæ, and more strongly and deliciously scented. The tube of the corolla is not so long, and the general shape more open and cuplike. There is an excellent illustration in Hooker's *Sikkim Rhododendrons*, and a very inferior one in the *Botanical Magazine*. The tinge of colour in the white is generally rose instead of yellow, as in R. Dalhousiæ. Although, also, an epiphyte, but growing generally upon Pines, its habit is unlike, and the character of the root seems different from that of R. Dalhousiæ, which resembles in this respect the Bornean and Javan races as described by Mr. Low.

It is a species which ought to be grown in many greenhouses, requiring just the temperature suiting Indian Azaleas, or a cooler one. I have grown plants out-of-doors, and they have survived several winters, but not comfortably. Small plants are easily procured from the nurseries, but larger ones are scarce. In fact, it is only of late that the taste for Sikkim Rhododendrons has revived.

I have lately seen at Messrs. Williams', of Holloway, a fine large plant (among other fine Rhododendrons) naturally grown, which shows that it need not be tortured and twisted round a wire trellis in the usual horrible way. There is a very interesting plant also at Kew, under the trusty care of Mr. Binder in the Temperate-house. It stands in a bed at the north-east corner, and is all the more interesting because surrounded by the most unlikely congeners—almost a pigmy among giants, and so different in appearance and habit. There, behind it, stands the stately R. arboreum, a forest tree; R. barbatum and Aucklandii, tall saplings; mighty bushes of R. calophyllum and R. Jenkinsii of two or more types; R. Maddeni, larger still; and R. formosum of goodly proportions. Further on is seen R. Fortunei the miserable, and R. fulgens used to stand beside, but has now disappeared; nor let the visitor omit to notice the grand leaves of R. Nuttallii, and of a young plant of R. Aucklandii, and then let him come back to R. Edgeworthii, inferior to none, though less imposing.

R. Edgeworthii is in truth so beautiful and so unique that it must have required some courage to think of blending it with other species, unless for the sake of experiment, or to infuse hardiness. My sympathies, however, are not exclusively with the champions of natural species, nor with the hybridisers, but with both. I am for giving fair play to both, and it is not because I admire enthusiastically R. Edgeworthii that I would depreciate such an excellent and useful hybrid as R. Princess Alice, bred from the former with pollen of R. ciliatum. The hybrid is certainly hardier, freer in blooming, more compact, and scarcely, when well grown, inferior in flower. I have lately in your columns described the double origin of this plant. More dwarf, and perhaps more sweet-scented, are the various hybrids raised between our species and R. multiflorum. R. Sesterianum was raised by Rinz & Co., of Frankfort-on-the-Maine, from R. formosum (otherwise Gibsoni), with pollen of R. Edgeworthii. It is a truly excellent and lovely flower, with a yellow instead of a roseate tinge. Many types of the same cross are in cultivation, of which Duchess of Buccleuch, as grown by Messrs. Downie & Laird, of Edinburgh (to whose grand show of Rhododendrons I must presently relate my visit) is perhaps the best. R. magniflorum, between R. Edgeworthii and Countess of Haddington, was raised by Mr. Parker, of Tooting, and has produced with me open flowers, pure white, and of a large size. And last, but not least, I must mention R. Forsterianum, raised by Mr. Otto Forster from R. Veitchii fertilised with pollen of R. Edgeworthii.

Of this last I have had excellent experience, having seen, for the last two years or more, plants of great beauty at Messrs. Veitch's; but a short time since a case 8 feet long reached me from near Vienna, containing several very fine plants, presented to me by my munificent friend. So well were the plants packed that in a few days after their arrival they were in full bloom and the admiration of everybody. The flowers were of an exquisite lemon or primrose tinge, very large and scented, and inherited the ineffable delicacy of R. Veitchii, with more substance—in fact, they were more like a Rhododendron and less like an Azalea, although all are Rhododendrons now. The foliage is intermediate, but it is a curious fact that none of the hybrid progeny of R. Edgeworthii inherit, when mature, the thick tomentum under the leaf, but when young most of them show it. In mature plants it is best to examine the pedicel for traces of Edgeworthii blood.

I must now close with two practical observations. 1st. In all the hybrids from R. Edgeworthii, of which I know, our species has been the pollen parent, never the seed bearer. 2d. All the well-known and vigorous hybrids are derived from unions with scaly species. Unions with scaleless species are, I confess, not unknown to me, but they are far more difficult to accomplish, and produce weaker offspring; whereas the seedlings of the other cross are often even more vigorous than true bred seedlings of either species. It must not, however, be supposed that I am in a position to lay down any general law, at all events at present, on this point. *J. H. Mangles, Valewood, Haselmere.*

P.S.—Since writing the above I have been to Kew, and find that the small plant of R. Aucklandii has burst into bloom, and such bloom! Mr. Binder measured for me a single flower, and it was 6½ inches across. Four trusses have seven flowers each, and others less. The unopened flowers have a tinge of rose.

(*To be continued.*)

* *Tropical Nature*, A. R. Wallace, p. 61, 1878.

## New Garden Plants.

SHORTIA GALACIFOLIA.*

The history of this plant is little short of romantic. Originally found by Michaux in the mountains of North Carolina nearly a hundred years ago, it was described by Dr. Asa Gray more than forty years since, from imperfect materials in the Paris herbarium, transmitted by Michaux. Till lately it had never been met with again, so that it had come to be looked on somewhat as a botanical "Mrs. 'Arris." Meanwhile Dr. Maximowicz sent from Japan specimens of a plant which he called Schizocodon uniflorus, but which Dr. Gray at once recognised as the same as his Shortia galacifolia, or if not the same, then its brother.

The occurrence in Japan of the same or a very closely allied North American species furnishes another to the already numerous list of plants common to the Atlantic States of North America and to Japan. So close is this resemblance in the flora that Dr. Gray lays it down as a general rule that any plant special to the temperate regions of the Atlantic States is represented in Japan or the neighbouring parts of North-East Asia by the same or by a very closely allied representative species. There is, further, a close correspondence between the flora of the Miocene epoch and that of the existing north temperate zone. Around the Pole in Miocene times existed a flora, traces of which are still found fossil, closely analogous to what is now found much further south both on the eastern and the western continents, having been driven down by the increasing cold of the north.

The Shortia, then, is not merely a pretty herbaceous plant, but it furnishes one of the clues to the understanding of a remarkable fact in botanical geography, and to the interpretation of one phase in the past history of the globe. That such a plant should be dying out, that it should be found in small numbers, is not surprising. Knowing what we do now it need not have surprised us if Michaux's specimen had proved to be the last. But, leaving aside the Japanese specimens, the Shortia has again been discovered in North Carolina. A specimen may be seen in the Kew herbarium, entitled "Hyams' sparkling Shortia," the lucky finder, Mr. M. E. Hyams, having detected it in 1877 in McDowell county, growing in a solitary patch a few feet square, and nowhere else, so far as known at present. No one who compares the Japanese Schizocodon uniflorus which lies side by side in the herbarium with the North Carolina plant will doubt their identity.

Apart from its beauty it was naturally a matter of great interest to get the plant into cultivation, and we are happy to say this has been done by Messrs. Woolson & Co., of Passaic, New Jersey, dealers especially in North American herbaceous specialities, and who have furnished us with the water-colour drawing from which our illustration (fig. 109) was made, and which we have compared with the specimens in the herbarium. Botanists have a not unnatural dread of rarities like the present becoming exterminated by the greed of collectors for commercial purposes, and we do not wish to minimise the danger. On the other hand, it may be pointed out that by introducing the plant into cultivation a much better chance is afforded of perpetuating it than if it were left in its original fastnesses all unprotected by the care which the loving cultivator bestows on his pets. Again, if the plant is to die out, as it may do even in gardens, it will not vanish till it has been made to tell its history to the botanist, till it has been registered in his archives, and depicted in his gallery of plant portraits. It will be interesting to see whether the plant will thrive under cultivation, for it is just possible that a plant which seem to be dying out, or to find its necessary requirements in a very restricted locality, may baffle the gardener's art. We prefer, however, to think that the gardener will be the means of perpetuating the plant for generations to come. We rather doubt if "Hyams' Sparkling" will get into circulation as the vernacular epithet for the plant—indeed the veriest stickler for the use of vernacular names would, we imagine, hardly care to adopt this.

Shortia galacifolia is a dwarf herbaceous plant with a creeping cylindrical root-stock, from which issue numerous fine rootlets, and tufts of long-stalked evergreen, leathery, glabrous, cordate, roundish, remotely-toothed leaves, which in the dried specimens are rather broader than long (1½ by 1¾ inch). The flowers occur singly on the ends of leafless stalks or scapes, emerging from among and exceeding in height the tuft of leaves. The bell-shaped flowers have three small bracts close to the calyx. They are about an inch in diameter when expanded, pure white, shading into rose colour as they wither. The botanical structure is interesting, by reason of the imbricate calyx, the verticillate petals, and the curious row of petaloid staminodes, representing probably a second row of stamens. For further details on these points we may refer to Dr. Gray's paper, merely adding that Shortia has a fallacious superficial resemblance to Primula or Pyrola, but is included with Galax and others in the order Diapensiaceæ, of which the best known species is D. lapponica. Diapensiaceæ are usually placed near Ericaceæ, but it seems clear that so many links are missing that this little group in its present state is not very close to any other group. *M. T. M.*

FIG. 109.—SHORTIA GALACIFOLIA; FLOWERS PALE ROSE.

* *Shortia galacifolia*, Torr. et Gray; A. Gray, in *Proc. Amer. Acad.* 1870, viii., 243, et in *Ann. Sc. Nat.*, ser. 6, t. 7, tab. 15.

KERRIA JAPONICA VARIEGATA.—For cool conservatory decoration few hardy shrubs surpass the single-flowered variegated form of the old-fashioned double Kerria. Although hardy it well deserves a place under glass, as it is a neat grower with small charmingly variegated foliage thickly studded with pretty yellow blossoms. In the Temperate-house at Kew, where it is planted out, it forms a neat bush about 2 or 3 feet in height, and flowers profusely.

# Notices of Books.

**Guide to the Literature of Botany**; *being a Classified Selection of Botanical Works, including nearly* 6000 *Titles not given in Pritzel's "Thesaurus."* By B. D. Jackson, Sec. Linn. Soc. London. Published for the Index Society by Longmans & Co. and Dulau & Co.

Every working botanist, and every one who has occasion to consult botanical literature, will sympathise with the opening words of the preface: "This work, so long announced, is at length completed." A glance at the massive neatly-printed volume, with its well-filled pages, is sufficient to explain the author's statement that its compilation has cost him twenty months of continuous labour, to say nothing of a much longer period of preparation. But, so far as the object proposed is concerned, those twenty months have been well spent, and we are quite sure that Mr. Jackson has earned, and will receive, the thanks of those for whom he has undertaken so much work of a nature that would be irksome indeed were it not a labour of love. As a "selection" its value to others depends on the judgment of the selector. It is a comparatively easy matter to select for one's self according to the nature of one's own requirements, but directly it becomes necessary to cater for the needs and pleasures of other people the difficulty of choice begins. Space prescribes limitations that cannot be overstepped; the knowledge, or the want of knowledge, the sympathies, the prejudices of the compiler, all influence the selector for good or for ill. He must make up his mind that it is impossible to please every one. Although he will do well to keep fixed principles of selection constantly in view, yet in their application he should be as pliant as is consistent with the general plan of the work and the restrictions of space. "The aim I set before myself," says the author, "was to give all the works likely to be wanted by my fellow-countrymen, either for a knowledge of their own botanical literature, local and colonial floras, or for trade, keeping specially in view those districts likely to be visited by the traveller from these shores."

Mr. Jackson tells us that he commenced compiling a "classified subject index of short titles" by extracting from Pritzel's *Thesaurus* such as he thought should be included, believing that that most useful work was complete, or nearly so, up to the end of 1871. He soon found the task much more onerous than he had expected, and that the additions requisite to supply the omissions in Pritzel, and to supplement that work by an indication of the books issued since its publication, would be so numerous as to demand rigid selection and most careful consideration. Mr. Jackson tells us the canons he laid down for himself; if he has, as he admits, not always acted up to them, so much the better for him who wants to consult the book—so much the more convenient to the critic who has to form an opinion on the judgment which has brought into a catalogue easy of reference no less than 9000 book-titles, 6000 of which were, from one cause or another, chiefly of course by reason of their later publication, not inserted in Pritzel. The titles are included under some two-and-twenty primary headings, such as History, Physiology, Morphology, Systematic Botany, Economic Botany, &c., and 125 minor sections.

Under the head of Botanical Gardens certain "cultural books are given as showing what plants are in cultivation in the respective countries. I have also in each case enumerated such seed catalogues as I knew of." The list of cultural books is very meagre, and the catalogues here referred to are the official exchange lists of the several botanical gardens, issued at irregular intervals, and often containing descriptions of species, or other matter of value so permanent that it is greatly to be regretted that its record should be made in so ephemeral a mode of publication. The work is completed by an excellent

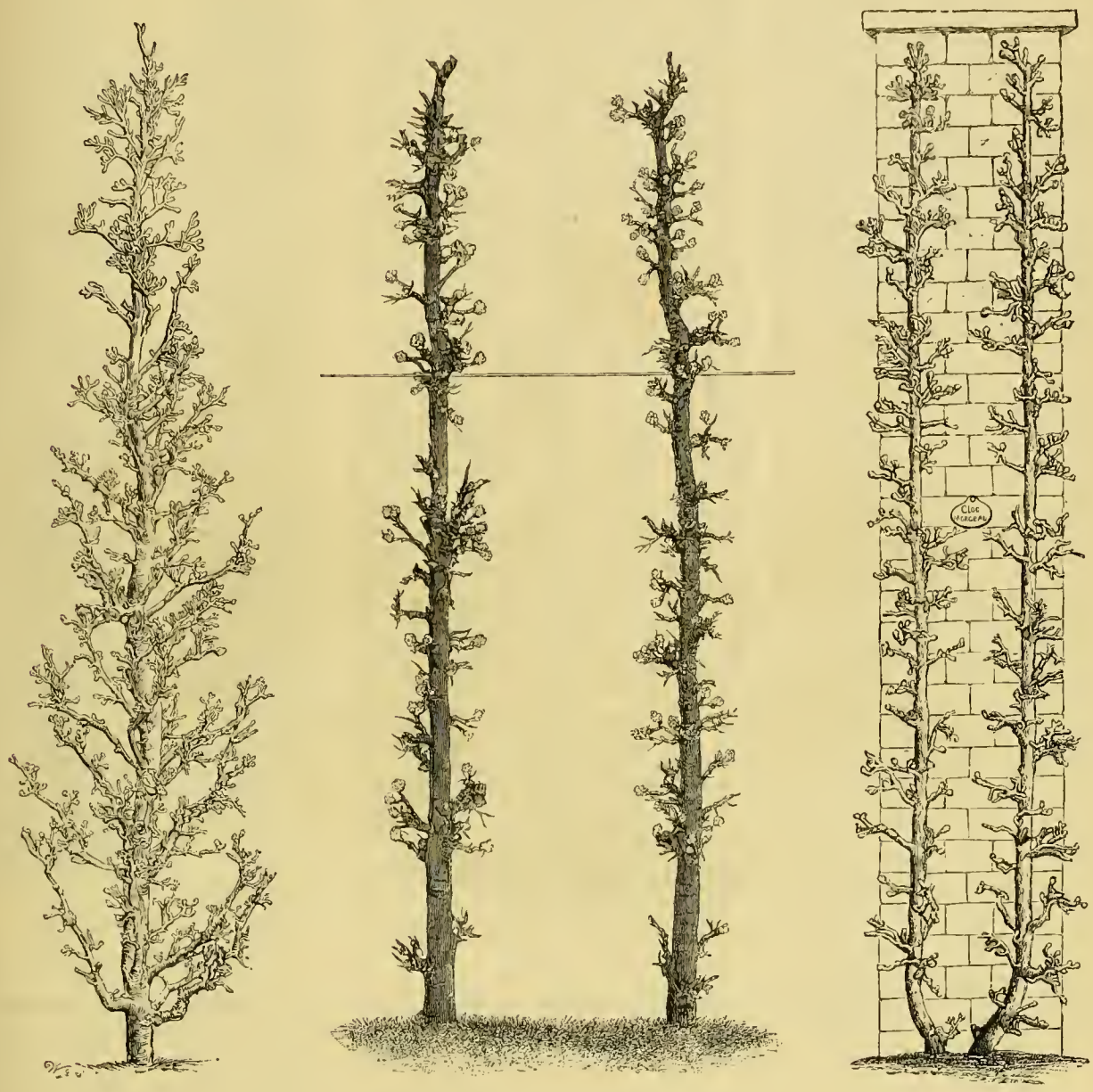

Fig. 110.—Trained Pear Trees at Chiswick. (see p. 600.)

alphabetical index. The value of this latter will, of course, be appreciated by every one. We may cite an instance which occurs to us in turning over the pages. Struck by the fact mentioned in the last paragraph, that certain cultural books were included under the heading of Botanical Gardens, we turned to the pages devoted to that subject, and found, among many titles two which specially indicated the value of an alphabetical index: thus, under the head of "Hackbridge" Mr. A. Smee's *My Garden* is included (with no mention of the French edition); under that of "Ladiston" is inserted Mr. Lyons' *Remarks on the Management of Orchidaceous Plants*. Who, we wonder, would think of looking for Mr. Smee's book under the title Hackbridge, or for Mr. Lyons' book under that of Ladiston? Incidentally, we may note that one only of Mr. Smee's numerous publications is included — that relating to the Potato disease; but then, had Mr. Jackson inserted all the tractates on this subject he would indeed have required a volume as big as the one he has already issued. Under "Chiswick" we find only a single entry, that of one of Dr. Lindley's Reports on New and Rare Plants, an extract from the *Transactions of the Royal Horticultural Society*. Why that one only out of the scores that had an equal right of admission? It is, it is true, easy to understand Mr. Jackson's reason for not inserting more, but by including this one only (and which we imagine he was not bound to do by his programme) he is likely to create the impression among those who know no better that this is the only publication connected with Chiswick sufficiently important to be included. Similar remarks apply to another pamphlet of Dr. Lindley's, entitled *Instructions for Packing Living Plants*.

This inclusion of papers and memoirs, extracted or reprinted from various *Transactions*, is the matter that pleases us least in this excellent volume. The list of such papers is of necessity very incomplete—aggravatingly so, indeed—and would be even more so were it not that many of them are swept up in the catalogue issued by the Royal Society. This being so it would, we think, have been better to have omitted them altogether from the present volume. For instance, it is annoying to find scattered references to papers reprinted from this or that journal when papers of infinitely greater value or importance are omitted. Of course this is no fault of Mr. Jackson's, but it is none the less vexing to find such a series of articles, say, as those of Mr. Berkeley on Vegetable Pathology excluded from Pritzel, the Royal Society Catalogue and the present work when fugitive trifles find a place in one or other of them. Again we could have wished to find some mention of Mr. Baker's list of Bromeliads, and Mr. Brown's corresponding list of Aroids, under the head of the Kew Reports. It might as well have been stated that *Le dessin appliqué à la Botanique*, by Mr. W. H. Fitch, was a transcript from these pages, and so with certain other books mentioned in the list. Among minor matters we note that the statement as to the editorial staff of this journal, at p. 473, is not quite accurate, that the Russian and Dutch editions of *Botany for Beginners* and the excellent French edition of Sach's *Lehrbuch*, by Van Tieghem, are not included.

It would, however, be a very graceless task to comment further on such a book without indicating our sense of the value of Mr. Jackson's labours. None can fairly estimate them but those who have had experience of like kind. For the reasons we have already cited, such a book offers very numerous opportunities for criticism; but the defects—if they are defects—are so vastly outweighed by the substantial value of the information collected, that we end as we began, by tendering our congratulations to the author on the completion of his task, and by expressing our gratitude to him for so useful an addition to botanical literature.

## Orchid Notes.

Work in the Houses.—There are many species and varieties of Orchids which invariably appear to succeed better when grown in shallow pans or wooden baskets suspended from the roof, or fastened on blocks or rafts, and hung up in a similar position. Why it should be so it may be difficult to state in every individual case, though probably if the majority of the epiphytal forms were treated in the manner here described they would be found to grow and flourish in a vigorous manner. But since our houses are so built and arranged that the inside tables and stages are most suitably adapted for the arrangement of plants in pots, the majority of them, up to the present, are grown in this convenient way. Many plants succeed thoroughly well when grown thus, and where this is the case there is no special need of altering the conditions and plan of treatment; still there will be some that appear to enjoy the extra light and air, and the drier state of the atmosphere as we have it the nearer we get to the glass. This should teach us that in the building of new erections one essential point to bear in mind and carry out is to keep the houses as low as can be done consistently with the height of the plant it is intended should be grown therein. It is all very well to say elevate the plants on pots, stages, or other temporary expedients to get them up to the glass; this at best is only a partial gain to the plants themselves, whilst it is a most untidy method, and often a great eyesore. Again, if the houses were lower, much less fire-heat would be required, and the atmosphere correspondingly retain a greater degree of moisture; so, too, growths, more especially of Dendrobiums, &c., are always of a stouter and more mature description when grown near the glass, to those that are formed in more lofty and roomy structures when grown on the stages. Still, in every collection a number will be grown in baskets or blocks suspended from the roof, whilst others, and perhaps the greater number, will be managed in pots stood on the stages and tables.

In dealing with plants grown under either of these conditions it should be borne in mind that both require care, method and watchfulness; else in our desire to give to those on the tables as much light as we possibly can we may expose those hanging from the roof to the chances and danger of being burnt or scorched by ths sun's rays. So, too, in watering, the nearer the baskets are to the glass the more rapidly they become dry, and since they are mostly overhead they do not come under observation so often as those on the stages, and consequently are in danger of being passed or forgotten. Let them, therefore, be looked over at the present time at least every second day, and though there may not be many requiring dipping it is better that they should often be looked to, whilst beside their being dry there may be thrips, slugs or other vermin praying upon them which would be certain to commit much injury unlesss speedily detected. Where there are many plants that succeed so much better when grown in baskets hung from the roof it might be worth the while to devote one house entirely to the baskets. If it could be that the house thus set apart should be like one which I have in my eye—a low Pine-stove with a wide tan bed in the centre—it will be found that the atmosphere charged with moisture rising from this substance is most beneficial, and apparently much enjoyed by the plants themselves. However, for ease of access and the better for taking down, dipping, or syringing, the space under the plants should be open, so that in passing under them there is no danger of breaking the bulbs or damaging the growths. If such a house should be set apart, say for Dendrobiums, Cattleyas, and some of the Lælias, let the baskets have the first consideration, and the treatment such as will be most beneficial to those elevated in this manner, and anything that may be placed below them must be of such a hardy nature and robust constitution, that they may be able to bear with the second-class treatment they may have given to them. *W. Swan, Fallowfield, May 2.*

### Cattleya gigas.

In the annual management of this fine Orchid the month of May is a very important period. Where the plants have been wintered as recommended, in a light airy position with a temperature ranging from 50° to 60°, young breaks will now be fast pushing, and water may be given more frequently. Avoid, however, keeping the roots constantly wet; a thorough soaking about every seven days will satisfy any well-established plant in a pot. Basket plants, or those growing on blocks, may require it more often. C. gigas prefers growing in a pot to all other methods. The block and pot system combined answers in every respect. The proper place for this Cattleya now is the Mexican-house, or where it will get a high sun-heated temperature, a small amount of shade, and at all times when the external air is above 50°, a fresh circulation of fresh air. Indeed, so long as the sun can keep the inside temperature between 70° and 80°, it would be difficult in an ordinary Orchid-house to give too much air. If a plant intends flowering the flower-sheath will be visible a few days after the leaf proper emerges from its enclasping bracts. From this time, bulb, flower, and leaf come away altogether at a rapid rate, so that by the time the leaf is exposed at the top of the bulb, the flower-buds will be as large as Damsons. The plant should then be moved to the Cattleya-house, where, with less exposure to the sun and a more generous atmosphere, it will carry with the least distress its large complement of flowers, which will last four weeks in perfection. The best time to pot, or in any way interfere with the roots of C. gigas, is a few weeks after the flowering season. *J. C. Spyers, Burford Lodge.*

### Orchids in Flower.

The following Orchids are in bloom at Messrs. James Veitch & Sons', Royal Exotic Nursery, King's Road, Chelsea:—

Aerides Fieldingii
,, japonicum
,, suavissimum
Angræcum falcatum
,, sesquipedale
Anguloa Clowesii
Bletia hyacinthina
Burlingtonia fragrans
Calanthe veratrifolia
Cattleya amethystina
,, citrina
,, Mendelii
,, Reganelli
,, Skinneri
Chysis bractescens
Cymbidium eburneum
,, Lowii
Cypripedium Argus
,, albo-purpureum ×
,, barbatum
,, ,, biflorum
,, ,, grandiflorum
,, Boxalli
,, caudatum
,, concolor
,, Dominii ×
,, Harrisianum ×
,, hirsutissimum
,, Hookeræ
,, Lawrenceanum
,, longifolium
,, Lowii
,, niveum
,, porphyreum
,, Schlimii album
,, Sedeni ×
,, Stonei
,, superciliare ×
,, vexillarium ×
,, vernixium ×
,, villosum
Dendrobium aggregatum
,, Bensoniæ
,, chrysotoxum
,, crassioode
,, crystallinum
,, cucullatum
,, densiflorum
,, ,, album
,, Devonianum
,, Dominii ×
,, endocharis ×
,, Falconeri giganteum
,, Farmeri
,, ,, aureum
,, fimbriatum oculatum
,, infundibulum
,, Jamesianum
,, japonicum
,, Jenkinsii
,, lasioglossum
,, lituiflorum
,, luteolum
,, nobile
,, ,, pendulum
,, Pierardi
,, primulinum giganteum
,, pulchellum
,, senile
,, thyrsiflorum
,, Wardianum
Epidendrum crassifolium
,, erectum
,, macrochilum album
Epidendrum pseud-epidendrum
,, vitellinum majus
,, Wallisii
Eria Curtisii
,, species
Dendrobium tortile
Lælia flammea ×
Leptotes bicolor
Lycaste lanipes
,, Skinneri
,, tricolor
Masdevallia amabilis
,, Backhouseana
,, bella
,, Chelsoni
,, ignea
,, ,, erubescens
,, Lindeni
,, Peristeria
,, radiosa
,, Veitchiana
,, xanthina
Odontoglossum Alexandræ
,, ,, maculatum; and many other fine varieties.
,, Andersonianum amabile
,, Cervantesii
,, cirrhosum
,, citrosmum
,, cordatum
,, gloriosum
,, maculatum
,, nævium
,, ,, majus
,, pardinum
,, Pescatorei
,, Phalænopsis
,, Roezlii
,, ,, album
,, Rossii majus
,, vexillarium
,, tripudians
,, triumphans
Oncidium aureum
,, ampliatum
,, concolor
,, Crœsus
,, cucullatum
,, Krameri
,, luridum
,, Marshallianum
,, phymatochilum
,, sarcodes
,, unicorne
,, Weltoni
Phalænopsis amabilis
,, casta
,, grandiflora
,, Lüddemanniana
,, Parishii
,, rosea
Phaius irroratus
Restrepia elegans
Saccolabium ampullaceum
,, curvifolium
Sophronites grandiflora
Trichopilia suavis
Vanda cristata
,, suavis
,, tricolor
,, ,, formosa

## Garden Operations.

### *HARDY FRUIT GARDEN.*

Apricots, Peaches, and Nectarines on walls, will now reqire almost daily attention. Aphides speedily establish themselves and overrun the trees, and where their appearance is not promptly observed their destruction becomes more troublesome, and, if long delayed, disastrous to the trees. The recurrence of low night temperatures will have prevented the application of water with sufficient frequency from the engine. Now that the weather has again taken a more favourable turn, it will be well to wash the trees with tepid water, applied with moderate force on several successive days; after which, it may be necessary to add an insecticide, in order to effect a clearance—1 lb. of soft-soap, and ½ lb. of tobacco-powder, to 10 gallons of water, will be found effective and of suitable strength. If the evenings threaten to be cold, it will be well to wash the trees early in the day rather than to wait for a suitable time for night application. Gradually remove the protecting material at first, leaving a single herring-net, and await mild and growing weather before finally dispensing with all, or removing the temporary coping-boards. Proceed carefully with rhe disbudding of Peaches and Nectarines, not being in too great a hurry to remove much foliage, as cutting winds, such as we have experienced during the month of May for several

years past, have a serious effect on the tender leaves; therefore remove the shoots gradually, so as not to give any additional check to the trees. Commence on the upper portions of fan-trained Peaches, and rub off at first only those growths that are on the lower side of the shoots and have no fruits at the base, those affected with greenfly and of which the foliage is too much curled to be readily cleaned, and any strong fore-shoots that appear to be making a rank growth. Any other part of the tree that is excessively crowded may be gone over in the same way. In the course of a few days the trees may again be gone over and further growths removed, taking care to reserve at least one good growth as near the base of each shoot as possible, and avoid tearing off any that have fruits attached to them. In fruitful seasons some shoots will be found covered with fruits but without a leading bud, even where every care has been taken in pruning; these may be cut out at once. Young trees of Peaches, Apricots, and Nectarines that were allowed as much extension at the winter pruning as the ripeness of the wood would permit, will require early attention in disbudding in order to insure an equal growth to furnish the, perhaps long, shoots. Rub off all fore-right and under buds as soon as they start, while those on the upper side of the branches had better be pinched in gradually, retaining after the final pinching only as many shoots as will be required for permanent branches. Apricots will now require to have some of the fruits where most thickly set, removed, and the young growths attended to. As the breast-wood is pinched off, see that as many as possible of the grubs that affect the points are removed in performing the operation, and destroyed—not left lying about to have a chance of returning to the trees. The larva of the crane-fly sometimes causes great destruction in Strawberry quarters by eating through the stalks of the young leaves and flower trusses at the ground level. Where its presence is observed—which may easily be done by noticing the portions of young growths withering—a search must be made around the crowns just under the surface of the earth, where it will frequently be found in great numbers, playing havoc with the fresh roots as well as with the growths above-ground. When they are unfortunately present there seems to be no other way of destroying them than by patient search; for their "leather jackets" are proof against soot or other things that can be used without injury to the plants. In previous seasons we have removed from two to three dozen of those grubs from around a single plant, while the total removed from a quarter of Strawberries would amount to several quarts. Many operations will now require attention at an early date, and amidst the press of work it will be well to see that newly-planted trees do not lack sufficient supplies of water during this month, when such trees are subjected to a severe strain should the weather prove dry. Vines on walls will now be started sufficiently to be disbudded; where the spurs are long the lowest shoot may be retained in addition to the one left to bear the bunch, but in other cases one shoot from each spur will be enough. Continue to keep the hose going amongst Gooseberries, Currants, Raspberries, &c.; this will be beneficial to the rightful occupiers, while making a clearance of those that are not, amongst which seedlings of bush fruits are far from being the least numerous. *R. Crossling.*

## *FRUIT HOUSES.*

Vines.—The weather still continues favourable for finishing early Grapes; give a pleotiful supply of warm air to those colouring, and on bright days damp the house early in the morning so that it will dry up by midday. It is also a good plan to leave a little air on all night back and front, increasing it in the morning as the temperature rises, and gradually reducing it again in the afternoon, keeping a fairly brisk heat in the pipes all day. Grapes that are ripe must now be kept cooler and drier, the border will only require sufficient water to keep the berries plump and the foliage healthy. On bright days an occasional damping of paths and borders will help to keep the foliage healthy, doing it in the early part of the day. Succession-houses taking their second swelling had better be now looked over, and have any berries too thickly placed removed. Examine the borders, and when dry water copiously with tepid manure-water. If the borders are well drained they will take a large supply of water about every three weeks. Muscats that are set had better be left a few days longer than Hamburghs before thinning, as then you can see which berries are taking the lead and there is less chance of having small berries; in fact, if the Vines are in a good state, and so thinned, there will be no small berries at all. After thinning give a good soaking with tepid manure-water, and keep a night temperature of about 70°, a few degrees more or less according to the state of the weather outside, raising the temperature early in the day and closing early in the afternoon. Fill the evaporating pans with weak manure-water. Muscats coming into flower (and the latest should be by this time) treat as advised in previous Calendars. Late varieties of Grapes for use in the early part of next year should now be approaching the flowering period, to be ripe by the end of September, as if not thoroughly ripe by that time they will not keep well through the winter; it is also a good plan to assist them with a little fire-heat through the summer. Succession-houses of Black Hamburghs tie down, stop, and thin as they require it, leaving only enough foliage to cover all the trellis without crowding. The latest house of Hamburghs will now be showing bunches freely, and can be kept close and encouraged to grow with a little fire-heat in cold or dull weather, which also helps to draw out the bunches. Early planted Vines will now be growing freely, and will take liberal supplies of clear tepid water and a good supply of air on bright mild days, closing early and syringing foliage, paths, and borders thoroughly. Do not stop them at all, but let them ramble about the trellis the first year, which will fill the border with good healthy roots and cause them to break well the following year. The present is a good time to plant Vines in outside borders, shaking the soil carefully from the roots, and laying them out straight in the soil about 6 inches below the surface, then give them a watering and mulch with short manure. Pot Vines for early forcing next year will now be growing freely, and will be better for a little feeding with manure-water as soon as the pots are filled with roots. Stop the side shoots at the first joint, and be careful about giving air early, for if the large leaf by the eye for next year's fruiting gets scalded they never break so well. Stop them at the point when they get to the required length, and keep them in a brisk moist heat to make an early growth. *Joshua Atkins, Lockinge Gardens, Wantage.*

### Orange House.

The details of work in this house now are much the same as those given at p. 367. Where the fruit is swelling plenty of heat and moisture, with vigorous syringing, will cause a healthy growth. Let the leaves be freely exposed to light, and do not be satisfied unless they are of a rich dark green colour. If there is a tan bed in the house for the trees to stand over, the roots will be more active, and I find that very much less heat is required from the hot-water pipes. The sun-heat should be utilised by shutting up the house early in the afternoon. If any trees require repotting this can be done, even when the green fruit is on the trees, but in that case the roots should be disturbed as little as possible during the operation. The trees may also be surface-dressed, but the material should be different from that used for the stone fruit; loam and manure in equal parts answers well with a good proportion of fine bone-dust and small bits of charcoal. *J. Douglas, Loxford Hall, Ilford.*

### Pines.

The directions already given respecting temperatures, watering and syringing, still hold good. Too much cannot be given at any time of the year. As regard solar heat the chemical action of the sun's rays becomes changed in their passage through glass, and it is wrong to assume that Pines require no shading; in light structures shading is absolutely necessary. An acute observer will soon notice the difference of colour of Pines grown in the shade and others grown under a bright sun; the former assumes a colour and finish to which the latter never attains. Another point may be cited—the largest fruit of the season are invariably those ripened in the autumn, which can only be attributed to the fact that the sun's rays are not too powerful. What is needed, is a means of shading that will admit plenty of light, and at the same time regulate the solar heat. Lime, whiting, or any other material put on the glass to give shade, is a cheap way, but it has the disadvantage of obstructing the light at morning and evening. After trying various modes of shadings we have found scrim canvas blinds the best. These should be made on easily portable principles, and that can be expeditiously worked and only applied when required. Where a number of Pines are grown in long structures under one continuous roof the shading is more difficult. One mode of working the shading is to have two cords placed at intervals from 8 to 10 feet wide attached to the scrim, so that one cord hauls up the shading, and the second cord pulls it down—a very old method and a very imperfect one, taking time to put it up and down, and the canvas tearing with constant working. This plan has now been superseded here by a better construction. The fruiting-houses are 120 feet long, worked by two rollers 60 feet long each. At each end of the house is a wheel attached to the end of the roller; this folds and unfolds the cords as the rollers are worked up and down the roofs. When the shadings are let down the rollers run from the apex to the bottom of the roof, and when winding up the shadings the rollers run from the bottom back to the apex. Instead of pulling up the shading and letting it down by the hand a small roller is fixed, which collects the cords and also winds the canvas up and down more evenly. On one side of the winding wheel is a cog, with a catch to drop into; this holds the shading at any point on the roof. This plan is in part of our own devising, and the most simple and efficacious I have seen. *D. Wilson, Castle Hill, Devon.*

## *PLANT HOUSES.*

Stoves.—The occupants of this department will, now that they are mostly in active growth, become somewhat crowded. In order to remedy this, it will be advisable to remove some of the plants to an intermediate house. Select those kinds which will thrive best under these conditions—some of the hardier Palms and the green leaved forms of Dracænas, for instance. Established plants of Eucharis amazonica may be placed in vineries at work. Several of the forms of gold and silver Ferns (Gymnogramma) will do far better in a vinery than under the ordinary treatment of a stove, where the amount of moisture required to be maintained will be prejudicial to them. I am assuming that all the plants are free from mealy-bug; where this pest exists on no account should the plants be moved to a vinery or fruit-house, if these houses are free from it. When plants are clean the cultivator will find it a great help in enabling him to remove them from house to house as occasion may require, suiting the situation to their several wants. Where the early autumn and winter flowering Gesneras are grown, attention should now be given to such kinds as G. cinnabarina and G. zebrina, which should be shaken out, and the bulbs replaced in smaller pots; one bulb in a pot will be sufficient for general purposes, or if larger plants are desired, from three to five may be placed in a larger sized pot. G. Donckelaarii can be easily propagated from cuttings; this is a fine showy plant in September. They will all thrive well in a mixture of peat, leaf-soil, and sand, shading them when in free growth from the direct rays of the sun. A good batch of the various fancy kinds of Coleus ought now to be grown on in a good heat—cuttings struck even now will make good stuff for conservatory decoration later on. These plants are most serviceable and highly ornamental for late summer use. Give attention to all kinds of Ferns now they are in free growth; attend closely to the shading on all bright sunny days. Some kinds are more sensitive than others. Adiantum cardiochlæna and the forms nearly allied to it, require double the amount of shading generally given them to keep their handsome fronds perfect. Thin out the older fronds from all Ferns that are attacked with brown-scale; this can now be done without detriment to the young growth. Ferns grown in hanging baskets are highly ornamental either in the stove or conservatory where room can be afforded them. Several of the Davallias and Adiantums are good subjects for this work; among the former D. elegans is one of the best, of the latter A. amabile is, I consider, the very best of its kind. Asplenium flaccidum and longissimum, and most of the varieties of Goniophlebium are also most handsome plants when thus treated. It would be a good time now to start making up baskets of either kind, using good rough fibrous peat and some sphagnum moss. This operation is better performed now than early in the season, the plants having just at first an excess of soil, which, if they were not in active growth, would soon become sour. Regulate the young fronds and also the fresh growth proceeding from the older ones of the Gleichenias, also peg the rhizomes closely to the soil where they are disposed to travel beyond their limits. Keep the stems of all Tree Ferns well syringed. Look after seedling Ferns of all kinds where it is desired to increase the stock; spores should be sown in pans of those sorts which are best increased in this manner.

Greenhouse and Pits.—The greater part of the hard-wooded greenhouse plants will now be advancing into flower, so any fresh tying or regulating that has to be done should not be delayed longer, or the ill effects arising therefrom will be apparent when the plants are in bloom; use neat sticks in this work, and not more than is really necessary; where the plants have to be used in the conservatory this should be especially avoided. Give attention to the stock of plants for conservatory decoration to succeed the Azaleas, Pelargoniums, &c. The earlier batch of Fuchsias may be allowed to advance into flower. These, with Stocks in pots, and Rhodanthes will make a nice change after the more showy plants have ceased to be effective. Lilium auratum should now be growing strongly; when showing flower an occasional watering with liquid manure will be beneficial; late potted bulbs of the same should be brought on steadily in a cold frame or pit. Herbaceous Calceolarias now advancing into bloom should be fumigated to keep off or destroy greenfly, before the blossoms expand; these plants ought also to be tied out to give support to the stems before the weight of the trusses bears them down. Great care should be exercised now with Camellias making new growth not to damage the tender foliage; unless specially required the flowers should be picked off all the late kinds, to encourage growth as soon as possible. *James Hudson, Gunnersbury House Gardens, Acton.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| MONDAY, | May 9 | Sale of Established and Imported Orchids, at the Mart, by Protheroe & Morris. |
| TUESDAY, | May 10 | Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. |
| | | Sale of Flowering Orchids and Specimen Plants, at Stevens' Rooms. |
| | | Sale of Stove and Greenhouse Plants, at Ryde's Hill, Guildford, by Protheroe & Morris. |
| WEDNESDAY, | May 11 | Sale of Imported and Established Orchids, at Stevens' Rooms. |
| THURSDAY, | May 12 | Sale of Imported Orchids, at Stevens' Rooms. |

CHISWICK, shorn of much of its former area, deprived of its Arboretum and Wilderness Walk, and of much which in years gone by made it one of the most interesting among similar establishments, still has much to attract the gardener, as may be judged from the notices which from time to time appear in these pages. It is, as it should be, an instructive garden. So far as means and other circumstances permit, it is utilised for instructive and experimental purposes, and if more is not done in this direction the reason is known to every one conversant with the history of the Society. What Mr. BARRON, the Superintendent, undertakes, he does thoroughly, but unostentatiously; the consequence is, that the greatest reliance is placed in him by those of the gardening fraternity with whom he comes directly or indirectly in contact. Just at the present time the most conspicuous objects in the gardens are the fruit trees—Plums and Pears are in full bloom, the Apples of course are later.

An inspection of the collection of Pears is calculated to afford much interest, particularly with reference to the question as to the advantages or disadvantages of restrictive pruning and training. Space nowadays at Chiswick is very limited; there would be no room for fruit trees with long bare trunks, irregularly placed straggling limbs, and a thin coating of flowers over the outside of the head of the tree. A score or so of such trees would fill up all the area devoted to fruit culture. On the contrary, the well-managed pyramids of moderate height, furnished at regular intervals with fruit-spurs to the very base, with no bare spaces, seem to be the very thing for gardens of moderate extent, and allow of a much greater variety of kinds being grown. Whether over the same area the quantity and specially the quality of the fruit is greater in the unpruned than in the pruned trees is a question which has not, we believe, been accurately determined, nor, indeed, would it be at all easy to get at fairly comparable results.

Every one admits that pruning is more or less an unnatural process, though it is by no means wholly so, for Nature does a good deal in that way herself. Every one admits that a great deal of unintelligent, unnecessary, and, worse still, mischievous pruning is done. But, because this is so, it by no means follows that all pruning is bad. The tree left to itself attains a certain age before bearing, it makes a more or less lofty trunk, and the position and proportion of leaves and wood to flowers and fruit are adjusted accurately according to the requirements of the tree, its age, vigour, and the circumstances under which it is growing. That, so to speak, is the wild tree, and we do not doubt that in some cases the practice of the old Herefordshire and Kentish fruit farmers was and is the right one. But in most cases, and especially in small private gardens, we want the tree to conform to our requirements and the exigencies of time and space. We secure this, amongst other things, by judicious pruning. It may well be that in the long run the trees suffer in some way by this mutilation, but if it be so it has to be proven, and in any case this can be provided against; there are more behind, and, under the circumstances, the advantages more than compensate for the disadvantages. Some of the trees at Chiswick are veritable pictures at the present moment—such, for instance, as Urbaniste, a pyramidal tree with the branches trained down *en quenouille*, and with thick firm shoots, now covered with bloom — as Duchesse d'Angoulême, Louise Bonne, Maréchal de la Cour, Jargonelle, Bonne Charlotte, and many others. Belle Julie, with its large saucer-shaped flowers, is one which at Chiswick bears every year. One of the trees has lost its original leader, to replace which a side shoot has been taken up with complete success. Des deux Sœurs is one which is late in flowering, and has characteristic bark, like that of the Elm.

Very interesting also is it to note the different behaviour of the trees on different stocks. Mr. BARRON finds, for instance, that Marie Louise does not do well on the Quince, but is best on the free stock, or when double grafted. Jargonelle on the Quince is a sheet of bloom, while the corresponding tree on the Pear has scarcely a flower. Winter Nelis on Cratægus coccinea is full of flower, on the Quince it is later, freer-growing, and not so full of flower. Nouveau Poiteau, a free-growing Pear, on Cratægus acerifolia is full of bloom, on C. coccinea scarcely less so; on the Quince it is moderate both as to amount of flower and growth, on Cratægus laxiflora it has but few flowers, and those are late; on C. frigida it remains dwarf, with no flowers at all.

We instance these as a few among the most remarkable illustrations of the effects of grafting in the case of the Pear, which may be seen at Chiswick at present, and which justify our remarks as to the value of this garden as an experimental station. Our illustrations, fig. 110, p. 597, taken a short time since, before the flowers were expanded, show a large pyramid, two upright cordons of Colmar d'Eté on the Quince which have never been root-pruned, and two cordons against a wall of Glou Morceau. All these are now covered with bloom, but the woodcuts, taken from photographs, more correct and full in detail than any drawing could be, are more instructive as to the manner and method of pruning than would have been the case had they been represented in their present state. On the Apples we may have something to say next week.

—— THE EUCALYPTUS.—We have on various occasions adverted to to the growth of this tree in the South of France and in Italy. We have now the opportunity of giving an illustration (fig. 111) of one of the finest trees of E. globulus, if not the finest in Europe, planted about twenty-five years ago in the garden of the Villa de Luynes at Hyères. The smooth bark and the drooping foliage are well shown in our sketch, forwarded by a correspondent, but the greyish colour is somewhat monotonous to our eyes, so that the woodcut conveys an impression of greater beauty than, to our thinking, the tree possesses. It is not, however, as an ornamental tree that it is specially planted.

—— THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—We are greatly pleased to hear that an attempt is to be made by the committee of this Society to increase the amount of the pensions granted to £20 and £16 respectively. We have long felt and expressed our opinion that the amount granted was painfully small, though we were well aware that careful management could do no more with the existing means consistent with safety. We now learn that a serious attempt is to be made to increase the funded property to such an extent as to permit the increase above-mentioned. One means of doing this is to raise a fund to be called the Gardeners' Benevolent Pension Augmentation Fund, to be kept separate and distinct from the General Fund, and to be invested till the committee shall find themselves in a position to make the augmentation alluded to. To make a beginning it is proposed that a collection be made in every garden and horticultural establishment of the country on Saturday, July 30 next. If every one will make a point of giving what he can afford, if it be only a "mite," and not leave others to do his duty for him vicariously, such a collection will, we have no doubt, be very large. We would suggest that an opportunity should be given to those disposed to contribute by establishing a collection once a year at each one of the leading horticultural exhibitions, whether in the metropolis or the provinces. In any case we trust the gardeners, for whose special behoof the Institution exists, will make it a point of conscience to help on so excellent a scheme.

—— THE ROCKERY AT CHISWICK.—We are glad to see that the existing rockery has proved so popular that a considerable addition to its area is being made. It would be well if an attempt were made to secure greater accuracy of nomenclature.

—— PELARGONIUM SOCIETY.—We are requested to state that although the prizes offered by this Society are open to competition amongst the members of the Society only, the rule does not apply to the Society's honorary award of the Certificate of Merit, which is open to members and non-members alike. Seedling Pelargoniums will be adjudicated upon by a special committee of the Pelargonium Society at meetings of the Royal Horticultural Society at South Kensington, June 14, June 28, and July 12. Forms of entry for seedlings may be obtained from the Honorary Secretary, Mr. SHIRLEY HIBBERD, 15, Brownswood Park, London, N.

—— FLOWER SHOW IN PARIS. — The Société Nationale and Centrale d'Horticulture de France will hold its show from the 21st to the 29th of May. The Society has at last made up its mind to have a show by itself, instead of combining it with the exhibition of paintings, which it had done for some years without any good result. The show this year takes place in the gardens, close to the Palais de l'Industrie, in the Champs Elysees. Though up till now nothing has transpired about the arrangements, the schedule has been issued, in which there are 101 classes. The number of prizes, and their values for every class, is not marked, but is left to the judges to decide. We hear that some good plants are likely to be exhibited, and that it is expected this show will be far superior to any that have been held in Paris during these last few years.

—— THE AMERICAN POMOLOGICAL SOCIETY.—We have before us the report of the meeting of the American Pomological Society held at Rochester in 1879. This is a publication which may well put our horticultural and pomological societies to shame. It contains a record of useful work done with which we have nothing to compare. The catalogue, especially, is of great value, containing an enumeration of the principal varieties of fruit cultivated in the States, with indications of their size, form, colour, quality, use, season, origin, and of their respective value in the several States and Territories of the Union from Nova Scotia and Maine to Florida, from Massachusetts to California and New Mexico. This immense area is mapped out into a northern division between 42° and 49° N. lat., a central division between 35° and 42°, and a south division between 28° and 35° N. lat.

—— MYOSOTIS DISSITIFLORA.—The great beauty of this species elicits admiration from every one who sees it; but there is a drawback, and a serious one, too. It is what gardeners call "miffy," so that it has rather gone back in popular favour. There is a large-flowered variety of this plant, which we have seen at Kew, Chiswick, and elsewhere, under the name M. dissitiflora splendens, which is even more beautiful than the original form. Whence it originated, and whether it is more robust than the type, are questions we should be glad to see answered.

—— THE BOTANIC GARDEN, FLORENCE.—We have received a protest, signed by several well-known Florentine botanists and horticulturists, deprecating the proposed transfer of the collections, living and dead, from their present location to one far less well suited for them. Those who attended the Congress at Florence in 1874 will remember how remarkably good were the arrangements of the Museum and herbarium, while if the garden was in some respects antiquated and restricted, it was at any rate better in these respects than the old herb-garden to which it is proposed to remove it. We cannot conceive what are the reasons which actuate the pro-

moters of the scheme. One must be on the spot to understand that; but to outsiders who have had the pleasure of working in the Florentine Natural History Museum, so admirably conducted by the late Prof. Parlatore, the removal seems to be a veritable sacrilege. If it is a mere affair of the convenience of students attending elementary classes, surely arrangements could be made for them, if more convenient, in the Giardino dei Semplici, leaving intact the existing collections at the museum for purposes of research and the use of proficients.

—— Apple Blossom. — The great beauty of Apple blossom is known to every one, but the present time affords an opportunity for comparing different varieties as to this point. At Chiswick, the other day, we noted the following as specially beautiful: — Irish Peach, or Early Crofton, with its large very deep-coloured flowers; Oslin, with a profusion of red flowers; Transparent Codlin, with rose-coloured blooms; Gravenstein, with large pale blossoms. It is a singular fact that the unexpanded buds of some Apples are more tender than are the expanded blooms of the Pear.

—— British Mosses. — The fifth part of Dr. Braithwaite's excellent *British Moss Flora* has been published. It includes the history and description of the species of Fissidens, with lithographic representations of the plants and their parts. This work is most conscientiously carried on, and is indispensable to students of Mosses.

—— Pyrus spectabilis.—It is quite probable that some of our readers may be inclined to modify the warm praise bestowed on this tree by Loudon, who states that it is "by far the most showy of all the different species of Pyrus, both of this and of the other sections," and that "no garden, whether large or small, ought to be without this tree." The beautiful deep red of the large and numerous flower-buds of a well-flowered tree make it a splendid object, and even when the blossoms are fully expanded their pale rose-coloured tints, although less attractive than that of the buds, create a fine effect. At Kew some good specimens are in bloom in the arboretum and elsewhere, and in the Pyrus collection a variety under the name of Kaido—with flowers a couple of shades deeper than those of the type—is especially conspicuous. P. spectabilis is a native of China, from whence it was introduced to this country a century ago.

—— Gleichenias at Upleatham. — Amongst the many fine genera of Ferns which have become popular with cultivators in recent times, Gleichenia holds a first place. The whole formation of the plants —including their slender half-scandent stems, with their perfectly regular but elegantly-cut fronds—is alike beautiful. Disliking division of the rhizomes, and difficult, or, as most growers find them, incapable of being raised from spores in the ordinary way that most Ferns can be increased, the propagation of Gleichenias has necessarily been slow, and has tended to keep them dear; otherwise they would, no doubt,

Fig. 111.—Eucalyptus globulus in the garden of the villa de Luynes at Hyères. (see p. 600.)

ere this have been much used for mixing in a cut state with flowers, few who grow them caring to cut them in the manner that commoner Ferns admit of; yet when they receive the treatment best calculated to encourage quick growth it is surprising how rapidly they grow. Few people manage them so well as Mr. Letts, as many who saw the splendid plants he last year exhibited can testify. Along with a number of large specimens of the best species, such as G. Mendelii, G. speluncæ, G. flabellata, and G. rupestris glaucescens, is an example of the last-named kind which has been grown in two years from a small bit, then in a 7-inch pot, up to 6½ feet in diameter, which it now measures, the growth so close and luxuriant that it would not be possible to imagine anything more magnificent in its way. This is one of the finest, if not the finest, of all the Gleichenias—a free grower, and most beautiful in all its stages of growth.

—— Mr. Henry Knight.—We are sorry to learn that Mr. Henry Knight is about to vacate the post of Gardener at Floors Castle, Kelso, which he has for some years ably and honourably filled, and that under conditions which were not the most encouraging. Mr. Knight has had a good training and an extended experience, both in this country and on the Continent, and we have little fear that the services of so competent a person will not soon be in requisition elsewhere.

—— Saxifraga virginiensis flore-pleno.—All admirers of double flowers will welcome the subject of the present note, which as an ornamental hardy rockery, border, or even pot plant, is certainly much superior to the single-flowered type. At Kew, under the same conditions, it has taller, stouter scapes, and its compact, very double blossoms, bear about the same relationship to the normal plant as do those of the double-flowered form of Saxifraga granulata to those of the ordinary wild plant.

—— A New Method of Vine Culture.—We take the following from an Anglo-Italian journal, which evidently accepts the statement in full confidence. What a pity editors of public journals do not take the advice of their *confrères* of the horticultural Press before printing such rubbish. We have seen cuttings thrust into Potatos to keep them fresh: has some hoaxing "Yank" seen something of this kind and invented the rest?—

"A great discovery has been made on the Mojave desert, which seems destined to revolutionise viticulture in Southern California. It has been found that Grape cuttings inserted in the trunks of the Cacti on the desert grow and thrive as vigorously as in cultivated land. This fact is of great importance to the people. By the use of a chisel a man can plant a large vineyard in a day, and the Vine so planted will climb the Cactus and grow luxuriously without cultivation or irrigation. The dry, hot sands of the desert will afford a fine place for drying raisins. In addition to Grapes it has been proved that Melons, Cucumbers, and Tomatos will grow from the Cactus stock, so that the desert may soon blossom as the Rose."

—— Corokia cotoneaster.—In the Winter Garden at Kew this rather peculiar New Zealand shrub is now in bloom. It has interlaced, twiggy, tortuous branches, clothed with small round leaves, dark green above and cottony below, studded with pretty star-like yellow blossoms. As will be seen by referring to the report by Mr. Gorrie, published in our columns for January of last year, specimens of this shrub had passed the winter of 1878-9 against a wall at Rait Lodge, Trinity, near Edinburgh, without injury.

—— Colour in Fruit Blossoms.—The bloom everywhere upon hardy fruit trees is marvellous in quantity, whole breadths of orchards being literally white as snow. Were it not for the pleasant anticipations of grand crops of delicious fruit to which this points, we should perhaps find fault with the exceeding monotony of colour, or rather absence of colour, thus shown. Beautiful as a tree covered with a mass of bloom of snowy whiteness may be here and there amidst others of varied hues or of rich dense green foliage, a perfect wood of white is not ornamental, or calculated to elicit enthusiasm. Just now Pears, Plums, and Cherries, all white, are in the height of their "flowering," and at least all through the metropolitan district it is so abundant as to excel all that has been seen for many years. Town dwellers, whose perceptions of rural life and the country in its spring garb are often of the cloudiest, will find in a day's outing amidst the garden orchards and the greenhouses which border them in the remoter districts, much to delight and to admire. But there is now coming to the relief of the monotonous bloom of snow the bright contrast of pinks and reds given by the beauteous Apple blossom, latest of all our hardy fruits, but ever the most welcome. Under the expanding influences of warm sunshine, assisted by softening showers, the Apple bloom is universally opening, and if the frosts should spare us more visitations, the product will be one of the heaviest crops of fruit perhaps ever seen. But if the orchard fruits are generally wanting in colour, we may find in some of the better known early blooming decorative trees rich colours that help to make shrubberies singularly bright and gay. Just now there is not to be found in all Kew Gardens a more striking or beautiful object than a double-blossomed Peach, near the tall flagstaff. 'Tis true one half the twigs on the branches are dead, but the live ones are covered with bloom so rich in colour as almost to rival the double scarlet Thorn. Even for this one tree alone we have reason to be thankful.

—— Clematis Exhibition at Alexandra Palace. — This year Messrs. G. Jackman & Son's collection of Clematises make their *debût* in the North of London at the Alexandra Palace. There, in one of the glazed corridors, a very effective group has been staged, and is now open to public view. The plants a day or two since were scarcely at their best, the backward season having thrown them rather later than usual, so that they will go on improving. One of the most brilliant is Sir Garnet Wolseley, which certainly stands A 1 amongst the earliest bloomers. Several other of the popular favourites are also very effectively flowered, and altogether the show will be a treat to the North Londoners and others whom it may attract during the period over which it is on view, which extends, we believe, to the 21st inst. We did not notice any novelties.

—— Anthemis montana.—On the rockwork at Kew this pretty and somewhat rare dwarf Composite is now nicely in flower. It is of neat dwarf habit, has whitish leaves and large Camomile-like flower-heads. A native of the Alps of Piedmont.

—— Mr. Davies' Rhododendrons.—At the spring flower show held lately in the Manchester Town Hall, Mr. Isaac Davies, Brook Lane Nursery, Ormskirk, was awarded a First-class Certificate of Merit for a new seedling Rhododendron named "Daviesii," the colour of the flowers being a bright orange-scarlet, exactly the colour of glowing fire. Mr. Davies is well known as the originator of many valuable varieties of Rhododendrons and Azaleas, having devoted his attention for many years past to the interesting art of hybridising.

—— Fruits from the West Indies.—The success which has attended the experimental shipments of ripe fresh fruits from Australia has, according to *The Colonies and India*, set the West Indians on their mettle, and several planters have turned their attention to the cultivation of Oranges, Pine-apples, Bananas, and other fruits, especially for shipment to Europe. America has hitherto been the chief customer of the West Indian Islands for fresh fruits, but there is no reason why England should not share in the fruit produce of her nearest tropical colonies. At the present time the trade in Pine-apples is pretty well monopolised by the Bahamas, from whence we receive the cheap fruits which are displayed in a more or less damaged condition on the costermongers' barrows in the streets of London during the summer months. But if more care were taken in selecting and packing the fruit, Pine-apples might be received in excellent condition from all the West Indian Islands, and not only Pine-apples, but Bananas and Oranges. The greater expense which would be incurred by a little more care in packing the fruit, and the additional cost of freight, would be more than covered by the higher prices which would be realised for ripe Oranges, for instance, which could be sold at the time when such a luscious fruit would be most highly appreciated, viz., during the summer months, and at a time when the ordinary supply of European Oranges would not be in the market. One enterprising cultivator in Jamaica, who has lately taken to growing Pine-apples for export, has realised as much as £80 per acre. The trade in Bananas is also increasing, at least so far as Jamaica is concerned, and last year nearly half a million bunches were exported from that island, valued at over £38,000. In the case of Oranges the value exported last year from Jamaica was over £11,000.

—— Spartium junceum flore-pleno.—What has become of the double Spanish Broom? A search through several catalogues, where one might reasonably have expected to find the plant, has proved unsuccessful. Koch in his *Dendrologie* does not mention it, but Loudon does. In Paxton's *Botanical Dictionary* the date of its introduction is given as 1548, whilst a different tale is told in *Hortus Collinsonianus*. The following interesting note occurs in the latter book:—"I first introduced the Spanish Broom with double flowers; it was sent me from Nuremberg, anno 1746, in a pot nicely wickered all over; it cost there a golden ducat; came from thence down the Rhine to Hamburg, and was brought by first ship to London in good order. I soon inarched it on the single-flowered Broom, and gave it to Gray and Gordon, two famous nurserymen, and the public soon had it from them."

—— Bath and West of England Society and Southern Counties Association. — At the Council meeting held at Bristol on April 26, the sum of £20 was granted by the Council for the promotion of an Exhibition of Bees and Bee-appliances at the forthcoming Tunbridge Wells meeting, the arrangements and control being placed in the hands of the Hon. and Rev. J. T. Boscawen.

—— Primula scotica.—There are many plants which are generally to be found in hardy herbaceous collections that are not so pretty and interesting as this little gem from the pastures of Caithness and Orkney. Under cultivation it becomes somewhat modified, the leaves get larger, the scape stouter, and the blue-purple flowers become more numerous. It is now in flower at Kew.

—— Publications Received.—*Second Report of the United States Entomological Commission on the Rocky Mountain Locust* (Washington: Government Printing Office).

—— The Weather.—General remarks on the weather during the week ending May 2, issued by the Meteorological Office, London:—The weather has been generally cloudy, with occasional showers of rain in all districts. On the first day of the period thunderstorms occurred at nearly all our easterly and south-easterly stations. During nearly the whole of the week the weather was mild, but on Monday a change to cold took place all over the country, with a return of north-easterly winds. The temperature was several degrees higher than that of the previous week, but was, nevertheless, still below the mean for the time of year in all districts. The highest reading recorded (67°) occurred at Nottingham on the 28th. At Strathfield Turgiss the thermometer rose to 66° on the 2d, and at Cambridge to 65° on the 1st. The lowest readings took place early on the 28th, when a slight frost was experienced at some of our central and eastern stations, as well as at Silloth. The rainfall was rather more than the mean in Scotland and in "England, S.W.," but about equal to it or a little less in all other districts. Bright sunshine shows a decrease in the grazing districts, but a slight increase elsewhere: the percentages varying from 16 in "Ireland, N." to 36 in "England, E." Depressions observed:—From the commencement of the period until the 28th pressure was highest to the south-westward of our islands, and lowest over Scandinavia; the wind consequently varied between north-west and west, and was of little strength. On the 28th the barometer began to fall briskly in the west and north, and south-westerly and southerly winds set in as some depressions moved northward outside our western coasts. On the 1st an arm of low pressure stretched eastward over these islands, causing fresh westerly winds in the south, and easterly breezes in the extreme north. On the following day a depression appeared over the north-west of France, and the wind shifted north-eastward everywhere.

—— Gardening Appointments.—Mr. Thomas Lowns, lately Foreman in the Gardens at Longford Castle, Salisbury, has been appointed Gardener and General Manager to J. B. Coaks, Esq., Fern Hill, Thorpe Hamlet, Norwich.

## NARCISSUS TRIDYMUS ×.

MR. BURBIDGE lately sent us an interesting Daffodil with a sketch. It is remarkable, amongst other things, in having three flowers within the spathe, instead of one only. As Mr. Burbidge remarks, there is no good reason why we should not have Polyanthus Daffodils as well as other Narcissi. All we beg is, that the cultivators will not let the old true Daffodil go out of cultivation in their zeal for the new. Mr. Burbidge may best be left to tell his own tale :—

I beg to illustrate a curious three-flowered seedling Daffodil, raised, I believe, by the late Mr. Backhouse, of Walsingham (fig. 112). It came to me from Mr. Barr, and I have just painted its portrait. It is one of the most curious and interesting of all the vagaries of our old friend the (Ajax) Daffodil (N. Pseudo-Narcissus). I have sketched it on wood for you, and I send it by to-day's post, as likely to interest the increasing lovers and cultivators of Narcissi. I presume the leaf, which I have not yet seen, is flat as in the Daffodil, and yet I more than suspect that it has some of the "odorus" blood in it, the inclination, however, being strongly on the side of the Daffodil parent. My sketch is natural size, and, as will be seen, the tube is in proportion both narrower and longer than in pure Daffodils ; and yet the stamens are in one series, and spring from near the base of the tube, but not quite so near to the ovary as in the common N. Pseudo-Narcissus. At present it varies with two to three flowered scapes—perhaps four or five flowers on a stalk may be possible to us if we grow it under the best conditions. What a long vista of agreeable possibilities does not this solitary seedling open out to us! Hitherto we have been content with one Daffodil on a stalk, feeling that as a Mede and Persian-like fatality, to be unquestionably accepted : and now the spell is broken ! We may even hope now to raise seedlings with blossoms almost as large and as lovely as N. maximus, N. Emperor, N. Empress, or N. Horsfieldii, and, as faithful old Parkinson says, "many on a stalke." Solitary flowered Daffodils will ever be dear to us ; nevertheless, we shall now, following up this new view, be longing to gain "polyanthus" forms of all our old single solitary-flowered favourites, and the greater the success in this direction so also the greater variety, and its attendant fresh beauty will be ours.

It only remains for me to say that in colouring this variety is well nigh identical with the common wild English Daffodil (N. Pseudo-Narcissus). In size the flowers are smaller than is generally the case in the last-named species—a result which one must naturally expect to follow when the number of flowers are multiplied 200 to 300 per cent. on the same scape. I beg to send also the 3-flowered scape itself for your own inspection. Treat it kindly as the first of its race, and I hope it may give you the pleasure it has given to me. *F. W. Burbidge, College Botanic Gardens, Dublin.*

FIG. 112.—NARCISSUS TRIDYMUS ×.

## Home Correspondence.

"Improved Pruning and Training."—As your review of this book contains mis-statements and misrepresentations, I have to ask you to permit me to correct them. 1. Your reviewer states that I have "condemned all pinching, root-pruning," &c. There is not a particle of truth in the assertion that I have condemned all root-pruning, or root-pruning. At p. 6 I have distinctly stated that "I do not underrate the importance of root-pruning," and a chapter of eight pages is devoted to the subject, p. 95, wherein root-pruning is described as a "necessity," and recommended when needful, and full instructions are furnished for its application in all cases. 2. Your reviewer also states that a "distorted figure of a 'dwarf pyramid tree' is given (p. 44) with the branches at right angles, &c., in such a manner as we should imagine was never seen." This is also untrue. No "distorted" example of pyramid training, as taught by the advocates of restriction and condemned by me, has been given. Fig. 11 (p. 44), to which your reviewer alludes, represents a common way of delineating restrictive pyramid training, and is a *fac simile* of an illustrative example entitled "Pyramid Training," given at p. 406 of the *Gardeners' Assistant* (fig. 265), last edition, edited and revised by one of the present editors of the *Gardeners' Chronicle*, who has evidently failed to recognise his own adopted and approved example of training, and permitted the reviewer to libel it as my invention. In reference to this figure, and respecting the arrangement of the side branches, the *Assistant* says :—"They should be pruned and trained with an aim to give the tree the form of a pyramid or cone, of which [if the tree is intended to be of limited extent] fig. 265 may represent a section." 3. Your reviewer continues :—"Dwarf bush and pyramid systems of cultivating the Apple and Pear come in for perhaps the strongest measure of condemnation at the hands of our author, not because they are the subjects of mismanagement, but rather, it would seem, because they are adopted and popular, and it has become the business of our author to write things down." In the above passage the reviewer imputes unworthy motives and reflects on my veracity in a manner calculated to injure my reputation and interests. I claim and have set forth in my book that my object is to improve and simplify the culture of fruit trees, &c., and I am prepared to show, if called upon, that I have for years past been a consistent advocate and practitioner of what I recommend in my book, and that my objects and motives are what they profess and are set forth to be, and are not those attributed to me by your reviewer, which are uncalled for and untrue. It is a matter of regret that you should have so far forgotten your duty to the public and to an author as to permit a reviewer so far to overstep the bounds of legitimate criticism as to make the statements complained of, and I have to request you to be good enough to insert this letter in an early issue of your paper, and make a satisfactory apology for the aforesaid statements. Whatever latitude may be allowed a reviewer he is not permitted to introduce fiction, and in the event of your declining to comply with my request I shall be compelled to take such steps to vindicate myself as may be necessary. *J. Simpson, Author of "Improved Pruning and Training, &c.," The Gardens, Wortley Hall, Sheffield, April 27.* [We have no desire to misrepresent Mr. Simpson, impute unworthy motives to him, or reflect on his veracity, nor have we done so. If Mr. Simpson will refer to our review, he will find that we do not say he "has condemned all pinching, root-pruning, &c." What we said was that "Chapter V. is devoted to an abuse of what is termed the Rivers school of fruit culture. The dwarf bush, pyramid and almost every form of growing the Apple and Pear are condemned, as well as all root-pruning, pinching, &c." It is no answer to say that other pages are devoted to the recommendation of these practices, even if it were so. At p. 95, now referred to, considerable qualification was necessary, but it is there stated that "root-pruning . . . must be considered a necessary evil." We stated that at p. 44 "A distorted figure of a 'dwarf pyramid tree' is given with the branches at right angles, and in such a manner as we should imagine was never seen." Mr. Simpson calls fig. 11 of his book a "restrictive-trained Pear tree," and says (p. 44) "fig. 11 is a section of a dwarf pyramid tree produced by much and patient manipulation ;" and continues, "The only reason assigned for the adoption of this shape is, that it possesses 'the most elegant appearance.'" This would seem plain enough evidence as to the author's belief in the existence of such a specimen, or why was the illustration given? For the purpose of ridicule, as we supposed, and, in the indulgence of which he would have been perfectly justified, provided such specimens were ever produced. Mr. Simpson gives this as an example—without the slightest qualification, and he can hardly feel surprised if he is credited with having seen, or having produced, a tree with such an elegant appearance. There is nothing in Mr. Simpson's book to intimate that this figure was copied as is now stated to be the case, from the pages of the *Gardeners' Assistant*. Mr. Simpson would do well to read the *Gardeners' Assistant* once again, where he will find that the illustration fig. 265 of that work is entitled *Pyramid Training*—it is nowhere called a tree, but is a mere plan or diagram, no more intended to represent a tree than the skeleton frame in a milliner's shop is intended to represent a human body—and it is given merely to illustrate the proportion of the diameter of the branches according to the height, as the dotted lines (omitted in Mr. Simpson's so-called "*fac simile*" reproduction) and the following context show :—"Its total height is about equal to its circumference at the widest part, a proportion which, according to the French authors, is considered to give the most elegant appearance." If another edition is called for, Mr. Simpson will do well to say how much of his work is copy and how much is original, and in the case of borrowed matter to be careful to make his acknowledgments to the right person. Had Mr. Simpson been as anxious to instruct as we are glad to note he now professes to be, he might have copied fig. 264, from the same leaf of the *Gardeners' Assistant*, representing a perfect pyramid tree, and then have shown the absurdity of such a system to the best of his ability. It would have been much more to the point than ridiculing things which have no real existence. We regret Mr. Simpson should for a moment feel that we have written in a personal spirit at all. We entirely repudiate any such intention. We have freely criticised *Improved Pruning and Training*, and should have been better pleased to have praised than to have condemned, could we conscientiously have done so. We had marked many more passages to which exception might be taken, but our space is limited : the importance of the subject alone justified so much. The rest we leave with the public. *Your Reviewer.*]

The Crystal Palace School of Gardening.—The establishment of a school for the training of practical gardeners, and the diffusion of practical knowledge on the management and cultivation of land amongst all classes, whether owners, occupiers, or managers, by which it can be profitably employed, must commend itself to the support of the British public. To carry this idea to a successful issue, it is absolutely necessary that facilities should be at hand, by which practical gardening and its many accessories can be demonstrated by the principals and practised by the students. For however great may be the advantages of a theoretical training, these, unaccompanied by practice, will be of little avail. The course laid down in the prospectus recently issued by the Crystal Palace Company is certainly most comprehensive ; but before entering on the two years' course of study there, and paying the £110, it would be well for the students to ascertain whether the grounds and interior gardens of the Company possess all the requirements necessary for them to acquire that practical knowledge of gardening which would fit them to occupy such a position as the premium should warrant. Let us take a few of the leading features set forth in the prospectus upon which information may

reasonably be asked. "Practical Gardening and Floriculture:"—The principal requirements for practical gardening are a thorough knowledge of kitchen garden work, pruning, fruit growing, and the forcing of fruit and vegetables. Have the Company means at their disposal for practical instruction in these branches? If not, how do they propose to deal with this most essential part of a gardener's education? Of what will the "outdoor work" consist? As far as one can judge by visits during the past few years, mowing, sweeping gravel paths, clearing up after *fêtes* and firework nights, form the greater part of the outdoor work during summer; whilst digging the borders, sweeping up leaves, and similar work constitute the principal winter occupation. "Propagation and Nursery-work:"—The propagation department at the Crystal Palace is chiefly of bedding plants, and as to nursery work, what is there? And where can nursery work be learned except in the best of our large nurseries? Would a young man after serving his two years at the Crystal Palace and having to go through the extensive curriculum set forth in the prospectus be competent to take the place of a propagator in any ordinary nursery? The "Office-work" is a subject quite outside practical gardening and of secondary importance to the practical gardener, nor is it necessary to enter into the question as to whether young men wishing to become either surveyors or landscape gardeners may obtain their instruction better or cheaper at the Crystal Palace School than elsewhere; but it is to be hoped that in constructional works, such as drainage, roads, &c., they may be taught on better principles than those which were carried out in the original formation of the Crystal Palace grounds. Of "Plants and Planting," it is needless to say more than that if the same wholesale and indiscriminate disposition of trees and plants in the grounds of the Crystal Palace be adopted by the landscape gardeners of the future (as instructed at the Crystal Palace School) the nurseryman upon whom they bestow their favours will have reason to be grateful. "Woodcraft and Forestry:"—Woodcraft is undoubtedly the art of cutting and converting underwoods and timber into marketable produce, and requires a thorough knowledge (only to be acquired by long practice) of the various tools used by the woodcraftsman, and the many purposes for which both underwoods and timber are used. Forestry is a science in itself and much neglected in England. To attain even an approach to proficiency in this art the student must begin in the nursery, must understand how to use a spade, to raise seedlings, to transplant them, and so on through every stage until his plantations are ripe for cutting; soil and situation most suitable for the growth of the plants he has raised must also be his special care, as well as to protect them as far as possible from the ravages of insects and other pests. These and many more important points of instruction are necessary to make a competent forester or a qualified woodcraftsman, and it would be well to know how the directors of the Crystal Palace Company propose to impart them. The prospectus contains too many subjects. No student could possibly attain proficiency as a practical gardener, forester, or landscape gardener in the short space of two years; and if he has to wade through the whole course as proposed, at the end of his term his practical knowledge would be of a most elementary character. The scheme, if successful, will add materially to the pecuniary resources of the Company, and will provide them with a considerable amount of cheap labour, but whether the students would receive a *quid pro quo* which will enable them to obtain remunerative employment at the end of their term seems more than doubtful. A great deal may be said on the subject of the regulations, pay to the students, and other parts of the prospectus, which may probably be further discussed. The question is an important one, and if the Crystal Palace Company can carry out their programme and be the means of advancing the education of the practical gardener, they will deserve the warmest thanks of the whole community. *Practice.*

**Florists' Specialities.**—May I offer a practical suggestion on this subject? The case seems to me to stand somewhat as follows. We all admire and are grateful for the enthusiasm and patience with which florists have developed certain flowers; but some of us wish that the field might be less narrow. The florist confines his efforts to the attainment or further development of certain points. He says:—"The Auricula should have this and not have that," and so on. When questioned he maintains that the "points" for which he endeavours are essential elements of beauty, that his flowers are beautiful in proportion as they approach his standard of perfection. Some of us say—"We don't agree with you: we think that some of the flowers which you reject are in reality more beautiful than some of your prize-taking favourites." And so the battle rages. Nor is the question one which can be decided in an offhand manner. The florist of course has his reasons, and, as Mr. Dodwell says, can defend the justice of his standard; but his arguments are at least open to controversy. I took the trouble some two or three years ago to read carefully the Rev. G. Jean's articles, to which I was then referred as containing an unanswerable exposition of the florist's views, and to which Mr. Dodwell has again referred us. I am, however, free to confess that I found them absolutely inadequate; as far as the real æsthetic difficulties are concerned, the author left the matter very much where it was. The study of the articles strengthened me in my conviction that the florists' standards of perfection are traditions handed down from old times; they are the echoes of tastes now gone by, and the modern florist may accept them and defend them, but they are not standards which he would himself create. Thus, I am led to withhold my sympathies with the author of the leader of April 23 in his demand that the florist should give his reasons. I think it would be a great pity if the pages of the *Gardeners' Chronicle* were occupied by æsthetic discussions, for it would be almost impossible to keep such discussions within profitable limits. I would, instead, desire to offer the following practical suggestion. I would ask the young florists who are just beginning their work seriously to consider whether in their heart of hearts they agree with the dogmas of the fraternity. Let them look at the matter unbiassed by the authority of great florist's names, and put before themselves the question whether there may not be other standards than those which have received the stamp of the brotherhood. If any such find on reflection that they are at variance with acknowledged views, let them take a bold, independent course and work up new types of beauty. It will be an uphill struggle at first, but I think they will, after a short time, find supporters, and eventually gain their reward. At any rate, in this way time will decide whether the present florist has sole possession of the lines of beauty of the "florist flowers." May I also make a humble appeal to the florist, and ask him if, on reflection, he does not himself think that he is sometimes angry without due cause? Is he not a little hasty when he complains of being ill-treated because a modest gardener, himself trying in his way to be painstaking, hints in a friendly humorous way that perhaps the florists' methods are capable of improvement? *Dietes.*

**Spice Apple**—I have great pleasure in seconding every word Mr. Fish has said respecting the Spice Apple. It really is a most delicious dessert fruit, and keeps till May. I got my grafts from a gentleman in this neighbourhood, who had it from the parent tree, and he also gave me its history, which I cannot relate with certainty now, but shall some other day. I consider this Apple deserves a good space and place in every garden as an espalier tree, for it comes in most acceptable when Grapes are scarce and other fruits hardly in, and although I do protest against standard trees in a kitchen garden there is, and can be, no objection to espaliers along the south sides of walks, where they will thus shade no crops, are very interesting in autumn, while the fruit is most useful in winter and spring in high situations like this. The autumn gales are hard on the late kinds, blowing them off before the crops are ripe, thus tempting one to gather them too soon, when they are sure to shrivel, so that the espalier tree or that grafted on the Paradise stock afford the best means of growing choice dessert kinds. In my judgment late Apples should be kept cool and damp rather than otherwise. *J. Rust, Eridge Castle.*

**Royal Horticultural Society.**—Although it is yet a month to the time for holding the Society's grand June show it is not too early to invite from some one in authority information as to whether, as the show opens on a Friday, the committees will sit on that day or not. Of course the schedule of the Society shows that no meeting of the committees is fixed for that day, but it is a question whether exhibitors coming from all directions will understand that. On the one hand it is no doubt inconvenient to have the committees meeting on grand show days; but on the other hand, as this is the only great show the Society holds in the season, and when so many persons attend who would not otherwise do so, it becomes worthy of consideration whether the committees should not sit to suit the convenience of many coming from a distance. *D.*

**Cauliflower, Veitch's Extra Early Forcing.**—As a really first-rate early Cauliflower, suitable for growing in pots, I commend this variety to the notice of those who are interested in the growing of vegetables. We are now cutting beautiful heads from plants grown in 6-inch pots, the seed of which was sown Jan. 5. *J. H., H.*

**Charcoal.**—In your answers to correspondents last week I notice you advise a manure containing charcoal for application to Vines. I think it may interest your correspondent to know that very considerable benefits are obtained by so using charcoal. A gentleman of my acquaintance, some three or four years ago, being desirous of utilising the contents of a very large cesspool on his estate, purchased some tons of powdered peat charcoal, which he thoroughly mixed with the excreta, &c., whilst in the cesspool; he was thus able to remove it without the slightest smell or nuisance, and in a semi-dry state fit to be used for almost any manurial purpose. By adding further charcoal he brought the mixture to any state of dryness he required. Applying, however, rather too much of the manure to his Vines, they made an excessive amount of wood, and it was not considered advisable to allow them to bear fruit that season. However, next year, and every year since, he has received ample proof of the great value of the peat charcoal mixture, by the Vines bearing numerous and enormous clusters of Grapes, and of a superior quality to those they had produced formerly. It is perhaps necessary to add that the peat charcoal used had not been thoroughly carbonised, but still retained much organic matter with nitrogen. In all the flower, orchard and vegetable purposes to which he applied the great charcoal mixture, splendid results were obtained; and in the case of the Potatos there was not the slightest sign of disease, whilst others in the immediate neighbourhood were much affected. *Fred. Livingstone, Sydenham Park, S.E.*

**Sarmienta repens.**—In going through the nursery of Mr. James Wheeler, of Warminster, the other day, I was delighted to find, and could not help admiring, a fine batch of this pretty little plant in full flower, which it was a great treat to me to see. Its merits and great beauty are not so well known, I fear, as they deserve to be, for rarely it is, indeed, that one meets with it in private gardens. Were I to say that it is quite a gem in its way, and that it might almost be regarded as a real botanical treasure, I should not, I think, be bestowing too much praise in its favour. It appears to be quite at home in a cool house and luxuriates in shade and moisture, needing nothing further to grow in than peat and silver sand. Mr. Wheeler, with whom it seems to be a specialty, thinks (and I quite agree with him) that it would do well for rockwork in a cool house. No very great stretch of the imagination is required to enable one to conceive in the mind's eye what a lovely sight it would be to behold a few yards of rockwork with a plant of Woodwardia radicans, with its drooping fronds, planted here and there, and the groundwork carpeted over with the dark green leaves of this beautiful Sarmienta and ablaze with its bright orange-scarlet blossoms. Such a sight, which one can imagine much better than describe, would be worth going a good day's journey to see. *J. Horsefield, Heytesbury.*

**Citrus trifoliata** (p. 568).—There is no doubt that this would make a good fence shrub, but it is at present, as you say, far from common. Those, however, who possess a plant may be glad to know that it is easily increased by cuttings. Last autumn I put a few cuttings in a pot as an experiment, but without much hope of success. The pot was placed in the greenhouse, but with no bottom-heat. All the cuttings seem to have struck. The shrub is quite hardy, but last week's frost cut off the promise of flowers for this year. *Henry N. Ellacombe, Bitton Vicarage.*

**Pulmonaria?**—Under this title Mr. Backhouse, of York, is now sending out what seems likely to prove the finest Jerusalem Cowslip yet cultivated. The habit of the plant is tall and vigorous, and the colour of the flowers clear blue and pink. It is quite distinct from every variety I have before seen, though for two or three years I have bought every Pulmonaria I have seen mentioned in any nursery catalogue. I am disposed to agree with Mr. Bentham, who says that P. officinalis and P. angustifolia, and the intermediate forms, are all varieties of the same species modified by climate and soil. In fact there are already more names than distinct forms, for I have bought Pulmonarias under at least twenty names, whilst I have not more than half as many true and constant varieties. But they are interesting plants, and in suitable soils very ornamental in spring, though their large roots, running far just beneath the surface, rob the soil near them, and require keeping within bounds. The best flower for colour amongst them is that of a plant bought as P. tuberosa. I once got the same from a collector as P. azurea, though it differs from the plant usually sold by this name. I am collecting all the varieties of the species I can meet with. *C. Wolley Dod, Edge Hall, Malpas.*

**Omphalodes verna.**—It is scarcely fair to this pretty spring flower to compare it with Myosotis dissitiflora, for the latter gives about six times as much bloom from a plant of the same size that the Omphalodes does. The one is a neat and pleasing rock-plant, or will give a good mass of greenery for a border, but the bloom is always more pretty than striking. The Myosotis is a grand mass plant, and produces such an abundance of flower that it may be seen a long distance away. The Omphalodes is altogether too modest, though its little flowers exhibit a richer shade of blue. The Myosotis may be more fitly compared with the Aubrietia in its production o

a mass of colour. It has been said that the Omphalodes bloom is less injured by spring frosts: my experience of it here is that whilst the bloom of that and the Myosotis were equally cut off by the spring frosts, the Forget-me-not recovered in a few days, and was as beautiful as ever, whilst the Omphalodes did not again become like its former self. *A. D.*

—— Though enthusiastic in praise, at times, of the Myosotis dissitiflora, I have always grown and frequently extolled the beauty of the ground Forget-me-not, as the Omphalodes is often called. I was therefore much pleased to note the favourable encomiums on this old favourite of "Visitor" and "J. S." at p. 571. Both these writers dwell on the fact of its being so easily cultivated. This is quite true; and yet few plants pay better for a little extra culture. It thrives fairly well, and has a striking appearance under such conditions and culture as those described by "Visitor" and "J. S."; but to have Omphalodes verna in the highest perfection year after year, it should receive the same treatment and culture as Violets—that is, a fresh stock of plants should be propagated from the runners every year; and these should be grown on a piece of nice light soil—an east or north border suiting them best. Plant them in rows 15 to 18 inches apart, and 9 inches or a foot from plant to plant. Keep free of weeds and of runners throughout the summer months. The last advice is somewhat difficult, for the Omphalodes are more inveterate in the putting forth of creeping runners than the Neapolitan Violet. But by perseverance the plants may be grown into compact crowns before the autumn. Plant them out in October or November where they are wanted to bloom. On warm banks I have had the plants in bloom in February, and they go on flowering a long time in succession. The colour and form of the flowers are quite distinct from those of the Forget-me-not or any other, and it is impossible to describe, far less exaggerate, their beauty. Many years ago I used this plant annually by the hundred for spring gardening. Since I have grown so much of Myosotis dissitiflora we have done less with the Omphalodes. By the way, will the fact of the variety, O. Krameri, being larger than verna be any advantage?—and is the habit and colour identical or nearly so? Permit me to add that the Myosotis dissitiflora is now (April 30) magnificent. From our large reserve we were able to make good our winter losses, and our last few showers have caused it to grow and rush into flower. One of the most gratifying facts concerning it is that it is now seen everywhere. In a drive of 10 miles to-day I hardly passed a single farm or cottage garden that was not made lovely by this charming Forget-me-not. It is also often seen in cottage and other windows. It need hardly be added that on the same journey I did not see a single plant of the Omphalodes verna. *D. T. Fish.*

**School Gardening.**—In an article under this heading on April 23 "A. D." speaks with a degree of familiarity on the subject which entitles him to be heard with respect; but he attaches unnecessary importance to the guiding and controlling power of the Education Department, and he is rather hard upon the clergy and school managers. These gentlemen, from the writer's statement, "are so jealous of teaching children anything calculated to improve their condition in life that it is useless, &c." Now that is rather a strong assertion, seeing that the clergy and school managers did such excellent work years ago before the era of School Boards. I have no doubt they are striving to do good work now, and they deserve to be spoken of with greater respect. But for their generous help in time and money the education of the masses must have been deplorably bad. What is called the Education Department consists of a Lord President, a Vice-President, and certain permanent officials—public servants. The present Code of education has been moulded and developed chiefly by these permanent officials, and they are naturally adverse to seeing their work revised. Schemes for the modification and improvement of the Code and its administration are quietly pigeonholed, and the most energetic and intelligent of Vice-Presidents has to yield to the dead weight of the obstructives, and is gradually bound in the red tape of official routine. It is useless to look to the Department for reform of abuses in the administration of the Government grants unless pressure is applied from without. If managers of schools throughout the country desire a rearrangement of the Code, and press their recommendations on the attention of their representatives in Parliament, and through them upon the leading members of the Government, it would enable the Vice-President to urge the necessity of much-needed reforms with sufficient force to sweep away all obstruction. No permanent officials, however great their services may have been, ought to be allowed to dictate arrangements opposed to the wishes of the community at large. With regard to the immediate subject under consideration—"school gardening"—a beginning has already been made. The rudiments of agriculture may now be taken as a class subject, and managers in rural or other schools may substitute it for history, grammar, or geography. These latter subjects, by the way, are not special subjects, but class subjects, which are examined and paid for in totally different ways. "A. D.'s" letter, however, says little on the point at issue—"school gardening." His chief anxiety is to introduce drawing and music in place of history and grammar, or geography. My wish is to see the rudiments of agriculture [and gardening] in connection with school gardens made an essential part of the school curriculum. The value of the subject as an instrument for mental training is superior to either of the usual class subjects, and its direct bearing on the work of the future labourer is more useful beyond comparison. "A. D." says "neither time nor means will permit it;" in my humble opinion—and I speak with the authority of a long experience—both time and means must permit of it—they could not, after teaching of the so-called "three R's," be more profitably employed. Let the parson and the squire, and a few of the leading farmers of each rural centre, press forward this important matter. Let the country schoolmasters (some of whom are capital gardeners) study the subject theoretically and practically, and the Department formally mention the rudiments of agriculture as a class subject, and the farm labourer, of whom I am especially thinking, would not long remain as the "awful example" of an almost criminal neglect, or as the "wooden plough" of an effete agricultural *régime*. *T. W., Harrow.*

**Leucojum vernum or æstivum?**—Does not your correspondent, "J. S.," p. 571 *a*, confound these two flowers? And is it not L. æstivum which he describes? *Diss.* [Yes. L. vernum has only one flower on a stalk, L. æstivum three or more. Eds.]

**Notes from Kingston Lacy.**—It is something like two years since a sketch of the grand block of forcing and other houses erected by Messrs. Weeks & Co., of Chelsea, at Kingston Lacy, the residence of D. Banks, Esq., was given in the *Gardeners' Chronicle*, and it may now be interesting to note the progress that has been made in the way of cultivation since the houses were planted. The block of houses forms a square, and the houses are all span-roofed except the range of vineries and plant-stove, 88 feet long and 14 feet wide, facing the south. The range is divided into three divisions, two of which are planted with Vines, which have succeeded so well that it is quite possible they may be heard of later on. The growth is of the most vigorous kind and unusually prolific, the bunches being of large size and compact habit—a character or rather condition not always obtainable with young Vines. The centre house is a plant-stove, and this I cannot help saying is a mistake, as it is impossible to keep Vines clean and free from insect pests for long where they are so close to stove plants. I noticed a plant on the back wall of the stove (Trachelospermum jasminoides) quite a sheet of bloom, which proves how accommodating this plant is as to temperature. It is planted in a narrow border about 18 inches wide, and while it has made rapid growth and is more floriferous than I ever remember to have seen it in a greenhouse, the foliage seems to lack that size and substance which is produced under a cooler system of cultivation. The creepers trained upon the front trellis are Stephanotis floribunda, Clerodendron Balfourianum, and Passiflora edulis, the centre and side stages being occupied chiefly with Ferns and an assortment of stove plants—the nucleus of a collection of those popular favourites, Palms, Dracænas, and Crotons. The north side of the block is an orchard-house, 144 feet long by 20 feet wide, planted with standard Cherries, Pears, and Plums, just coming into bearing. The east and west wings are each 100 feet long and 20 feet wide, and are planted with a good variety of Peaches, Nectarines, and Vines. The young trees are fast filling the trellis, and have set fine crops of fruit. The trees are all planted inside, and trained to a drum trellis, which from the width of the house gives abundance of room for extension (strange Messrs. Weeks should anticipate the new extension system!), while every portion of the tree is within easy reach of the workman, to execute the routine operations of cultivation with ease, comfort, and despatch. Altogether the arrangements are such that any one intending to build new houses could not employ their time better than by devoting a couple of hours to the study of the fittings, and the general idea conveyed by the inspection of such a block of houses, and the satisfactory return resulting in so short a period, which is alike creditable to the builders and to Mr. Loader, the gardener, under whose supervision the fruit borders have been made, and the trees brought to a state which indicates attention and good management. *Visitor.*

**Clianthus puniceus.**—Although perhaps not quite equal to the Glory Pea of Australia, Clianthus puniceus is one of the most showy and desirable of plants for the greenhouse or conservatory any one can have, and yet, strange to say, it is very seldom met with now, through having shared the fate of many other favourites which have given place to the new. Without finding fault with any of these, it is much to be regretted that plants of such sterling worth as the one referred to should drop out of cultivation. Another that occurs to my mind is Hovea Celsii, which thirty years ago was thought much of, and which for colour and effectiveness is still unequalled by many of its rivals. The way to see Clianthus puniceus in all its beauty and freshness of foliage is to plant it out where it can be loosely trained on a trellis near a wall or up a pillar, as in pots with a limited amount of soil, and consequently a restricted root-run, it is subject to red-spider, which greatly disfigures it and injures its growth. In a damp atmosphere with plenty of syringing it escapes this pest and flowers freely, and is then a gorgeous looking object that commands admiration. When turning plants out they should have a border prepared with rich soil consisting of fibry loam and rotten manure, with plenty of sharp sand to keep it open and porous. In this they will thrive and grow to a large size if well watered when flowering and making fresh shoots. *J. S.*

**The Falkland Islands.**—A plain working gardener left here thirty years ago, worked his way to Aberdeen, shipped in a whaler which called at the principal island, where he remained as gardener to the then Governor. Returning to Derry some eight years ago to see his father, he said the only vegetation was the Falkland grass, Dactylis cæspitosa. It grows 2 to 3 feet high, with thick fleshy stems, and remains green throughout the winter; cattle are lassoed and towed to the different fattening grounds, and brought back when fit for killing. They tried to get a few Furze seeds to grow on the heights by clearing. There are no trees, on account of the continual sea breezes, and vegetables were grown inside a high wall surrounding the garden. Southern whalers call for fresh meat and vegetables, giving in exchange sugar, tea, spirits, &c. Of course I can well imagine that in dells a clearance could be made in many of the numerous small islets where the grass would form a screen to grow Cabbages, Lettuces Potatos, Turnips, Beet, Greens, Onions, Gourds, Beans, Leeks, Peas (dwarf), Parsley, Celery, herbs, Parsnips, &c. *W., Derry.* [See *Gard. Chron.* 1843, p. 131, and again vol. ix., 1878, p. 829.]

**The Weather.**—This morning (May 4) the thermometer registered 8° below freezing. Potatos are much injured where above-ground. I am afraid the fruit trees will suffer, Pears and Cherries being white with blossom. *Thos. Woodford, Quex Park, Margate.*

**Sunken Houses.**—Strange statements appear from time to time in the journals, but one of the oddest I have come across lately is in the *Garden* of April 16. A gentleman rejoicing in the name of "Peregrine" gives the readers of that periodical his views on glasshouses. "Sunken houses," he says, "are things of the past—ugly, stuffy and mildewy, as those who attempt the culture of fruit trees and plants in them will soon discover. They are to the present glasshouses what the old coaches or carrier waggons were to the railroads of to-day. Their one advantage is that they save some fuel, but not much," &c. I have not seen fruit grown in houses of this description; but with regard to houses more or less sunk being things of the past everybody knows, or ought to know, that they are constantly put up, and by the best of judges too. Ugliness is a relative term, and as the strong point of a plant-house is not, as a rule, its beauty, the underground ones may be said to "have the pull," as less is seen of them. In place of "the one advantage of their saving some fuel, but not much," I have found by experience at least six:—1, Great economy in fuel; 2, ditto in building; 3, ditto in repairs; 4, getting the plants near the glass; 5, a more equable, genial temperature; 6, gaining a higher temperature with less heat—a priceless advantage, especially where Orchids are concerned. "Peregrine" does not prove himself a very clear-sighted bird in this matter, and may take a lesson from his underground friend, who is lucky in not being quite blind. *The Mole.*

**Cantua dependens.**—This is one of the most effective plants that can be had for training up pillars in light conservatories or under the roofs of greenhouses, in either of which situations, if it can get plenty of sun to ripen up the growth, it flowers freely, and is then an object of great beauty, the clusters of rich rosy pink tubular-shaped blossoms being of a very striking and highly ornamental character. The soil it appears to succeed best in is a fibry sandy loam, mixed with a little peat, but to keep this sweet and healthy the drainage should be good or the roots will suffer, as they cannot bear any excess of moisture. The worst enemy one has to contend with in growing the Cantua dependens is red-spider, an insect that is most troublesome, and unless kept down it will get

such a hold of the leaves as to deprive them of sap and cause them to fall from the plants. The best remedy against this pest is to syringe frequently, and if some sulphur is put into the water occasionally that will be a great help. Greenfly, too, sometimes affects the young shoots, but these may easily be got rid of by the use of tobacco-water or nicotine soap, which is one of the best of the many mixtures now sold for extirpating these and other of the various parasites with which gardeners have to contend. *J. S.* [A figure of this fine plant was given in our vol. xiii., p. 784. Eds.]

Single Roses.—The Rose, like the Dahlia, may be considered to have been pushed to what may be termed the extreme limit of duplicity, and it is quite possible and even desirable that a taste for single varieties of the former, as well as of the latter, should begin to develope itself. Each season, it is true, witnesses the introduction of new varieties of the queen of flowers. But these new varieties are not always, as of course they ought to be, improvements upon, or perfectly distinct from, the older ones; but it is not every season which furnishes a Maréchal Niel, a La France, or even a John Hopper. It is, however, quite possible that if some enthusiastic and persevering cross-breeders could be induced to take the matter fairly in hand, a race of new and very desirable plants would ere long be the result. There are no doubt materials enough at hand with which to make a start in this direction—such as the single Scotch Rose, the single yellow Banksian, and the single Austrian Brier, Rosa rugosa, and its white variety; the common Sweet Brier, and the common Dog Roses of our woods and hedgerows; the flowers of the latter are very pretty, although its luxuriant habit of growth renders it somewhat unmanageable, and, in common with most of the single varieties, the petals composing its blooms are less persistent than could be desired. But by the exercise of patience and perseverance it is quite possible that these drawbacks might be overcome. Some few years since M. Jean Sisley, of Lyons, kindly sent me a few seeds of the Rosa polyantha, which I sowed at once in a Cucumber frame; they all appeared to vegetate, and as soon as the plants were sufficiently strong they were planted out in the open air. A portion of them flowered last summer, some of them being of very luxuriant growth, yet produced abundance of single white flowers, which appeared to retain their petals much longer than those of the Briers and the Dog Rose, plants of which happened to grow near to them. A few of the seedlings also produced plants of dwarfer habit with double and semi-double white blooms in large terminal bunches. A considerable portion of the plants have not yet bloomed, but may possibly do so during the ensuing summer. The plants, however, which have already bloomed presented much diversity in flower, as well as in the habit of the plants, hardly any two of them being quite alike; and, as far as I can recollect, differing all, more or less, from the parent or seed-bearing plant. This circumstance induces me to think that if the pollen (when it can be obtained) of some of the least double hybrid perpetual and other dwarf growing Roses were applied to the blooms of the various single flowering kinds, such as has been alluded to, a race of plants with single flowers of various shades of colour, and of dwarf and compact habit of growth, might soon be secured. In attempting to secure this desideratum it might be advisable to have plants of the various single flowering kinds well established in pots, with the view of making such the seed-bearers; the anthers should be carefully removed from their blooms before the pollen was ripe, and the foreign pollen should be equally carefully applied to the stigmas of emasculated flowers. This operation will be most likely to be successful when performed under glass, and it might also be advisable to retain such plants under glass even when the hips are fairly set, with the view of facilitating the ripening of the seeds. *P. Grieve, Bury St. Edmund's.*

## HARDY FLORISTS' FLOWERS.

Auriculas.—It is now a critical time with the Auricula. The plants are in full bloom, and the fancier, eager to keep the flowers in good condition as long as possible, probably shades the plants too much, and causes the leaves to become rather drawn. This is an evil which must be remedied by placing the plants in a frame behind a north wall, and removing the lights from them whenever it is possible. Plants coming into bloom must on no account suffer for want of water at the roots; if the leaves of the plant flag the bloom is sadly injured. In such a late season as this many of the plants will be in flower well into May. If hot weather sets in the plants, even if they are in flower, should be removed into their summer quarters. When the bloom is over the plants may be repotted; but this is a matter of convenience; we are generally too busy to do it in May, and a large proportion of the plants have to stand over until July. See that all the plants, offsets as well, are placed in a shady place as soon as convenient.

### Carnations and Picotees.

The plants are very late in starting into growth this year, but ours are throwing up their flower-stems now slowly but strongly. The plants are kept in the frames as long as we can keep them, but the lights are removed night and day when the weather is favourable. Before removing the plants out of the frames we try to fumigate them with tobacco-smoke, even if there are no green-fly upon them. Stir the surface of the soil in the pots, and remove weeds. Whenever it is necessary to remove the plants out-of-doors to their summer quarters the sticks should be placed to the flower-stems, to prevent accidents. Where the plants are out in beds in the open ground they are now starting to grow; no more attention is required as yet than just to stir the surface of the ground, and when dry weather sets in mulch with short rotten stable-manure; the clearing out of a Mushroom-bed answers well.

### Dahlias.

By this time nearly all the cuttings should be rooted, or at least put in. It is best to place a cutting in the centre of a small pot, and when this has rooted sufficiently to fill the pots with fibres repot the plants into 5-inch or 6-inch pots. It is best to keep them in a warm house for a week or more after repotting, and when the plants are established remove them to a cold frame, but protect from frost. Keep the young plants free from green-fly, and remove the lights from the frame entirely in fine weather, placing them on to protect from high winds and frost.

### Gladioli.

We planted out our whole collection this year about the end of March; the ground was in splendid condition. I have frequently urged the importance of placing some sand under and over the bulbs; this to a great extent preserves them from canker. Seeds were sown in March over a gentle hotbed; these appear in about two weeks, and should be carefully attended to.

### Hollyhocks.

Unlike the Dahlia these are not much likely to be injured by frosts after this time. They ought to be planted out now, as the weather is suitable. The soil in the pots should be moist before the plants are turned out; if dry weather should happen to set in after planting it may be necessary to water them, as if they suffer from drought soon after planting they produce spikes prematurely, and the plants are ruined for the whole season. Seedlings intended to flower this autumn should now be growing freely; continue to work the Dutch hoe amongst the plants until they are likely to suffer from drought, then mulch and water freely.

### Pansies in Pots and in Beds.

The plants in pots are now coming into bloom, or if they have been kept in a warm position are now in full bloom. If it is intended to exhibit they must be sheltered from cutting winds, which crumple the petals considerably. Apply weak manure-water when the first blooms open, as the Pansy delights in rich food. Green-fly is a very troublesome pest to the Pansy, but it should be destroyed before the flowers open. The plants in beds, notwithstanding the east wind, made good growth, and some flowers opened even in its teeth. Now that the frost-winds have ceased, and the "soft south" breathes upon the plants, they are growing and opening their flowers well.

### Pinks in Beds.

These require much the same treatment as Pansies. See that each plant is firmly fixed in the ground. Stir the surface occasionally. The Pink soon suffers from drought; the beds should therefore be watered, and a second mulching of rotten manure may be applied to the surface of the beds towards the end of May. It is now a good time to take cuttings of the different varieties of the forcing section; they will strike roots freely in a forcing-house or hotbed.

### Polyanthuses.

These flower rather earlier than the Auriculas, and as soon as the bloom is over the plants should be inured to stand in the open air, and after a week or ten days, planted out in the open ground. Sow seeds now to produce flowering plants for next year.

### Ranunculuses.

The whole of our plants are now well out of the ground, and they are making very healthy growth. We met an amateur in the North who had not planted his out a fortnight ago; he will have a late bloom, but it would be well to plant one bed after another, and so obtain a succession of plants. We would plant the first bed on February 1, another the middle of the month, again on March 1, and so on to the end of April. When the leaves first appear above-ground the beds must be looked over to remove the soil from the leaves. Stir the soil between the rows with a pointed stick.

### Roses.

The earliest pruned bushes are now starting freely into growth, and with the young growths appear the usual insect pests that attack the Rose. Those succulent young shoots are preyed upon by the Rose-maggot; it can easily be discerned by the leaves sticking together. I find a needle or pin useful to extract the maggot without doing any injury to the Rose leaves. Tea-scented, Noisette, and China Roses should be pruned immediately. Tea-scented and other tender Roses that have been wintered in pots should now be planted out, after being inured to the weather by exposure. Roses that were planted late should have a good application of water to the roots, and if the winter mulching has been dug in, or has nearly disappeared, mulch again.

### Tulips.

In the South the beds have not required any protection whatever; we had plenty of frost, but the leaves were dry, and in that state they do not suffer. We have not had such a strong healthy growth as that of this season for many years. If we do not have rain in a week or two we shall water the beds and mulch the surface. Covering should be ready to place over them now, if frost should follow rain. *J. Douglas, Loxford Hall, Ilford.*

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The Laced Polyanthus.—These very beautiful plants have succeeded remarkably well with us this season. Why they should have done so I am unable to say, as some growers have complained of their not doing well; and Mr. Smith, of Edmonton, an ardent cultivator of them, lost nearly his whole collection, as he believes, from the severe frost. That frost does not injure them in the least, there is good proof in the fact that our plants were out in cold frames, and were exposed without any protection except from the snow. I fancy the state of the plants at potting time, and the time of potting, has much to do with it. They seem to start into a second growth about the last week in July or the first in August. They ought not to make this growth in the open border, but should be potted up before growth commences; the plants will then grow freely, and become well established before the winter. As soon as the flowering period is over the plants are put out in a shady border without disturbing the roots. See that they are free from greenfly and red-spider before planting out. The old varieties that were so very scarce a few years ago are now becoming more common, and the popular fallacy that their constitution had become impaired may now be said to be dispelled. I have grown the most of them, and some of the very oldest varieties are more vigorous than those raised quite recently. Mr. Barlow, of Stakehill House, near Manchester, has been very successful in raising seedlings. He has stolen a march on the very best varieties in both classes. William IV. and Lancer were the only good red ground flowers, but Sunrise is far in advance of either of them. In the maroon ground class he has given us two very fine flowers in Criterion and John Bright; but as all of his seedlings have been so recently described it is not necessary to say more at this time. Mr. Barlow does not work by chance; his seedlings are all the result of careful crossing, and the great results he has obtained should stimulate others to work in the same direction, as even yet laced Polyanthuses are not in sufficient numbers to supply the demand made for them. *J. Douglas, Loxford, Ilford.*

## SOURCES OF CARBON IN PLANTS.—II.

In his third lecture M. Dehérain considers the question as to whether vegetation obtains any portion of its carbon from any source besides the atmosphere—whether, in fact, any is supplied by the soil. To commence with, he gives a short historical account of the progress of opinion on this point, which may be summarised as follows :—

De Saussure considered that the product of the decomposition of vegetable *débris* known as ulmic matter is absorbed directly by plants, and this view was at that time generally accepted when Liebig advanced the view that all the carbon of plants is obtained from carbonic acid and that ulmic matter is not absorbed by plants as such, but is only beneficial as being a continuous source of carbonic acid. In opposition to this view De Saussure quotes certain experiments made by him, and which he believed confirmed his first opinion. Two of these may be given.

A Haricot with its roots plunged in a solution of humate of potash—a solution of the organic matter of soil in dilute caustic potash—absorbed 9 millegrams of humus, and increased in weight 3 grams. It weighed 11 grams at the commencement of the experiment and 14 at the conclusion. Again, a Polygonum persicaria absorbed in ten days 43 millegrams of dry humus, its weight increasing from 20 to 25 grams. The absorption of the humus was evident not only by the increase in weight of the plant, but also by the almost complete decolorisation of the liquid.

Malaguti and Soubeyran also published experiments favouring this view, nevertheless the contrary opinion gained ground. Boussingault, amongst others, has adopted the view that carbonic acid is the sole source of vegetable carbon, but considers that decomposing humus supplies some of this gas. He says :—"It is incontestable that a portion of the carbon comes in this way from manure ; it has been proved that the confined atmosphere of the manured soil contains 10 volumes of carbonic acid per hundred volumes, whilst the external air contains only 4 in 10,000.

All prior to this may be stated in a sentence.

This being admitted, we may ask, How is the carbonic acid so formed used by the plant? It is very improbable that it diffuses from the earth, and so forms an atmosphere usual about the plant. Many experiments also throw great doubt on the possibility of its penetrating the roots, and so being conveyed to the leaves in the sap ; for example, De Saussure remarked that a plant set in the earth and enclosed above-ground in a balloon cemented air-tight round the stem only very slowly increased the proportion of oxygen in the air in which it was confined, and required several days and even weeks for this purpose. M. Corenwinder, in a more accurate series of experiments, attempted to ascertain if roots plunged into a material containing carbonic acid were able to absorb that gas. He found, however, that on the contrary the amount of carbonic acid in contact with the roots increased instead of diminishing, thus showing that it was given off by those organs. This conclusion has been confirmed by some recent experiments made by MM. Dehérain and Vesque. Moreover, certain experiments made by Moll, and which are summarised in *Nature*, seem to show that even if the carbonic acid were taken up by the roots, it could not penetrate to the leaves where alone it could be utilised by the plant.

The method adopted in these experiments was based on the fact, pointed out by Sachs, that starch is the first visible product of the decomposition of carbonic acid by the green parts of plants, and that when this decomposition is effected, starch is always produced in the chlorophyll cells concerned in the process.

The experiments alluded to were made by exposing one part of a green leaf or stem to an atmosphere containing carbonic acid gas, whilst it was excluded from the rest, light being freely admitted to both, and watching the changes which the starch contained in the chlorophyll cells underwent in each case. The experiments were varied in many ways, in order to exclude possible sources of error. From the results obtained, Moll concludes "That starch is never formed in leaves in an atmosphere deprived of carbonic acid, however much may be at the disposal of other parts of the plant ; nor can starch formation be accelerated in one part of a leaf by the supply of an excess of carbonic acid to another part either in the air or through the roots."

It may then be concluded that if ulmic matter exercise any influence on the supply of the carbon of vegetation it is not due to the carbonic acid produced by its decomposition.

The question to be answered is, Does such an influence exist?

It is certain that some plants can live in a soil free from organic matter, but great care is required to ensure success, and it is rare to see such attain their normal dimensions. Boussingault has seen a Helianthus prosper in a soil manured only with chemicals, Dehérain and Frémy have raised Beets of which the roots weighed 800 grams in soil absolutely deprived of organic matter. Also certain experiments on the large scale indicate that certain plants can develope themselves for an indefinite time on the same land without any renewal of the carbonaceous matter.

In this connection M. Dehérain refers to the experiments made at Rothamsted on the continuous growth of Wheat, showing that large quantities of carbon were assimilated annually on plots to which no carbonaceous manure has been applied for over thirty years. As, however, he refers to Wheat only, whilst equally striking results have been obtained with other crops, instead of giving his summary I will quote here a passage from the address delivered by Dr. Gilbert, as President of the Chemical Section of the British Association, Sheffield meeting, 1880, which presents the matter in a forcible way :—

"It will convey a more definite idea of what is accomplished by vegetation in the assimilation of carbon from the atmosphere if I give in round numbers the results of some direct experiments made at Rothamsted instead of making general statements merely.

"In a field which has now grown Wheat for thirty-seven years in succession there are some plots to which not an ounce of carbon has been returned for the whole of that period. Yet with purely mineral manure an average of about 1000 lb. of carbon is annually removed from the land, and where a given amount of nitrogenous manure is employed with the mineral manures an average of about 1500 lb. per acre more is obtained, in all an average of about 2500 lb. of carbon annually assimilated over an acre of land without any return of carbonaceous manure to it.

"In a field in which Barley has been grown for twenty-nine years in succession quite accordant results have been obtained. There smaller amounts of nitrogenous manure have been employed with the mineral manure than in the experiments with Wheat above cited, but the increase in the assimilation of carbon for a given amount of nitrogen supplied in the manure is greater in the case of the Barley than of the Wheat.

"With Sugar-Beet, again, larger amounts of carbon have been annually accumulated without the supply of any to the soil, but under the influence of a liberal provision of both nitrogenous and mineral manure than by either Wheat or Barley.

"Lastly, with grass, still larger amounts of carbon have been accumulated without any supply of it by manure."

It is apparent, then, in these cases, that the carbon taken up must have been supplied by the atmosphere, but M. Dehérain proceeds to discuss the question, Is this the case with all plants? and goes on to point out certain apparent exceptions. The behaviour of plants belonging to the leguminous order under cultivation appears to M. Dehérain to lend great support to the view that a supply of carbon in the soil is sometimes necessary to healthy vegetable growth.

It is a fact well known to agriculturists that plants belonging to this order—red Clover, for example—cannot be grown during many successive seasons on the same land. After one or two croppings it gradually dies down, and the land cannot again be used for its production until it has borne some other crop for several years. No improvement, moreover, can be effected by any kind of manuring, nothing but change of crop will restore the land to its original condition.

It has been found, however, at Rothamsted, that although it is impossible to enable ordinary arable land to support continuous crops of leguminous plants by any kind of manuring, yet red Clover has been successfully grown for many years on the soil of an old garden, which had been enriched by the accumulated residues of long-continued heavy dressings of farmyard manure.

M. Dehérain points to this fact as a proof that ready prepared organic food is necessary to the development of these plants, pointing out likewise that should this be the case fresh farmyard manure does not contain the necessary ingredients, as its application produces no beneficial effect on leguminous crops until after the lapse of some time, during which it may be conceived that the organic matter of the manure, is undergoing changes necessary to fit them for assimilation by the plant. As additional evidence in favour of the view that some plants obtain a portion of their carbon from the soil, M. Dehérain quotes certain experiments made by himself at Grignon.

The experiments consist of variously manured plots of Maize and Potatos grown in parallel bands. It was found that whilst the Maize was most benefited by farmyard manure and moderately by chemical manures, the Potatos seem to yield similar results with both. The mean yield of Maize on the plot manured with farmyard dung amounts to 90,000 kilograms per hectare, the highest obtained with chemical manures, nitrate of soda and sulphate of ammonia, is 68,000 kilos. per hectare ; on the other hand the Potatos give results slightly in favour of the chemical manure. It has been noticed, moreover, that the Maize yielded smaller and smaller crops each successive year on the plots manured with chemicals ; this did not occur with the Potatos, nor with those plots of Maize treated with farmyard dung, and it is considered by M. Dehérain to afford an indication that Maize can obtain a portion of its carbon from the soil. In order to test the matter further he had samples taken from the soil of the several plots, and the carbon determined in them. I copy here the table which he gives of his results :—

| Manure per Hectare. | Potatos : Samples taken Feb. 1878. | Maize : Samples taken Feb. 1878. | Forage : Samples taken Feb. 1879. |
|---|---|---|---|
| 80 kilos. farmyard dung in 1875-6-7 .. | 21.32 | 16.80 | 14.07 |
| Nothing in 1878-9 .. .. .. | 21.31 | 16.66 | 14 80 |
| Continuously unmanured .. .. | 16.30 | 15 06 | 10.00 |
| | 16.08 | 15.18 | 10.90 |
| 1200 kilos. nitrate soda in 1875-6-7 .. | 14.60 | 13 13 | 12.80 |
| Nothing in 1878-9 .. .. .. | 14.72 | 13.21 | 13.20 |
| 1200 kilos. sulphate ammonia in 1875-6-7 | 16.85 | .. | 11 90 |
| Nothing in 1878-9 .. .. .. | 17.35 | 15.20 | 12.50 |

Attention is first drawn to the fact that the quantity of carbon is throughout greater on the plots on which Potatos were grown than in those which bore Maize ; he argues that, if the loss of carbon were due to oxidation, the effect ought to be most noticeable with Potatos, as in their cultivation the soil is most exposed to contact with air ; whereas, on the contrary, the amount of carbon is least in the Maize plots. Again, he observes that the difference in carbon between the two series of samples taken in successive seasons is greatest on the plot which yielded the largest crop—that supplied with farmyard manure. The lowest actual amounts of carbon are, however, found in the plots manured with nitrate of soda, both Potatos and Maize, whence the lecturer observes that that manure seems to exercise a special oxidising power on the organic matter of the soil, a fact of which, under certain conditions, there can be no doubt.

It is then concluded by M. Dehérain that the diminution in the quantity of carbon in the soil observed during successive seasons, coupled with the fact that the crop yielded has decreased on those plots not supplied with farmyard manure, must be taken as a proof that Maize requires a portion of its carbon to be supplied to the roots in the state of ready-formed organic matter.

In further support of this view, he quotes another experiment on the small scale. In the spring of 1879 two large pots were filled with the same garden earth ; one of these was sown with Wheat, and the other with Maize. When their growth was completed, the carbon in each of the soils was determined, and gave the following result—

| | | | |
|---|---|---|---|
| Maize .. .. .. | 2.9 per cent. | .. | 2 8 per cent. |
| Wheat .. .. | 4 „ | .. | 3.8 „ |

the soil which carried the Maize being much poorer in carbon than that in which Wheat was grown.

(*To be continued.*)

## Apiary.

To those who combine with garden tastes a love for insects, and for natural history generally, there are few things more diverting or interesting than is presented at the outlet of a beehive on a warm spring day. The great thing which most strikes the observer is the earnestness of purpose and directness of object which characterise the bees. They waste no time, they go direct to their work, they return the moment instinct assures the insect it is duly loaded, and it comes home literally in a bee-line, making no mistake as to its domicile, even though there be scores of

similar domiciles close by. In one respect bees differ from human beings, in the fact that they make no holiday unless perforce so driven to be lazy by stress of weather. They never tire, and had we for a few weeks constant sunshine all the time, the insects would probably never cease for one moment from their incessant labour. Cold as the wind has been of late the long spell of dry weather has been greedily utilised by the busy insects to get in store of food, and prepare for that new brood which in any well ordered hive must be fast coming into existence. See how heavily laden are perhaps one half of the bees as they come in their great haste, almost tumbling one over the other. They have big clusters of pollen on either side, of various tints—cream, yellow, red, &c.—as gathered from the spring flowers, Wallflowers, Palm, Plum, Pear, Peach, and other early fruit trees, and also the masses of yellow Mahonia, which the bees largely frequent. If so much is dependent in the matter of beneficial fertilisation upon the action of insects how much good is being done by a few hives of bees! But their heavily laden thighs tell not only of the insects' industry, but also of the great abundance of pollen found everywhere this season, and the which, whilst furnishing so much food for the bees, also gives us strong reasons to rejoice in the fruit prospects. If some have only pollen, others have the little bags on either side full of honey, and if the load be less conspicuous it is not less valuable. All the most interesting observations concerning bees are not made from their internal labours; in their external work their lives are as interesting as they are useful.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, May 4, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| April | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 28 | 30.07 | +0.30 | 57.2 | 41.0 | 16.2 | 48.4 | − 0.5 | 41.9 | 79 | N.E.: E.S.E. | 0.00 |
| 29 | 29.92 | +0.15 | 58.0 | 45.6 | 12.4 | 51.0 | + 1.9 | 47.7 | 88 | S.W. | 0.09 |
| 30 | 29.58 | −0.19 | 63.2 | 46.0 | 17.2 | 52.2 | + 2.8 | 45.1 | 77 | S.S.W. | 0.13 |
| May 1 | 29.50 | −0.27 | 59.8 | 42.6 | 17.2 | 50.2 | + 0.4 | 41.7 | 76 | S.W. | 0.16 |
| 2 | 29.51 | −0.26 | 58.5 | 44.6 | 13.9 | 49.5 | − 0.7 | 44.3 | 83 | N.E. | 0.25 |
| 3 | 29.79 | + 0.02 | 50.1 | 39.0 | 11.1 | 42.4 | − 8.0 | 35.8 | 78 | N. | 0.00 |
| 4 | 29.88 | +0.12 | 52.5 | 34.0 | 18.5 | 44.0 | − 6.8 | 40.5 | 86 | S.W.: S.S.W. | 0.02 |
| Mean | 29.75 | −0.02 | 57.0 | 41.8 | 15.2 | 48.2 | − 1.6 | 42.4 | 81 | S.W. | 0.65 |

April 28.—A fine bright morning, dull afternoon. A fine night.
— 29.—Fine fresh morning. Fine and mild day. Slight rain at night.
— 30.—Fine day with fresh wind. Rain early in the morning, and again in the evening. A fine night.
May 1.—Dull and overcast. Showers. Black clouds at night.
— 2.—Generally dull. Occasional gleams of sunshine. Rain in early morning, and again in the evening.
— 3.—Cold and dull. Sunshine faintly from 11 A.M. to 1 P.M. Cold day. Clear night.
— 4.—Generally fine, but dull. Sun's place visible at times. A little rain fell in the afternoon. A fine clear night.

London: *Atmospheric Pressure.*—During the week ending Saturday, April 30, the readings of the barometer at the level of the sea, in the neighbourhood of London, increased from 29.75 inches at the beginning of the week to 29.89 inches at midnight of the 24th; decreased to 29.69 inches by the afternoon of the 25th; increased to 29°.76 inches by the morning of the 26th; decreased to 29.65 inches by the afternoon of the same day; increased to 30.01 inches by the morning of the 27th; decreased to 29.93 inches by the afternoon of the same day; increased to 30.09 inches by the morning of the 28th (the highest in the week); and decreased to 29.50 inches (the lowest in the week) by the end of the week. The mean reading at the level of the sea was 30.02 inches, being 0.12 inch higher than that of last week, and 0.07 inch below the average of the week.

*Temperature.* — The highest temperature in the week was 63°.2, on the 30th, the next in order being 59°.2 on the 25th, and 58° on the 29th. The lowest of the seven high day temperatures was 53°.1, on the 27th. The mean of the seven high day temperatures was 57°.2. The lowest temperature in the week was 39°.5, on the 27th, the next in order being 41° on the 28th, and 41°.1 on the 26th. The highest of the seven low night temperatures was 46° on the 25th and 30th. The mean of the seven low night temperatures was 42°.9. The greatest ranges of temperature in one day were 17°.2 on the 30th, and 16°.2 on the 28th. The least ranges were 12°.4 on the 29th, and 12°.7 on the 26th. The mean of the seven daily ranges was 29°.8.

The mean temperature on the 24th was 47°.4, on the 25th 51°.7, on the 26th 46°.1, on the 27th 55°.3, on the 28th 48°.4, on the 29th 51°, on the 30th 52°.2; on the 24th, 26th, 27th, 28th the mean temperatures were respectively 0°.8, 2°.4, 3°.4, and 0.°5 below their averages; on the 25th, 29th, and 30th they were respectively 3°.4, 2°.8, and 0°.4 above their averages.

The mean temperature for the week was 48°.9, being 5°.8 higher than that of last week, and 0°.1 below the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo placed in the full rays of the sun were 113°.6 on the 30th, and 103°.5 on the 26th. The lowest readings were 72°.2 on the 25th and 80° on the 27th. The mean of the seven daily readings was 93°.

The lowest readings of a thermometer placed on grass with its bulb exposed to the sky were 35°.4 on the 28th, 36° on the 27th, and 37°.1 on the 28th. The highest reading was 42°.6 on the 29th. The mean of the seven readings was 38°.7.

*Rain.*—Some fell on four days, the greatest quantities being 0.13 inch on the 30th, and 0.09 inch on the 29th. The total fall for the week was 0.33 inch.

England: *Temperature.*—During the week ending Saturday, April 30, the highest temperatures were—Cambridge, 67°, Leicester, 65°, Birmingham, 64°.2, and Nottingham and Sunderland, 64°. The lowest of the high temperatures were Truro, 58°, and Liverpool, 58°.3, Bristol, 58°.5. The mean from all stations was 61°.6.

The lowest temperatures were—Nottingham, 33°, Leicester, 33°.5, Hull, 34°, and Sheffield, 35°.5. The highest of the low temperatures were—Truro, 45°, Liverpool, 42°.6, Plymouth, 42°, Bristol, 40°.6, and Birmingham, 40°. The mean from all stations was 38°.1.

The range of temperature in the week was greatest at Leicester, 31°.5, the next in order being Nottingham and Cambridge, 31°, and Hull, 29°. The ranges were least at Truro, 13°, at Liverpool, 15°.7, at Bristol, 17°.9, and Plymouth, 18°.7. The mean from all stations was 23°.5.

The mean of the seven high day temperatures was highest at Cambridge, 62°.3, the next in order being Leicester, 60°.4, Birmingham, 60°.3, and Nottingham, 60°; the least means were Liverpool, 54°.3, and Bradford, 54°.5. The mean from all stations was 57°.6.

The mean of the seven low night temperatures was least at Hull, 39°.9; the next in order being Wrottesley, 41°.4; Nottingham, 41°.5; and Brighton, 42°.2. The highest means were Truro, 47°, and Plymouth, 45°.1. The mean from all stations was 43°.1.

The mean daily range was greatest at Cambridge, 19°.8; the next in order being Hull, 19°.1; Nottingham 18°.5. The least mean daily ranges were—Truro, 8°.6; and Liverpool, 9°.2. The mean from all stations was 14°.5.

The mean temperature for the week was highest at Cambridge and Birmingham, 50°.8, the next in order being Leicester, 49°.9; Truro, 49°.7; Nottingham and Sunderland, 49°.2; and Plymouth, 49°. The least mean temperatures were—Wrottesley, 47°.2; Bradford, 47°.3; and Hull and Leeds, 47°.8. The mean from all stations was 48°.7.

*Rain.*— Some fell at all station, the greatest quantities being Plymouth, 0.49 inch; Truro, 0.45 inch; Bradford, 0.43 inch; and Hull, 0.42 inch. The smallest amounts were 0.03 inch at Bristol, and 0.07 inch at Leicester. The mean from all stations was 0.27 inch, and the average number of days on which rain fell was four.

Scotland: *Temperature.*—The highest temperatures were Dundee, 63°, Leith, 60°.1; the lowest of the high temperatures was Greenock, 55°.2. The general mean was 58°.7.

The lowest temperatures were Glasgow and Paisley, 31°, and Dundee, 34°; the highest of the low temperatures was Leith, 38°.8. The general mean was 34°.8.

The mean temperature for the week was highest at Glasgow, 48°.3, the next in order being Dundee and Leith, 48°.1; the mean temperature was lowest at Greenock, 46°.2. The general mean was 47°.5.

*Rain.*—The greatest quantities were—Greenock, 1.07 inch, and Leith, 0.74 inch; the least quantities were Glasgow, 0.33 inch. The general mean was 0.65 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

"Gooseberry Rhubarb."—What is "Gooseberry Rhubarb"—that is to say, the vegetable sold in markets under that name? It is said to be quite green in flesh, and very sweet. *G. H. W.*

## Answers to Correspondents.

Cucumbers Diseased: *E. Bland.* It is the now well-known Cucumber disease, for which there is no remedy but "stamping out" by such measures as you propose to adopt. Burn the old soil if you can, and get your manure and loam from a fresh source. A change of seed is also desirable.

Hotbeds: *Major H.* The quantity of dung required depends partly on the use to which the bed is to be applied; besides which a "cartload," as applied to this article, is a very indefinite quantity. If the manure is partially fermented and not too strawy, three to four well filled two-horse loads would probably suffice for a frame of the size you name, especially if built upon a layer of faggots, and with a structure of faggots worked in in building, if the heat has to be kept up by the addition of linings of hot dung. Before making up the dung should be well worked, by being turned over and well shaken up two or three times at intervals of a few days before using, and sprinkle if it should get to a dry heat.

Insects: *R. Norris.*—Sirex gigas; a very destructive wood-boring pest.

Mummy Wheat: *C. & R.* No. A yarn invented by the Arabs.

Names of Plants: *W. Macdonald.* 1, Dendrobium Calceolus; 2, Dendrobium transparens. — *T. Hannaford.* The large flower is Cattleya Forbesii; the small one Dendrobium Jenkinsii.—*D. Walker.* An ordinary variety of Dendrobium Wardianum.—*T. E.* Yes; Matthiola tristis.—*M. P. L.* Lastrea æmula (the May-scented Fern).—*C. & R.* Cantua dependens. (See pp. 661, 784 of our vol. xiii.).—*Miss N.* The Pomegranate (Punica Granatum).—*T. S. P.* The Snowy Mespilus (Amelanchier vulgaris).—*W. R.* A garden variety of Ranunculus.—*R. W.* 1, Cardamine impatiens; 2, Fabiana imbricata.—*W. Goodall.* Alliaria officinalis.—*R. H. D.* A sport of the common Primrose, and a very interesting one, too.—*E. M. B.* 1, Deutzia crenata candidissima; 2, Spiræa prunifolia flore-pleno; 3, Dendrobium Pierardi. We cannot name flowers of Abutilons; they are becoming too numerous; the yellow one is probably Boule d'Or.—*E. G.* Nos. 1 and 2 are varieties of Ixia maculata.—*J. Van Volxem.* Oxalis Ortgiesii, Regel's *Gartenflora*, t. 817.

Notice to Leave: *A. B.* If you are paid weekly you are only entitled to a week's notice to leave; but the usual rule is for a month's notice to be given on either side in the case of upper servants.

Peas Injured: *T. Hill.* We could not find any of the beetles. Such things should be sent in a corked phial.

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

William Caudwell, The Ivies, Wantage — Polyanthus, and other Select Novelties.

Hans Niemand, Royal Nurseries, Harborne Road, Edgbaston, Birmingham — Horticultural Spring Price List.

Communications Received:—W. J. W.—H. W. W.—H. G. B.—E. C.—Leo Grindon.—W. Paul & Son.—W. H.—P. G.—H. G. R.—A. D.—E. M.—D. T. F.—Cultivator.—J. H. V.—C. W. D.—J. Lye.—W. R.—A. H.—J. C. & Co.—Clay & Levesley.—J. E. E.—J. C. B.—C. M. O.—A. F.—J. D.

# Markets.

*COVENT GARDEN, May 5.*

We have had a fair supply of Strawberries and Grapes during the week, the latter in excess of the demand, and prices have fallen considerably. Trade generally better. *James Webber, Wholesale Apple Market.*

Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Herbs, per bunch | 0 2– 0 4 |
| Asparag., Fr., bndl. | 2 0–15 0 | Horse Radish, p. bun. | 4 0– .. |
| — English, bund. | 6 0– .. | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| — Sprue, per bund. | 1 6– 2 0 | — Cos, each | 0 4– 1 0 |
| Beans, French, p. lb. | 1 0– .. | Mint, green, bunch | 0 4– 0 6 |
| — Broad, per lb. | 1 0– .. | Mushrooms, p. baskt. | 1 6– 2 0 |
| Beet, per doz. | 1 6– 2 6 | Onions, per bushel | 8 0– .. |
| Cabbages, per doz. | 1 0– 2 0 | — Spring, per bun. | 0 6– .. |
| Carrots, per bunch | 0 4– 0 6 | Parsley, per bunch | 0 4– .. |
| — New Fr., bund. | 1 6– .. | Radishes, per bun. | 0 2– 0 6 |
| Cauliflowers, English, each | 0 3– 0 6 | Rhubarb, per bund. | 1 0– .. |
| Celery, per bundle | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| Garlic, per lb. | 1 0– .. | Tomatos, per lb. | 0 9– 1 0 |

Potatos:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

### Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apples, ½-sieve | 2 0– 5 0 | Pears, per dozen | 4 0–12 0 |
| Cobs, per lb. | 2 0– 2 6 | Pine-apples, per lb. | 2 0– 3 0 |
| Grapes, per lb. | 4 0– 8 0 | Strawberries, per lb. | 4 0– 8 0 |
| Lemons, per 100 | 4 0– 6 0 | | |

### Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Narcissus, in variety, 12 bunches | 6 0– 9 0 |
| Azalea, 12 sprays | 0 6– 1 0 | Pelargoniums, 12 sprays | 0 9– 1 0 |
| Bouvardias, per bun. | 1 0– 2 0 | — zonal, 12 sprays | 0 4– 0 9 |
| Camellias, per dozen | 1 0– 4 0 | Primroses, 12 bunch. | 0 6– 1 6 |
| Carnations, 12 blms. | 1 0– 2 0 | Primula, double, per bunch | 0 9– 1 6 |
| Daffodils, various, 12 bunches | 2 0– 4 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Daisies, 12 bunches | 2 0– 6 0 | Stephanotis, 12 spr. | 3 0– 4 0 |
| Eucharis, per doz. | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Gardenias, 12 blms. | 1 6– 6 0 | Tuberoses, per dozen | 2 0– 3 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Tulips, 12 bunches | 3 0– 6 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Violets, 12 bunches | 0 9– 1 0 |
| — red, 12 blooms | 1 0– 3 0 | — Neapolitan, Fr., per bunch | 4 0– 6 0 |
| Lilac, Fr., per bunch | 6 0– 8 0 | Wallflowers, 12 bun. | 3 0– 4 0 |
| Lily of the Valley, 12 sprays | 0 9– 2 0 | | |
| Marguerites, 12 blms. | 0 4– 0 9 | | |

### Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Foliage Plants, various, each | 2 0–10 6 |
| Azalea, per doz. | 30 0–42 0 | Genista, per doz. | 9 0–18 0 |
| Begonias, per dor. | 6 0–12 0 | Lily of the Valley, per pot | 1 6– 2 6 |
| Cineraria, per doz. | 8 0–12 0 | Marguerite, white, per dozen | 24 0–42 0 |
| Cyperus, per dozen | 6 0–12 0 | — Yellow, per doz. | 12 0–30 0 |
| Dielytra, per dozen | 9 0–12 0 | Myrtles, per doz. | 6 0–12 0 |
| Dracæna terminalis | 30 0–60 0 | Palms in var., each | 2 6–21 0 |
| — viridis, per doz. | 12 0–24 0 | Pelargoniums, doz. | 18 0–30 0 |
| Erica, in variety, doz. | 18 0–30 0 | — tricolor, per dor. | 3 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | — scarlet, per doz. | 4 0– 9 0 |
| Evergreens, in var., per dozen | 6 0–24 0 | Roses, various, doz. | 12 0–30 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Tulips, 12 pots | 6 0– 8 0 |
| Ficus elasticus, each | 1 6– 7 6 | | |

## SEEDS.

London: *May* 4.—The approaching close of the season finds stocks of almost every description reduced to unusually narrow limits, the two exceptions of this being Trefoil and American red. Of choice home-grown Clover seed the available supplies appear exhausted, and the same can be said of the fine qualities of both Alsike and white. Rye-grasses are hardening in value. Scarcely any Lucerne or Timothy is now obtainable. Bird seeds are quite neglected. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CATTLE.

At Copenhagen Fields on Monday great depression prevailed throughout the trade, and whilst lower prices were taken all round sales were closed with difficulty, and the market could not be cleared. Beasts declined 2*d.* on best qualities, and in many cases more. Sheep must be quoted 2*d.* per stone down. Lambs were depressed, as much as 6*d.* to 8*d.* per stone. Prime English calves were scarce, and upheld their value, but the general demand was dull. Pigs met very little inquiry.—Quotations:—Beasts, 4*s.* to 4*s.* 8*d.*, and 4*s.* 10*d.* to 5*s.*; calves, 6*s.* 1*d.* to 6*s.* 4*d.*; sheep, 5*s.* to 5*s.* 4*d.* and 5*s.* 4*d.* to 5*s.* 10*d.*; lambs, 7*s.* 4*d.* to 8*s.* 4*d.*—Thursday's trade was rather firmer than was that of Monday. Supplies of beasts were short, and with a better inquiry prices tended upwards. Sheep and lambs were in request, at improving prices, and calves were firm.

## HAY.

Tuesday's Whitechapel Market report states that fair supplies of fodder met a steady trade at the following quotations:—Prime Clover, 100*s.* to 124*s.*; inferior, 60*s.* to 80*s.*; prime meadow hay, 80*s.* to 112*s.*; inferior, 30*s.* to 75*s.*; and straw, 30*s.* to 45*s.* per load.—A good supply was offered on Thursday, and with a steady trade prices were firm. Quotations:—Prime Clover, 100*s.* to 124*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 112*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 45*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 108*s.* to 118*s.*; inferior, 60*s.* to 84*s.*; superior Clover, 114*s.* to 124*s.*; inferior, 84*s.* to 95*s.*; and straw, 42*s.* to 48*s.* per load.

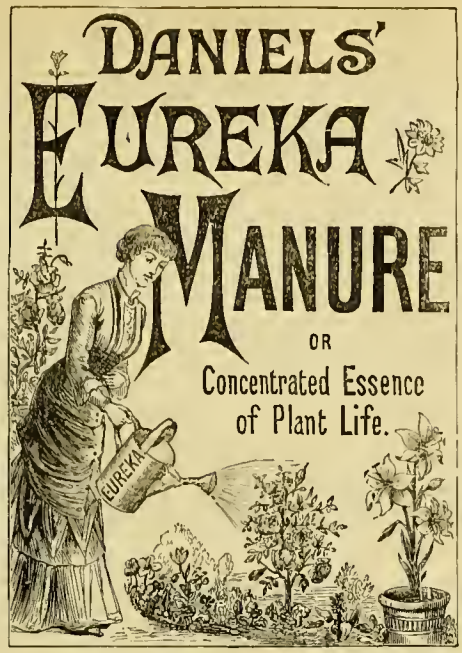
## POTATOS.

The Borough and Spitalfields markets reports state that supplies were fully adequate to demand, and prices remain as last quoted.—The imports into London last week were 9577 bags from Hamburg, 5338 bags Antwerp, 872 bags Boulogne, 2409 bags Ghent, 83 tons Erguy, and 41 tons Roscoff.

## COALS.

The following are the quotations current at market during the week:—Bebside West Hartley, 14*s.* 9*d.*; East Wylam, 16*s.* 6*d.*; Walls End—Hetton, 17*s.* 6*d.* and 17*s.*; Hetton Lyons, 15*s.*; Hawthorns, 15*s.* 3*d.*; Lambton, 17*s.* and 16*s.* 6*d.*; Original Hartlepool, 17*s.* 6*d.* and 17*s.*; Wear, 15*s.*; South Hetton, 17*s.* 6*d.* and 17*s.*; Tunstall, 15*s.*; Tees, 17*s.* 3*d.* and 16*s.* 9*d.*; Vanes, 15*s.*; Radford Navigation, 17*s.*

**Government Stock.**—On Tuesday Consols closed at 101¾ to 101⅞ for delivery, and at 101⅞ to 102 for the account. Wednesday's figures were, for delivery, 101⅝ to 101¾, and 101¾ to 101⅞ for the account; and the closing figures on Thursday were, for delivery, 102 to 102⅛, and 102 3/16 to 102 1/16 for the account.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We have, during past years, refrained from manufacturing any Artificial Fertiliser for Floriculture or General Gardening purposes, mainly for the reason that the successful composition of such an article requires years of experimental trial under a variety of conditions, such as temperature, climate, soil, &c.

The preparations generally offered to the gardening public are commonly made simply to act as stimulants, by which a marvellous activity of growth and bloom can be effected, but which generally is of very short duration, and often fatal in the end to the real prosperity of the plant.

Experience has convinced us that, under average conditions of floral or vegetable growth, true and lasting success is best obtained by the use of properly balanced Plant Food, by means of which soil which may have become poor and exhausted shall be so renovated as to be again generous and fruitful, so as to furnish at any time the necessary conditions of fertility and ensure the vigorous and healthy growth not only of leaves, flowers, and fruit, but of every part of the plant. These conditions we claim to have effected in our EUREKA MANURE, or ESSENCE of PLANT LIFE, a highly concentrated Manure, adapted for every kind of Flower, Fruit, or Vegetable, and useful alike to the Horticulturist and Farmer; a true friend to the Gardener; and not only a Stimulant but a Genuine Food for Plants; *perfectly efficient, odourless, and economical*, and is destined to take the place of all other Manures.

**Report of Mr. Francis Sutton, F.C.S., Chemist to the Norfolk Chamber of Agriculture, &c.**

[Copy.]

"Norfolk County Laboratory,
"*November* 22, 1880.

"Messrs. DANIELS BROTHERS,

"Gentlemen,—I have acquainted myself by experiment and analysis with the entire nature of your Eureka Manure, and I am satisfied that it is admirably adapted to the purposes for which you recommend it. I have had a long and varied experience in the examination of soils and fertilisers and their effects, and may say at once that you have carried out practically the ideas which I myself would advocate, and have produced a Concentrated Manure which is safe, odourless, and adapted to the healthy growth of every variety of plant.

(Signed) "FRANCIS SUTTON."

*SOLD BY ALL CHEMISTS AND SEEDSMEN,*
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**1 lb., 1s.; 2 lb., 1s. 8d.; 4 lb., 3s.; 7 lb., 4s. 6d.; 14 lb., 7s. 6d.; 28 lb. 12s. 6d.**
Much cheaper by the Cwt.

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ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.

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G. FISCHER begs to say he has still a few hundreds of his fine collections to dispose of.
Rose Nursery, 30, High Street, Clapham, S.W.

PRIMULA NIVALIS.—For filling a corner of a grave plot few plants can equal, none can surpass in purity, this lovely pure white Auricula. Two flowering plants free by post for 1*s.* 6*d.*; twelve plants for 8*s.* Trade price per 100 on application.
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EXTRA STRONG GERANIUMS, &c.—Wonderful, 12*s.* per 100; White Vesuvius, 15*s.* per 100; Madame Thibaut, 12*s.* per 100; Mrs. Pollock, Sunset, &c., 20*s.* per 100; Flower of Spring, 15*s.* per 100; Marshal McMahon, best Bronze, 20*s.* per 100; finest Show and Fancy DAHLIAS, to name, 20*s.* per 100; VERBENAS, Show sorts, strong, 10*s.* per 100; all well rooted and healthy.
W. JACKSON, Bladedown, near Kidderminster.

ZONALS, very large collection of the finest varieties for Pot Culture; also all the best Double GERANIUMS, by selection or by dozen. See New CATALOGUE for everything.
GLOXINIAS, ready for potting on, 4*s.* and 6*s.* per dozen.
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Strong TELEGRAPH CUCUMBER PLANTS. Prices on application.
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Low price per 100 or 1000 on application.
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ONION. ONION. ONION. **NUNEHAM PARK,** extra selected, per packet, 1*s.* This superior variety maintains the high character we gave when it was first introduced.
For description, see our ILLUSTRATED SEED CATALOGUE, post-free, on application.
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**Awarded over 60 First Prizes for Rose Blooms this season.**
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GARDEN REQUISITES.
**COCOA-NUT FIBRE REFUSE,**
3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
**H. G. SMYTH,**
17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE, fresh and pure, 4 bushels, 1*s.*; 120 for 20*s.*; truck, 25*s.*; BEST BROWN FIBROUS PEAT, 5*s.* per sack, 5 for 22*s.* 6*d.* BLACK FIBROUS PEAT, 4*s.* 6*d.* per sack, 5 for 20*s.* Sacks, 4*d.* each. COARSE SILVER SAND, 1*s.* 6*d.* per bushel. Yellow Fibrous Loam, Leaf-Mould, and Peat-Mould, 1*s.* per bushel. MANURES of all kinds, fresh SPHAGNUM, GARDEN STICKS and LABELS, RUSSIA MATS, &c. TOBACCO CLOTH and PAPER, as used by the leading Nurserymen, and acknowledged to be the best in the Market—Cloth, 8*d.* per lb.; Specialité Paper, imported solely by us, 1*s.* per pound, 28 lb. 26*s.*; 2d quality Paper, 7*d.* per lb. Write for Price List.—W. HERBERT and CO., Horticultural Stores, 19, New Broad Street, London, E.C. (turning by Gow's, Fishmonger).

COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons. Invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1s. each; 15 Sacks, 12s.; 30 Sacks, 20s. (all Sacks included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (equal to about 300 bushels when dry), free on rail, 25s. Terms cash with order.
CHUBB, ROUND AND CO.,
Fibre Works, West Ferry Road, Millwall, London, E.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1s.; 15 bags, 12s.; 30 bags, £1, bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15s.; truckload of about 250 bushels, £1 3s. (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

F. C. HILLS & CO.,
DEPTFORD and EAST GREENWICH, LONDON, S.E.,
HAVE APPOINTED
MESSRS. HOOPER AND CO.,
COVENT GARDEN, LONDON, W.C.,
the SOLE AGENTS in Great Britain and Ireland for the Sale of their very successful Special
CONCENTRATED POTATO MANURE.

PEAT.—Superior Black or Brown Fibrous PEAT, for Rhododendrons, Azaleas, Orchids, &c., same as supplied to Messrs. John Waterer & Son, and other noted growers, 6 tons, loaded on trucks at Camberley Station, S.W.R., £4 4s.—Address,
Mr. W. TARRY, "Golden Farmer," Farnborough Station.

Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.
Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.
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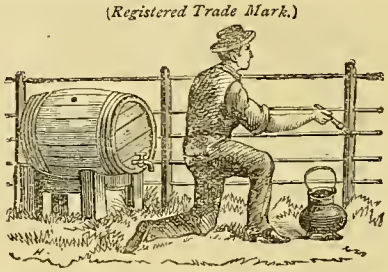

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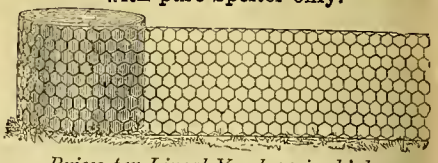

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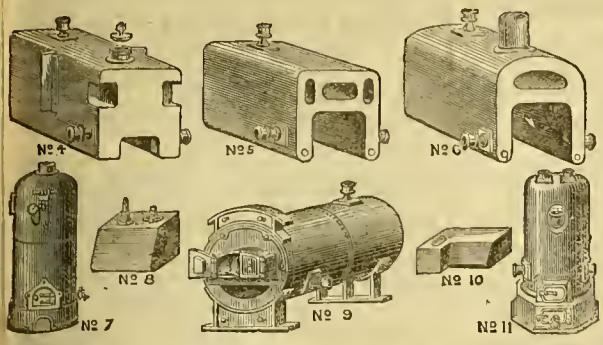


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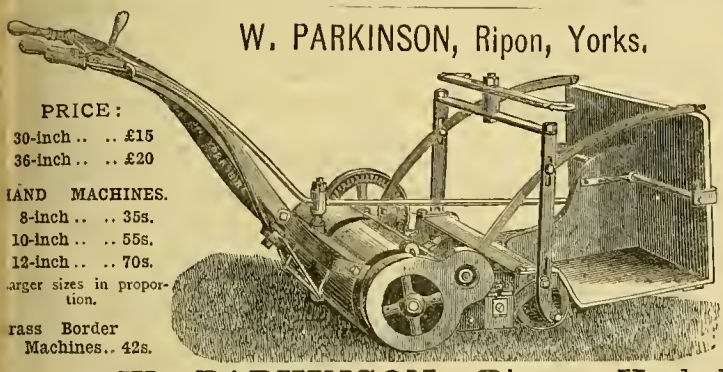

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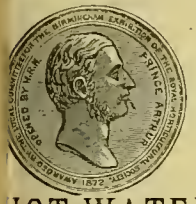

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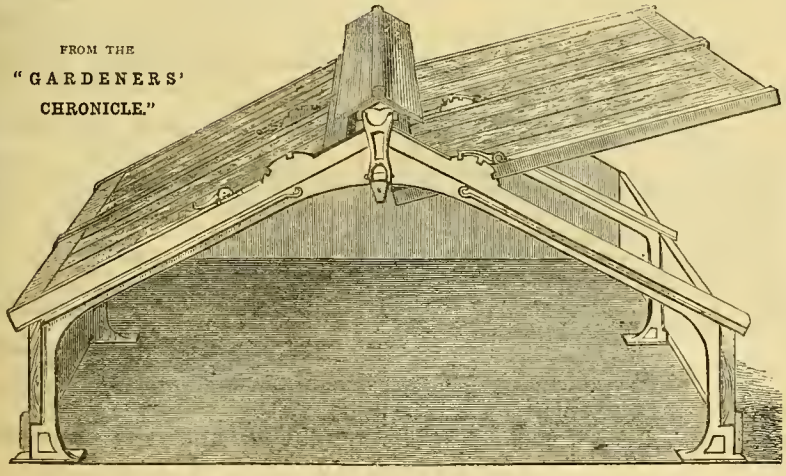

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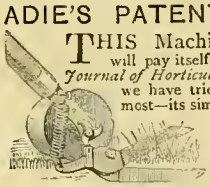

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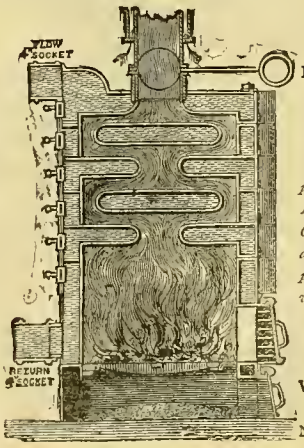


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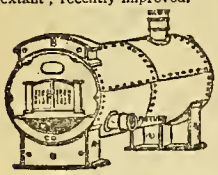

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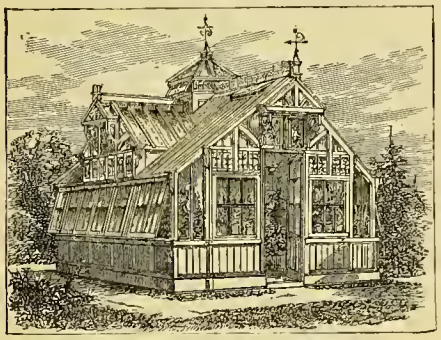

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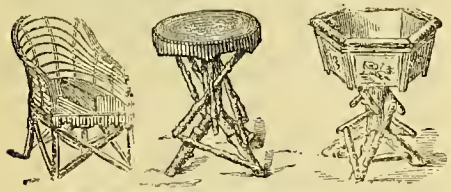

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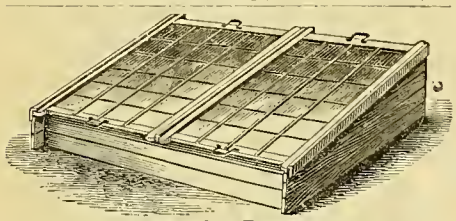

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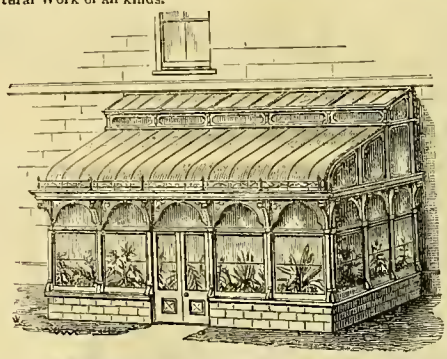

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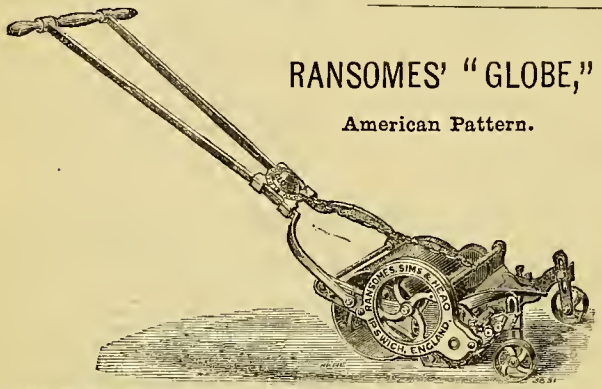

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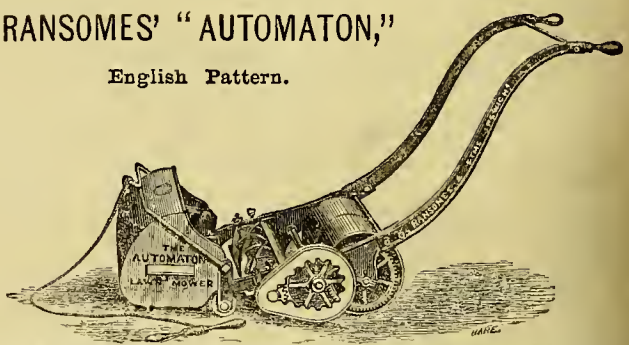

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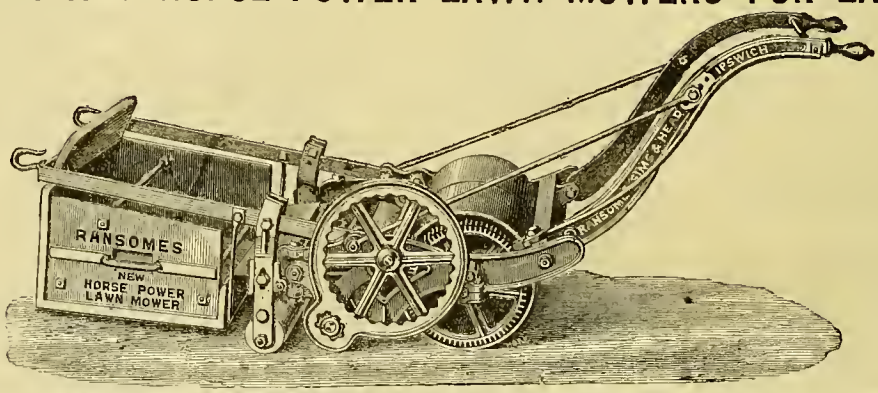


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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published b
said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, May 7, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 385.—Vol. XV. { New Series. } SATURDAY, MAY 14, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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| Erythronium purpureum | 638 | Sarracenias .. .. | 627 |
| Esparto for paper-making | 632 | Saxifraga peltata.. .. | 632 |
| Fernfield Orchids, the .. | 630 | School gardening .. | 638 |
| Florists' flowers .. .. | 639 | Scilla humifusa .. .. | 626 |
| „ specialities .. .. | 639 | Side-saddle plants .. | 627 |
| Forget-me-nots, garden | 638 | Societies :— | |
| Fritillaria recurva .. | 634 | Royal Horticultural .. | 640 |
| Frost, effects of the winter's .. .. | 634 | Summer, the coming .. | 634 |
| „ and the crops .. | 634 | Vanda teres .. .. | 630 |
| Fruit growing in Kent .. | 632 | Wallflowers .. .. | 638 |
| Hand garden cultivator | 638 | Weather, the .. .. | 641 |
| | | York Nurseries, the .. | 626 |


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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
GREAT FLOWER SHOW, FRIDAY, June 3; SATURDAY, June 4; WHIT-MONDAY, June 6; TUESDAY, June 7. ONE THOUSAND POUNDS in PRIZES: Roses, Orchids, Azaleas, Pelargoniums, Rhododendrons, Fruit and Vegetables. Competition for Silver Cups offered by Mr. Wm. Bull, F.L.S., for New Plants; also for Prizes offered by Messrs. Sutton & Sons, Joseph Davis & Co., and James Boyd & Sons.
Band of the Royal Horse Guards on June 3 and 4, and Full Bands all day on June 6 and 7.
ADMISSION { FRIDAY, from 1 o'Clock .. .. 5s. 0d. / SATURDAY, from 10 o'Clock .. 2s. 6d. / WHIT-MONDAY, from 10 o'Clock 1s. 0d. / TUESDAY, from 10 o'Clock .. 0s. 6d.
Fellows by Tickets purchased before the day by Fellows, for the first day, 3s. 6d.; second day, 2s.
Tickets at the usual Agents, and the entrances to the Gardens.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
GREAT HORTICULTURAL IMPLEMENT EXHIBITION and General Display of GARDEN STRUCTURES, TOOLS, and APPLIANCES at the Great Flower Show, June 3, 4, 6, and 7. Various Gold, Silver, and Bronze Medals, offered as Prizes for competition, with Certificates of Merit for New Inventions or Improvements.
Full particulars as to space, &c., may be had on application to Mr. A. BARRON, Royal Horticultural Society, South Kensington. ENTRIES CLOSE Friday, May 27.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
SUMMER EXHIBITIONS of PLANTS, FLOWERS, and FRUIT, WEDNESDAYS, May 25 and July 6, 2 to 7 o'Clock.
Tickets, to be obtained at the Gardens only by vouchers from Fellows of the Society, price 5s., or on the day of Exhibition, 1s. 6d. each.
Schedules of Prizes, and all particulars, may be obtained by post.

ALEXANDRA PALACE, N. (Lessees—Jones and Barber.)
MESSRS. JACKMAN'S CLEMATIS SHOW, from April 30 to May 21.
SHOW of FLORAL DECORATION and EXHIBITION of POT ROSES, May 20 and 21.
EXHIBITION of FLORAL DECORATION and SHOW of PELARGONIUMS, June 10 and 11.
STRAWBERRIES and CHERRY EXHIBITION, with FLOWER MART, June 17 and 18.
ROSE FAIR and PRIZE for the BIGGEST GOOSEBERRY, July 2.
GREAT ROSE SHOW, July 8 and 9.
J. FORSYTH JOHNSON, Horticultural Director.

INTERNATIONAL POTATO EXHIBITION.
President, the Right Hon. the Lord Mayor of London.
The SEVENTH ANNUAL EXHIBITION will take place at the Crystal Palace on SEPTEMBER 20 and 21, 1881. Schedules of Prizes and all particulars may be obtained on application to J. A. McKENZIE, Secretary.
Tower Chambers, Moorgate Street, London, E.C.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1881 will open on FRIDAY, June 3, at 2 o'Clock, P.M.
GREAT SHOW of AMERICAN PLANTS, by John Laterer & Sons, of Bagshot, will open the same day.
The INTERNATIONAL HORTICULTURAL EXHIBITION will open on AUGUST 24.
THREE THOUSAND POUNDS IN PRIZES.
For Schedules apply to BRUCE FINDLAY.
Royal Botanic Gardens, Manchester.

WILLIAMS' for AMARYLLIS and all other Bulbous Plants. For many years these Nurseries have been celebrated as possessing the finest collection of Amaryllis in the country.

WILLIAMS' for PITCHER-PLANTS, including all the old and well known varieties, as well as several novelties of B. S. Williams' own introduction.

WILLIAMS' for GARDEN and FLOWER SEEDS and HORTICULTURAL SUNDRIES.

WILLIAMS' NURSERIES are at all times worthy of a visit from all lovers of plants.

WILLIAMS' PLANT HOUSES are constructed both for convenience and comfort, and Parties about Constructing and Furnishing Conservatories, Stoves, &c., will do well to pay a visit to these Nurseries, where any advice will be gladly given.

WILLIAMS' for all kinds of FLOWERING STOVE and GREENHOUSE PLANTS. Specimens a speciality.

WILLIAMS' for EVERYTHING for the GARDEN.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, NURSERYMAN and SEED MERCHANT, Victoria and Paradise Nurseries, Upper Holloway, London, N.

Tea-scented Roses.
EDWIN HILLIER'S Pot ROSES are now fit to send out. Fine healthy bushy plants, on Seedling Briar Stock, by the dozen, 100, or 1000.
LISTS free. ROSE BLOOMS throughout the year.
The Nurseries, Winchester.

SEEDLING HOLLIES.—Several thousands of the above, extra fine. Apply
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

Orchids, &c.
THE NEW PLANT and BULB COMPANY'S SPECIAL LIST (No. 51) is just published. Post-free on application.
Lion Walk, Colchester.

Notice.
AUCUBA JAPONICA.—Splendid plants for immediate effect, 2½ to 3½ feet high, 24s., 30s., 36s., and 42s. per dozen. A few extra large specimens, 5s. to 7s. 6d. each.
W. RUMSEY, Joyning's Nurseries, Waltham Cross, N.

ALTERNANTHERA PARONYCHIOIDES MAJOR AUREA.—The new Alternanthera, as seen in Battersea Park last year; strong plants from store-pots, 3s. 6d. per dozen, 25s per 100. Cash with orders.
JOHN CHARLTON, Summervale Nursery, Tunbridge Wells.

To Nurserymen, &c.
ONE HUNDRED VINES in POTS, just breaking. Two years old. True to name. No room for them. No reasonable offer refused, or PLANTS in EXCHANGE.
W. AND G. DROVER, Florists, &c., Fareham, Hants.

WISE AND RIDES are prepared to receive CONSIGNMENTS of CUT FLOWERS, CHOICE FRUITS, CUCUMBERS, &c., in quantity.
3, Tavistock Court, Covent Garden, W.C.

Cut Flowers.
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of HOT-HOUSE and OUTDOOR FLOWERS. Cash by return of post if desired. Where money is objected to ORCHIDS, &c., MAY BE HAD in EXCHANGE.

WANTED, CLEMATIS ROOTS, for Grafting.
J. R. PEARSON, The Nurseries, Chilwell, Nots.

WANTED, CATTLEYA SKINNERI, good, healthy, established plants. Will any one having such to offer kindly send description and price to
HUGH LOW AND CO., Clapton Nursery, London, E.

WANTED, large healthy Plants of SEAFORTHIA ELEGANS, KENTIAS, ARECA LUTESCENS, RHAPIS FLABELLIFORMIS, ASPIDISTRA LURIDA VARIEGATA, DRACÆNA TERMINALIS, and LUCULIA GRATISSIMA.
W. HOWARD, Southgate, N.

Tall Palms.
WANTED to PURCHASE, for Cash.—Send description and price to
Mr. ROBERT GREEN, 28 and 29, Crawford Street, Bryanston Square, W.

WANTED, FRUITING CANES of the following VINES:—Buckland Sweetwater, Foster's Seedling, Black Hamburgh, Muscat of Alexandria, &c. State lowest trade price to
D. McFARLANE, The Gardens, Olive Mount, Wavertree, Liverpool.

Lawns and How to Make Them.—See
CARTERS' PRACTICAL GARDENER. Price 1s.; post-free, 1s. 4d. (Messrs. CARTER were the winners of the only Gold Medal for Lawns, Paris, 1878.)
The Queen's Seedsmen, and Seedsmen by Royal Warrant to H.R.H. the Prince of Wales, 237 and 238, High Holborn, W.C.

HOLLYHOCKS. — Strong plants now ready. List of varieties and price upon application.
L. WOODTHORPE, Glazenwood Nursery, Braintree.

Pelargoniums—Pelargoniums.
JAS. HOLDER AND SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties, 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

Tricolor Bedding Geraniums.
ALFRED FRYER offers a large stock of the best varieties. Priced LISTS post-free.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

H. P. ROSES, extra strong.—Very fine strong plants, in 9, 10, and 11-inch pots, of all the leading kinds, coming into bud; suitable for exhibition. For LIST of sorts and price, apply to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

WM. POTTEN will be happy to forward his CATALOGUE of Choice Geraniums, &c., post-free to all applicants.
Camden Nursery, Sissinghurst, Staplehurst, Kent.

Pansies, &c.
DOWNIE AND LAIRD, Royal Winter Garden, Edinburgh, are now sending out the finest Show and Fancy PANSIES that money can buy. Also VIOLAS, at from 4s. to 30s. per dozen.

LAPAGERIAS.
WHITE, extra strong, 42s. each; do., 31s. 6d. each; smaller, 21s. each
RUBRUM, strong, 10s. 6d. each.
ROSEA, strong, 7s. 6d. each.
Price to the Trade on application.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

A Quantity of
SPECIMEN FLOWERING and FINE-FOLIAGE PLANTS, fit for exhibition during the summer and autumn. At very reasonable prices.
J. HOUSE, Eastgate Nursery, Peterborough.

Verbenas—Verbenas.
JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other varieties of good strong Spring-struck Cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included, for cash with order.
Queen's Road Nursery, Markhouse Common, Walthamstow.

KEYNES AND CO.'S VERBENAS.—Thoroughly hardened, fit for immediate planting. Not to be surpassed for health and vigour. Price 10s. per 100, 95s. per 1000. List of fifty varieties free.
KEYNES AND CO., Salisbury.

Fox Brush, Aerides Fieldingii.
W. MAULE AND SONS offer a pair of home-grown Plants of this fine AERIDES. They are the best variety. Single stems about 1 foot long, with 9 or 10 leaves. Each has a branching flower-spike, which at present measures nearly 2 feet, and will be in bloom in a fortnight or three weeks. Price 210s. each.
The Nurseries, Bristol.

FINEST GRASS SEEDS, specially prepared for LAWNS, BOWLING GREENS, CRICKET GROUNDS, &c., comprising the very best dwarf evergreen kinds, quality not to be surpassed, 1s. per pound, 20s. per bushel; 3 to 4 bushels required per acre.
RICHARD SMITH AND CO., Seedsmen and Nurserymen, Worcester.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881.
RICHARD SMITH AND CO., Nurserymen, Worcester.

GLOBE ARTICHOKES.—Nice plants now ready, 6s. per dozen, 40s. per 100. Prices to Trade on application.
HOOPER AND CO., Covent Garden, London, W.C.

BLACK NEGRO BEAN SEED.—For Sale 16 Bushels. Apply
SMITH AND SON, Sipson, near Slough.

HENRY GODFREY, NURSERYMAN, Stourbridge, has still on hand a few hundredweight of SCHOOLMASTER POTATOS, true, and fine sample, at 10s. per cwt. Bags 6d. Cash with order.

## SALES BY AUCTION.

**Fulham, S.W.**
IMPORTANT SALE.—EXPIRATION OF LEASE.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Osborn & Sons (who are removing their Glass Erections to new premises) to SELL by AUCTION, at the Nurseries, Fulham, S.W., on TUESDAY and WEDNESDAY, May 17 and 18, at 12 o'Clock precisely each day, a valuable and choice assortment of STOVE and GREENHOUSE PLANTS, in great variety—specimen and half-specimen Palms, a quantity of Azalea indica and Camellias, Exotic and Hardy Ferns, and other Stock.

May be viewed. Catalogues obtained on the Premises, or at the Auctioneers' Offices, 8, New Broad Street, E.C., and Leytonstone, E.

**Important Sale of beautifully grown Greenhouse and BEDDING PLANTS.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the American Nurseries, Leytonstone, on SATURDAY, May 21, at 2 o'Clock precisely, about 15,000 GREENHOUSE and BEDDING PLANTS, including 5000 Geraniums in all the leading varieties, thousands of Verbenas, Lobelias, Calceolarias, and the usual assortment of Plants for Bedding, fine Pelargoniums, choice Azalea indica, Ericas, and other Greenhouse Plants, &c.

Full particulars in Catalogues, which may be had on the Premises, and of the Auctioneers, 8, New Broad Street, E.C., and Leytonstone, E.

**Established and Imported Orchids.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, May 23, 500 Lots of Established and Imported ORCHIDS.

Further particulars will appear next week.
Offices, 8, New Broad Street, E.C.

**Thursday Next.**
LÆLIA ACUMINATA.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 19, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, St. Alban's, a large and very healthy importation of LÆLIA ACUMINATA—this fine Lælia is very floriferous, and varies in colour of flower very much, some are white, others pink, others rose, and others are violet-shaded; an importation of AERIDES LEEANUM, a splendid free-flowering new Aerides—the plants are in finest health; also three new VANDAS, from the East; a grand lot of the fine DENDROBIUM HETEROCARPUM PHILIPPINENSE, a new GRAMMATOPHYLLUM or EULOPHIA, a large quantity of ODONTOGLOSSUM ALEXANDRÆ, very fine varieties, and other Orchids.

May be viewed the morning of Sale and Catalogues had.

**The Fourth Portion of the Celebrated Collection of ORCHIDS formed by JOHN DAY, Esq., of Tottenham.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY and TUESDAY, May 23 and 24, at half-past 12 o'Clock precisely, each day, the Fourth Portion of this celebrated Collection, comprising, amongst other fine things:—

| | |
|---|---|
| Cattleya labiata autumn var. | Phalænopsis sumatrana |
| ,, Skinneri alba | ,, tetraspes |
| Cypripedium Selligerum | ,, leucorrhoda |
| ,, vexillarium | Angræcum Chailluanum |
| ,, Stonei platytænium | ,, Ellisi |
| Aerides Schrüderi | Masdevallia Dayana |
| Deodrobium Brymerianum | ,, Macrura |
| ,, superbiens | ,, Veitchiana major |
| Odontoglossum nevadense | ,, Chimæra |
| Lælia autumnalis atrorubens | Lycaste Skinneri alba |
| ,, anceps alba | Epidendrum Cooperianum |
| ,, ,, Dawsoniana | Vanda Lowii. |

May be viewed the mornings of Sale, and Catalogues had.

**The Nursery, Fulham Road, near the Old Church, HAMMERSMITH, W.**

MR. J. A. SMITH, having received instructions from Mr. F. Herridge, will SELL by AUCTION, on TUESDAY, May 24, at 12 for 1 o'Clock, on the Premises as above, about 30,000 PLANTS, beautifully grown for Windows, &c., and well selected for Bedding and Greenhouse, and comprising about 13,000 Geraniums, 3000 Calceolarias, 3000 Mesembryanthemums, Pyrethrums, Heliotropes, Iresines, Alternantheras, and Coleus; 4000 Lobelias, &c.; thousands of Pelargoniums, Fuchsias, &c.

May be viewed the day prior and morning of Sale. Catalogues on the Premises, and at Mr. J. A. SMITH'S Auction, Land, and Estate Offices, 58, King Street East, Hammersmith, W.

**Plaistow.—To Nurserymen and Others.**

FREEHOLD RESIDENCE, with upwards of an Acre of Ground and an extensive Range of newly-erected Greenhouses, admirably adapted for Nursery operations on a large scale.

MR. W. B. HALLETT (many years with Messrs. Oxenham) will SELL by AUCTION, at the Mart, Tokenhouse Yard, near the Bank of England, on FRIDAY, June 3 at 1 for 2 o'Clock precisely, in Two Lots, the VALUABLE FREEHOLD PROPERTY, Durban House, Plaistow (about 250 yards from Plaistow Railway Station), and a large Plot of Land adjacent; the House, Out-buildings, Greenhouses, and grounds attached offering, either with or without the adjacent land, an excellent opportunity for acquiring a property peculiarly suited for horticultural purposes.

The property may be viewed, and Particulars and Conditions of Sale had of J. WHITELOCK, Esq., 1, Cecil Road, Plaistow; of Messrs. EMMETT, SON AND STUBBS, Solicitors, 14, Bloomsbury Square, W.C.; at the Mart; or forwarded on application to the Auctioneer, 278, Holloway Road, N.

TO BE SOLD, with Immediate Possession, a First-class Old-established NURSERY and SEED BUSINESS, containing 9 Acres of good Marketable Stock, comprising 1 acre of 2-yr. transplanted Quick, a large quantity of Spanish Chestnuts, Ash, Elm, Hazel, Hollies, Cedrus Deodara, Evergreen and Deciduous Shrubs, Fruit Trees, and a General Nursery Stock. Close to the Railway Station at Bridgnorth. The Nursery Land may be had on long Lease. Has been successfully carried on for many years by Mr. John Mann. Incoming from £500 to £600. A genuine good opening for any industrious man with small capital.

Also the Old-established BLACK HORSE INN, with good Stabling, Malt-house, and 3 Acres of Pasture Land adjoining, situated in the centre of Bridgnorth. For particulars apply, Mr. JOHN MANN, Elm Villa, Danesford, Bridgnorth.

FOR DISPOSAL, on the South Coast, a NURSERY, SEED, and FLORIST BUSINESS, comprising 2 Acres of Land, Two Vineries, Cucumber, Propagating, and two Span-roofed Greenhouses, Show House, and Seed Shop, Pits, Frames, Potting Sheds, &c. Rent only £25 per annum. Goodwill, Stock, Greenhouses, and all Erections. Price and particulars on application to
FLORIST, 96, Alexandra Street, St. Leonards-on-Sea.

TO BE DISPOSED OF, on account of owner leaving London, for reasonable offer, TWO SHARES in the GENERAL HORTICULTURAL ASSOCIATION, with Dividend now due.
Address N. A., May's, 159, Piccadilly

**To Nurserymen and Seedsmen.**

TO BE DISPOSED OF, by Private Treaty (in consequence of the death of the late Proprietor, Mr. William Roberts), the BUSINESS and STOCK-IN-TRADE of a Nursery Gardener and Seedsman, at Bridgnorth, with the option of taking to a PUBLIC-HOUSE, known as the "Black Horse." The Gardens contain 6 Acres, 3 Roods, 20 Perches or thereabouts, are close to the Railway Station, and are well stocked with all kinds of Nursery, Forest, and Fruit Trees, Flowering Shrubs, Plants, Flowers, and every description of articles connected with the trade

Immediate possession may be had. For particulars apply to Messrs. GORDON AND NICHOLLS, Solicitors, Bridgnorth.

TO BE DISPOSED OF, the Old-established NURSERY and SEED TRADE of the late Mr. Henry Baker, Atherstone. The Nursery (about 8 Acres) is in an excellent neighbourhood, and close to a Market Town, in full working order, and every facility for doing a large trade. For particulars apply to
Mrs. BAKER, The Nurseries, Atherstone.

TO BE LET, from June 1, large GARDENS, belonging to a Gentleman's residence; good Cottage, 3 miles from two stations, 16 miles from Manchester.

For particulars apply, by letter, to P. M., 1, Lancaster Gate, Hyde Park, London, W., or to Messrs. JAMES DICKSON AND SONS, Newton Nurseries, Chester.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are 8½ Acres of deep rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business. For particulars apply to
J. WATSON, 38, Crown Street, Bury St. Edmund's.

TO BE LET, from Michaelmas Next, CASTLE HILL FARM, Addington, comprising 138 Acres of Arable and Pasture Land, with good House and Buildings, &c. The Farm being only 4½ miles from Croydon and 12 from London, is well suited for Market Gardening purposes. Would be let on moderate terms.

For further particulars apply to GEO. GRAHAM BELL, Land Agent and Valuer, 11, Pall Mall East, S.W.

TO BE LET, a FLORIST and SEED BUSINESS, with between 3 and 4 Acres of Land, Greenhouses, Pits, &c. Good position. Established about forty years. Apply to W. H. WHEELER, Florist, &c., Farnham Nursery, Farnham, Surrey.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 8, New Broad Street, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

MAGNUM BONUM SEED POTATOS, true.—A few Sacks at 14s. a Sack. Send Cash and Sacks with Order.
ELLIGTT AND CO., Marlow, Bucks.

EXTRA STRONG GERANIUMS, &c.—Wonderful, 12s. per 100; White Vesuvius, 15s. per 100; Madame Thibaut, 12s. per 100; Mrs. Pollock, Sunset, &c., 20s. per 100; Flower of Spring, 15s. per 100; Marshal McMahon, best Bronze, 20s. per 100; finest Show and Fancy DAHLIAS, to name, 20s. per 100; VERBENAS, Show sorts, strong, 10s. per 100; all well rooted and healthy.
W. JACKSON, Bladedown, near Kidderminster.

HARDY CARPET-BEDDING PLANTS.—Antennaria tomentosa candida, 1s. 6d. per dozen, 8s. per 100; Arabis albida variegata, 2s. per dozen; Ajuga reptans atropurpurea, 2s. 6d. per dozen; Veronica repens, 1s. 6d. per dozen, 7s. per 100.
J. J. MARRIOTT, Walsall, Staffordshire.

**Stephanotis, Cut Bloom.**

MESSRS. TURNER BROS. can now supply the above, in quantity. Price on application.
Green Hill Nursery, Garston, Liverpool.

**Rhododendron Ponticum.**

J. J. MARRIOTT begs to offer small Bedded Stuff, at 15s. and 20s. per 1000; transplanted, 4 to 6 inches, bushy, 50s.; 6 to 9 inches, bushy, 70s. per 1000. Samples on application.
Highfield Nurseries, Matlock; and Walsall, Staffordshire.

JOHN THOMPSON AND SON beg to offer:—
AURICULAS, Alpine, strong blooming plants, 12s. per 100.
PINKS, Anna Boleyn, extra strong, 16s per 100.
PANSIES, the best bedding sorts, in distinct colours, 12s. p. 100.
,, finest named Show and Fancy Pansies, 4s. per dozen, 25s. per 100.
HOLLYHOCKS: see our LIST of choice named sorts.
21, Pilgrim Street, Newcastle-on-Tyne.

**Bothwell Bank Prolific Strawberry.**

DICKSONS AND CO., Pilrig Park Nurseries, Edinburgh, have acquired the entire stock of this new Strawberry, which was awarded a First-class Certificate at the Royal Caledonian Horticultural Society's Spring Show in 1880, and which has taken First Prizes wherever exhibited as a Forcing Strawberry. A correspondent in the *Gardeners' Chronicle* of April 30 writes: "I took up a plant at random and counted no less than thirty-two berries, some of which were an ounce in weight . . . I have seen it for the last two years, and can without hesitation say that it is a great acquisition to Strawberry Growers either for forcing or general crop, particularly so to growers for the market."

Plants, established in pots, 1s. 6d. each, 12s. per dozen, 75s. per 100.

**To the Trade.**

MARÉCHAL NIEL, and White and Yellow BANKSIAN ROSES. Good stuff, in 5-inch pots, 10s. 6d. per dozen, 75s. per 100.
GEO. COOLING AND SON, Nurserymen, Bath.

**Cauliflower Plants.—Cauliflower Plants.**

R. MAY, The Nurseries, Leyburn, Yorks, to effect a clearance and make more room for bedding plants, offers the above in fine, transplanted, autumn-sown plants, at the reduced price of 2s. 6d. per 100. Cash to accompany all orders.

**Rare and Valuable Orchids, cheap.**

J. H. LEY, Croydon, can offer fine plants, imported a few months since, but all rooting and growing freely, at greatly reduced prices:—
CATTLEYA MOSSIÆ, extra fine, will produce plenty of flower, 42s. and 60s. per dozen.
,, INTERMEDIA, 42s. per dozen.
,, CITRINA, finest ever imported, 3 to 5 new growths, 42s. and 60s. per dozen.
LÆLIA MAJALIS, 200 or more bulbs, growing well, 30s. per doz.
DENDROBIUM DEVONIANUM, strong new growths, 42s. and 60s. per dozen.
,, HOOKERI, strong new growths, 42s. per dozen.
,, CAMBRIDGEANUM, strong new growths, 60s. per doz.
,, FREEMANI, 42s. per dozen.
CŒLOGYNE OCCELLATA (rare), 42s. per dozen.
CYPRIPEDIUM NIVEUM (established), 60s. per dozen.
MASDEVALLIA HARRYANA, 60s. per dozen.
,, TOVARENSE, 60s. per dozen.

100 choice and valuable ORCHIDS, 50 sorts, for 210s., established plants, flowering size. Worth 50 guineas at London Catalogue prices. All packages gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

SPECIAL OFFER of CHOICE PLANTS.
FUCHSIAS, 12 best Exhibition varieties, 1s. 6d.; 12s. per 100.
,, 12 new Exhibition varieties, 2s. 6d.; 20s. per 100.
COLEUSES, 12 new varieties, 2s. 6d.; 20s. per 100.
,, 18 new varieties, 3s. 6d.
AGERATUM, Dwarf, 12 for 1s. 3d.; 8s. per 100.
IRESINE, 12 for 1s. 2d.; 8s per 100.
VERBENAS, 12, in 4 varieties, 1s. 2d.; 6s. per 100.
,, 12, in 8 varieties, 1s. 4d.; 8s. per 100.
CHRYSANTHEMUMS, 12, in 12 varieties, 2s.
,, 100, in 50 varieties, 12s.
PELARGONIUMS, 12 Show and Fancy varieties, 2s. 6d.; 18s. per 100.
,, 100 Show and Fancy, in 25 varieties, 20s.
GERANIUMS, Bronze, Beauty of Calderdale, 12 for 2s. 6d., 18s. per 100
,, ,, Maréchal McMahon, 12 for 2s 6d.; 18s. per 100.
,, ,, mixed varieties, 12 for 2s.; 15s. per 100.
,, Variegated Bijou, 12 for 2s.; 12s. per 100.
,, Double, 12 new varieties, 2s. 6d.; 20s. per 100.
,, Zonal and Scarlet, 12 varieties, 2s. 6d.; 18s. per 100.
,, ,, ,, mixed, 12 for 1s. 6d.; 10s. per 100.
CALCEOLARIAS, Golden Gem, 12 for 1s. 3d; 8s. per 100.
All well rooted and package free.
Terms—Cash with all Orders.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

**New and Choice Plants.**

JOHN H. LEY, Royal Nursery, Croydon can supply splendid young plants, now growing freely and fit to pot on for spring, as follows:—

| | Each—s. d |
|---|---|
| PAULLINIA ARGENTEA, very elegant | 5 0 |
| ,, THALICTRIFOLIA | 1 0 |
| ADIANTUM AUREUM (new Golden Maidenhair) | 5 0 |
| ARALIA GRACILLIMA | 3 0 |
| ,, VEITCHII | 3 0 |
| ,, ELEGANTISSIMA | 3 0 |
| ,, FILICIFOLIA | 2 0 |
| ,, LACINIATUS | 3 0 |
| BERTOLONIA VAN HOUTTEI | 3 0 |
| SONERILLA ARGENTEA | 2 0 |
| TORENIA BAILLONI | 2 0 |
| ,, FOURNERI | 1 0 |
| ,, EDENTULA SUPERBA | 2 0 |
| MARANTA MASSANGEANA | 1 0 |
| LASIANDRA FLORIBUNDA | 1 0 |
| SELAGINELLA AUREA | 1 0 |
| NEPHROLEPIS DUFFEI | 1 0 |
| YUCCA FILAMENTOSA VARIEGATA | 3 0 |
| PHYLLANTHUS PURPUREUS | 2 0 |
| CARYOTA TEYSMANIANA | 2 0 |
| GLAZIOVA INSIGNIS | 2 0 |
| LATANIA GLAUCOPHILA | 3 0 |
| MUSA ZEBRINA | 7 6 |
| TERMINALIA ELEGANS | 5 0 |

The collection of twenty-four choice plants for £3 3s., package included, and other plants gratis to pay for carriage.
J. H. LEY, Royal Nursery, Croydon.

PELARGONIUM EDWARD PERKINS.—The finest variety yet sent out. For description see large Advertisement for April 30. Price 10s. 6d. each.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

**Cheap Bedding Plants.**

H. I. HARDY, F.R.H.S., offers fine strong and healthy autumn-struck Plants of the following:—
GERANIUMS, Vesuvius and other best scarlets, from single pots, 2s. per dozen; stores, 12s. per 100. Master Christine and Madame Vaucher, single pots, 2s. 6d. per dozen, 15s. per 100. New Life, Crystal Palace Gem, and May Queen, from single pots, 3s. per dozen.
CALCEOLARIA, aurea floribunda, from single pots, 1s. 6d. per dozen; 10s. per 100.
VERBENAS, 1s. 9d. per dozen from single pots, 8s. per 100 from stores.
LOBELIAS, Emperor William, proved the best dwarf blue for borders, 10s. per 100 from single pots, 6s. per 100 from stores. Seedlings, 2s. 6d. per 100, 20s. per 1000.
DAHLIAS, fine named Show varieties, in single pots, 4s. 6d per dozen.
Terms cash. Package free, and extra Plants for carriage. A reduction made for quantities. CATALOGUE free by post.
STOUR VALLEY SEED GROUNDS, BURES, SUFFOLK.

**To the Trade.—Large Plants in 48's of**

GERANIUMS—viz., Vesuvius, Wonderful, Madame Thibaut, Master Christine, and Madame Vaucher, in quantities of not less than two dozen, at 4s. per dozen. These are the same size and quality as sent to Covent Garden Market. Terms cash. Packages free.
GEO. POULTON, Fountain Nursery, Angel Road, Edmonton.

**Verbenas.**

VERBENAS.—Extra strong and well-rooted plants of Purple, White, Crimson, and Pink, 6s. per 100, 50s. per 1000; ten choice Exhibition varieties, beautifully clean and healthy, 8s. per 100, 70s. per 1000; Cuttings, 3s. and 4s. per 100, 25s. and 35s. per 1000. All securely packed. Terms cash.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

KELWAY AND SON offer:—
50,000 DAHLIAS, in 400 varieties.
10,000 " single varieties.
50,000 PYRETHRUMS, in 50 varieties
50,000 SCOLOPENDRIUM KELWAYI.
VERBENAS, PETUNIAS, LOBELIAS Brighton Blue and Brighton White, CARNATION (Red) Souvenir de la Malmaison.
Langport, Somerset.

BEANS.
COVENT GARDEN NEGRO DWARF FRENCH (English saved). The best and most prolific variety grown.
NEWINGTON WONDER (True), English saved. A very quick and prolific Bean, and one much grown for pickling.
Also, SCARLET RUNNERS and WHITE-SEEDED RUNNERS. Special quotations on application.
WATKINS AND SIMPSON, Seedsmen, 1, Savoy Hill, Strand, London, W.C. Seed and Trial Grounds, Feltham, and Twickenham, Middlesex.

**Single Dahlias and French Marguerites.**

THOMAS S. WARE has pleasure in announcing that his new Special LIST of the above is ready, containing a fine selection of SINGLE DAHLIAS and the best of the MARGUERITES; also a number of specially choice NOVELTIES in ANTIRRHINUMS, PHLOXES, PENTSTEMONS, and CHRYSANTHEMUMS. Post-free upon application.
Hale Farm Nurseries, Tottenham, London.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.
EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Hardy Rhododendrons and Azaleas.**

ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

GARDEN SEEDS, &c.—To procure genuine new Vegetable and Flower Seeds, and effect a saving in Garden Expenses, apply for our Illustrated and Descriptive Priced CATALOGUE. It contains all the most popular and best new varieties, at very low prices.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, Hereford.

**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Yesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Yesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.
" TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.
" SILVER VARIEGATED—May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.
" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.
" BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.
" Forcing, Show and French vars., 30s. per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

**Spring Planting.**

SEEDLING and TRANSPLANTED FOREST TREES. PLANTS for GAME COVERTS,
ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c.—The immense stock of the above is in splendid condition, and special offers for large quantities will be made when desired.
CATALOGUES free on application.
The LAWSON SEED AND NURSERY COMPANY (Limited), Edinburgh.

**Rare Opportunity.**

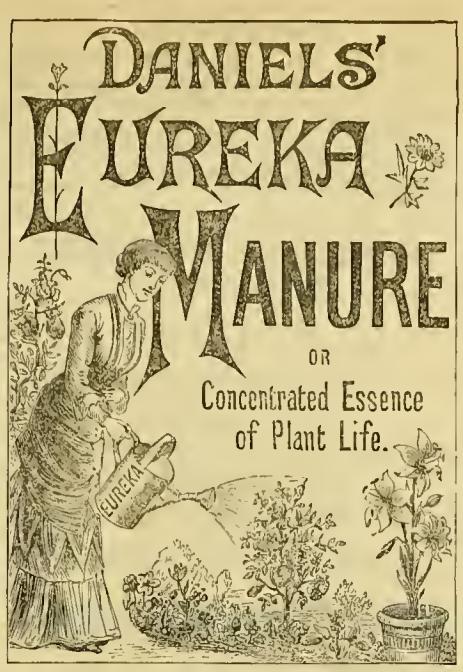
FOR WINTER GARDENS, &c.—A Gentleman who contemplates turning his Stove-house into a Cool Conservatory is desirous of disposing of the whole of his valuable collection of specimen plants, consisting of CROTONS, of large size and perfectly grown; PALMS, DRACÆNAS, ALLAMANDAS, &c. Further particulars from
Mr. E. MARTIN, Nausladron, St. Austell.

**To the Trade and Market Growers.**

VIOLETS.—Large clumps, suitable for dividing to plant out. Now is the proper time to transplant.

| | |
|---|---|
| Victoria Reginæ | Single Neapolitan |
| White Czar | Belle de Chatenay |

Low price per 100 or 1000 on application.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.




## (NEW FERTILISER.)

WE have, during past years, refrained from manufacturing any Artificial Fertiliser for Floriculture or General Gardening purposes, mainly for the reason that the successful composition of such an article requires years of experimental trial under a variety of conditions, such as temperature, climate, soil, &c.

The preparations generally offered to the gardening public are commonly made simply to act as stimulants, by which a marvellous activity of growth and bloom can be effected, but which generally is of very short duration, and often fatal in the end to the real prosperity of the plant.

Experience has convinced us that, under average conditions of floral or vegetable growth, true and lasting success is best obtained by the use of properly balanced Plant Food, by means of which soil which may have become poor and exhausted shall be so renovated as to be again generous and fruitful, so as to furnish at any time the necessary conditions of fertility and ensure the vigorous and healthy growth not only of leaves, flowers, and fruit, but of every part of the plant. These conditions we claim to have effected in our EUREKA MANURE, or ESSENCE of PLANT LIFE, a highly concentrated Manure, adapted for every kind of Flower, Fruit, or Vegetable, and useful alike to the Horticulturist and Farmer; a true friend to the Gardener; and not only a Stimulant but a Genuine Food for Plants; *perfectly efficient, odourless, and economical*, and is destined to take the place of all other Manures.

**Report of Mr. Francis Sutton, F.C.S., Chemist to the Norfolk Chamber of Agriculture, &c.**

[COPY.]

"NORFOLK COUNTY LABORATORY,
*November* 22, 1880.

"Messrs. DANIELS BROTHERS,

"GENTLEMEN,—I have acquainted myself by experiment and analysis with the entire nature of your Eureka Manure, and I am satisfied that it is admirably adapted to the purposes for which you recommend it. I have had a long and varied experience in the examination of soils and fertilisers and their effects, and may say at once that you have carried out practically the ideas which I myself would advocate, and have produced a Concentrated Manure which is safe, odourless, and adapted to the healthy growth of every variety of plant.

(Signed) "FRANCIS SUTTON."

*SOLD BY ALL CHEMISTS AND SEEDSMEN,*
*In Packages, with Complete Directions for Use,*
**1 lb., 1s.; 2 lb., 1s. 8d.; 4 lb., 3s.; 7 lb., 4s. 6d.; 14 lb., 7s. 6d.; 28 lb., 12s. 6d.**
Much cheaper by the Cwt.

**Wholesale Agents in London:—**

Messrs. BARCLAY AND SON, 95, Farringdon St., E.C.
Messrs. CORRY, SOPER, FOWLER AND CO., 18, Finsbury Street, E.C.
Messrs. HURST AND SON, 152, Houndsditch, E.
Messrs. NUTTING AND SONS, 60, Barbican, E.C.
Messrs. WAITE, NASH AND CO., 79, Southwark Street, E.C.

**Retail from**

**DANIELS BROS.,**

ROYAL NORFOLK SEED ESTABLISHMENT,

**NORWICH.**

NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties are now ready, 2s. 6d., 3s. 6d. and 5s. each. Full particulars and testimonials free on application to
Messrs. JONES AND NORTH, Hope Nursery, Lewisham, Kent.

**Vines—Vines—Vines.**

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

ILLUSTRATED CATALOGUE of PERENNIALS.—The present year's issue of this Catalogue, containing many rare and choice Hardy Perennials, also Selections of Hardy Terrestrial Orchids, Primula Sieboldii, Climbing and Trailing Plants, Aquatics and Bog Plants, Ornamental Grasses and Bamboos, Sarracenias, &c., may be had post-free upon application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

**To the Trade.**

PELARGONIUMS, Show, Fancy, and Decorative, best named sorts, good plants, to flower next month, in 48 pots, 8s. per dozen, 60s. per 100; in 32-pots, 12s. per dozen, 80s. per 100.
CHRYSANTHEMUMS, best sorts, large-flowered Japanese and Pompon, in thumb-pots, 25s. per 100.
DAHLIAS, best varieties, in small thumbs, 20s. per 100.
DELPHINIUMS, best named, single and double, good plants, 5s. per dozen.
GARAWAY & Co. offer the above: their own selection.
GARAWAY & CO., Durdham Down Nurseries, Clifton, Bristol.

CHOICE FERNS.—100 new, rare, and beautiful Ferns for 63s., in fifty distinct varieties, many of which are rarely to be met with. At London catalogue prices could not be bought under £15. All strong plants, fit to pot on and make a good show when bedding plants are cleared out. Packages gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

**To the Trade.—New Roses for 1881.**

LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,
Gratis and post-free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

**Now is the Best Time to Transplant Hollies.**

HOLLIES, STANDARD, GOLD and SILVER, perfect Specimens, from 10s. 6d. to 31s. 6d. each.
PYRAMIDS, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each.
GREEN HOLLIES, for Hedges, 12 to 15 inches, 21s. per 100; 15 to 18 inches, 30s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

**Verbenas—Verbenas.**

WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff, 6s. per 100, 50s. per 1000; strong plants from single pots, full of cuttings, 12s. per 100; 100 rooted cuttings, in twelve best show kinds, 8s., packing included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

**50,000 Pelargonium Vesuvius.**

WILLIAM BADMAN is sending out VESUVIUS, from store pots, 8s. per 100, 75s. per 1000, packing included. Send cash with order.
Cemetery Nursery, Gravesend, S.E.

NEW ROSES for 1881, in pots. TEA and NOISETTE ROSES, in pots. Price Lists free.
CLEMATISES, best new and old sorts. New List to be ready (D.V.) by end of May.
EWING AND CO., Eaton, Norwich.

DAHLIAS and TEA ROSES.—Show, Fancy, and Bouquet DAHLIAS, very fine plants of the best varieties, at £1 per 100.
Well established, strong healthy plants, of the finest TEA ROSES, 12s. per dozen, £4 and £5 per 100. Lists on application.
J. HOUSE, Eastgate Nurseries, Peterborough.

**Special Cheap Offer.—Surplus Stock of**

SEED POTATOS.—All the leading varieties. To clear out very low prices will be accepted. LIST of kinds and quantities on application.
KERR AND FOTHERINGHAM, Royal Seed Establishment, Dumfries, Scotland.

POT ROSES and CLEMATIS.—A large and very extensive Collection of the above, including the finest varieties, ready for delivery in June. Early orders solicited.
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

STRONG PLANTS.
100 Choice ZONAL GERANIUMS, all the best kinds, for 24s.
100 Choice BRONZE ditto, the best, 25s
100 Choice SILVER-EDGED, Fancy flowering ditto, 16s.
100 Choice PHLOX, well rooted, 16s.
100 Pot Roots of the best DAHLIAS, 20s.
1000 CUTTINGS of the best GERANIUMS, Zonal, Bronze, Tricolor, and Silver-edged, for £5.
No charge for packing. Cash with order.
CHARLES BURLEY, Brentwood.

PRIMULA NIVALIS.—For filling a corner of a grave plot few plants can equal, none can surpass in purity, this lovely pure white Auricula. Two flowering plants free by post for 1s. 6d.; twelve plants for 8s. Trade price per 100 on application.
MORRISON BROTHERS, Aberdeen.

PRIMULA ACAULIS PURITY.—This pretty free-growing single white Primrose makes a fine border plant. 2s. per dozen, 10s. per 100. Trade price on application.
MORRISON BROTHERS, Aberdeen.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock :—

BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
,, Golden, many thousands, 3, 4, 5 to 10 feet high.
,, Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
,, laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
,, Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
,, Golden Queen, 4, 5, 6 to 10 feet high.
,, Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
,, ,, ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 eet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet; hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
,, DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
,, SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.

The Plants referred to in this Advertisement have all been recently Transplanted.

Knap Hill Nursery, Woking, Surrey.

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**Specially Cheap Offer of Bedding Plants.**

VERBENAS.—50,000 now ready for Sale.

S. BIDE is now prepared to supply to his numerous customers, as in previous seasons, really good, strong, spring-struck plants of Purple, Scarlet, White, and Pink Verbenas, at 6s. per 100; 50s. per 1000. Best Exhibition Varieties, 8s. per 100.

Strong healthy Cuttings of the above at half price. Free by post.

DAHLIAS, true to name, well established, in 60-pots, 25s. per 100.
GERANIUM, Flower of Spring, strong autumn-struck plants, 12s. per 100.
AGERATUM, dwarf varieties, 6s. per 100.
IRESINE, Lindeni, 6s. per 100.
HELIOTROPE, light and dark, 6s. per 100.
COLEUS, Verschaffeltii, 8s. per 100.
CALCEOLARIA, Golden Gem and other varieties, strong autumn-struck plants, 8s. per 100.

Packages free. Cash must accompany all Orders. List of varieties of all the above free by post on application to

S. BIDE, Alma Nursery, Farnham, Surrey.

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**New Bedding Plants.**

ACHYRANTHES ATROPUPUREA VIOLACEA.—A cross between A. Wallisii and A. brilliantissima; leaves flat, roundish, velvety-purple with violet sheen. A quite new type. Price 4s. each, 20s. for six, 30s. for a dozen.
ALTERNANTHERA ENSIFOLIA.—Dwarf habit, leaves lanceolate, tinted with yellow and carmine on a metallic ground. Price 2s. each, 10s. 6d. for six.
ALTERNANTHERA ROSEA.—Fine variety, with a tint resembling that of amœna, very effective in beds, and more hardy than the preceding. Price 2s. each, 10s. 6d. for six.
COLEUS REINE DES BELGES.—The richest coloured of all the Coleus. Price 2s.

CATALOGUE of Plants suitable for Carpet-bedding sent free on demand.

ED. PYNAERT VAN GEERT, Ghent, Belgium.

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**Roses for 1881.**

WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, beg to offer strong plants of the undermentioned first-rate English raised novelties, 7s. 6d. to 10s. 6d. each :—

PRIDE OF WALTHAM (H.P.), delicate flesh colour; Two First-class Certificates.
LADY SHEFFIELD (H.P.), brilliant rosy-cerise; First-class Certificate.
RED GAUNTLET (H.P.), bright scarlety-crimson.

English raised ROSES of 1879 and 1880.

COUNTESS OF ROSEBERY (H.P.), brilliant carmine-rose; Three First-class Certificates. Price 2s. 6d. each.
CROWN PRINCE (H.P.), bright purple-crimson, 3s. 6d. each.
DUCHESS OF BEDFORD (H.P.), dazzling scarlet-crimson; First-class Certificate, 2s. 6d. each.
LITTLE GEM (Moss), crimson, beautifully mossed, 3s. 6d. each.
MASTERPIECE (H.P.), rich rosy-crimson, 3s. 6d. each.

A large general stock of ROSES for all purposes.

ROSES, in pots, for Outdoor Planting, 10s. 6d. to 30s. per dozen.
,, ,, Climbing, 10s. 6d. to 30s. per dozen.
,, ,, Pot Culture, 12s. to 30s. per dozen.
Half Specimen and Specimen ROSES, in pots, 5s. to £5 5s. each.

Priced Descriptive CATALOGUES free by post on application. Paul's Nurseries, Waltham Cross, Herts.

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**To the Trade.**

MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.

Seed Growing Establishment, Wisbech.

---

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.

Bardney Manor, Lincoln.

---

**Ferns a Speciality.**

EXOTIC AND BRITISH FERNS.

IN great number and variety, suitable for Stove and Greenhouse cultivation, for Outdoor Ferneries and other purposes.

*Intending Purchasers before buying elsewhere should send for our SPECIAL LIST of CHEAP FERNS, which will be forwarded free on application.*

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

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CRANSTON'S NURSERIES.

(ESTABLISHED 1785.)

CATALOGUE

OF

*New English and French Roses*

for Spring of 1881,

DAHLIAS, CLEMATIS, PHLOXES, and CHOICE BEDDING PLANTS,

*Free on application to*

CRANSTON'S NURSERY & SEED CO.

(Limited),

KING'S ACRE, near HEREFORD.

---

*Come and See.*

OUR SIEBOLDI PRIMULAS, in twenty-four varieties; and CAMPANULA PERSICIFOLIA ALBA, fl.-pl. They are now splendid, and cannot fail to repay a visit. The latter is a hardy plant, and for Cut Flowers almost equal to a Camellia. For full particulars see "Floral Guide."

---

**Bedding Plants.**

H. CANNELL AND SONS beg to announce that they have beyond all question the most complete and largest collection of BEDDING PLANTS ever brought together, and would be pleased to quote Special Prices for any quantities.

Their "FLORAL GUIDE" is replete with the most accurate descriptions and needful information, with Sixty Bed Designs.

---

**New Seed of Primulas and Cinerarias.**

Two 100-feet Houses full of Plants now ready for harvesting.

WE beg to remind our Patrons that we both RAISE, GROW, SHOW, PICK, and SELL our OWN SEED; and to prove the excellency of our flowers, Four First-Class Certificates and a Flora Medal have been awarded to our Plants this season by the Royal Horticultural Society. It is well known that our mixed 2s. 6d. packet would give a charm and delight in every greenhouse. Our SWANLEY RED and PURPLE bear no comparison to the ordinary strains.

THE HOME FOR FLOWERS — SWANLEY KENT.

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GEO. JACKMAN & SON,

(ESTABLISHED 1810,)

Cultivators of

FRUIT AND FOREST TREES,

Evergreen and Flowering

TREES and SHRUBS,

ROSES, RHODODENDRONS,

*Conifers and Hardy Climbers.*

THE CLEMATIS

A SPECIALITY.

*Descriptive Priced Catalogues free.*

WOKING NURSERY, SURREY.

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THE LARGEST ROSE GARDENS IN ENGLAND.

CRANSTON'S NURSERIES.

(ESTABLISHED 1785.)

*New Rose Catalogue for* 1880-81,

now ready, and may be had post-free on application.

Awarded over 60 First Prizes for Rose Blooms this season.

CRANSTON'S NURSERY and SEED CO. (Limited),

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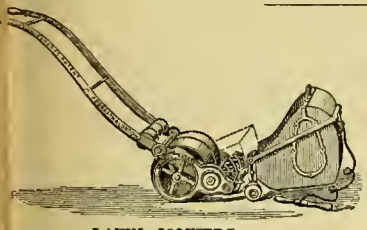

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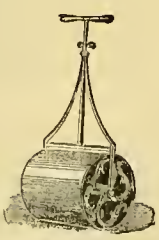

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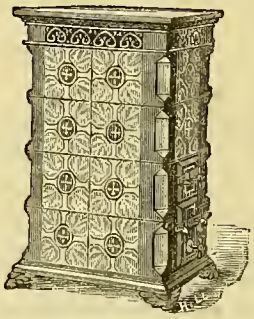

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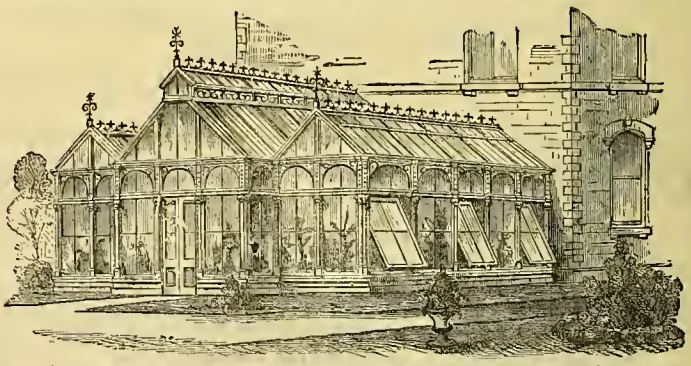

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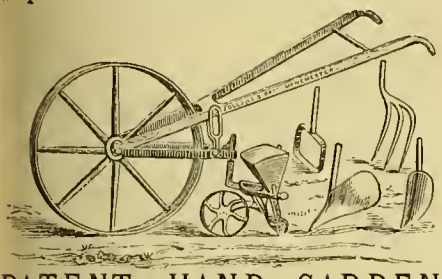

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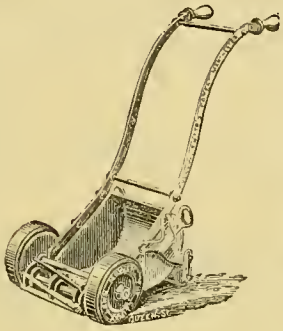

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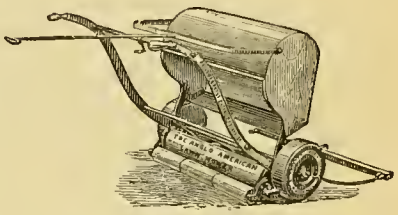

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*From the "Gardeners' Chronicle," June 5, 1880.*—"Herbaceous Calceolarias at Reading.—It is only when Calceolarias are grown on a large scale that a house full of them is presented to view; and when, in addition to the number of plants, they are well grown, with that balance between foliage and flowers that constitutes perfect plants, and the blossoms are large, finely formed, varied, and handsomely marked, one can appreciate the value of this showy subject for greenhouse decoration. Such a house of Calceolarias is to be seen at the Florists' Flower Seed Grounds of Messrs. Sutton & Sons, in the London Road. What particularly strikes the visitor is the strong, vigorous, and healthy character of the leaves, destitute of any insect life. Messrs. Sutton & Sons have attained a strain remarkable for the strength of habit the plants possess; perhaps it may be only a characteristic of good cultivation, but it is quite certain that a weakly strain will not exhibit the vigour that is found in a strong one."

*From the "Garden."*—"The Calceolarias of Messrs Sutton & Sons' Nurseries, Reading, are just now beautifully in bloom, and should be seen by all who take an interest in this class of plant. The strain is one of the finest, being the result of years of careful selection. Many of the individual flowers measure 2½ inches across, and are perfect in shape and colour."

*From* Mr. J. COZENS, *Gr. to* S. B. Garrard, Esq., *Hacheston.*—"The seed I had from you both of Calceolaria and Cineraria have far exceeded all expectation, and are the admiration of all. I never saw such a splendid lot of Calceolarias. One of them nearly 3 inches across the pocket."

*From* Mr. J. RENSHAW, *Gr. to* C. J. Lambert, Esq., *Beaudesert.*—"The Cineraria seed I had from you last year has proved the best I have seen, both for variety of colour and size of flower. I have measured some of the flowers to-day 2½ inches across, and as many as 300 on a plant."

*From* Mr. J. B. WARD, *Lower Edmonton.*—"Gloxinias from your seed, raised last spring, just coming into flower, are perfectly marvellous. The flowers are 3 to 3½ inches in diameter, and the colour of the bloom is quite equal to your plates."

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THE
# Gardeners' Chronicle.

*SATURDAY, MAY* 14, 1881.


## THE DATE PALM.

WITHIN the tropics various Palms in different regions afford the inhabitants food, raiment, and shelter—for example, the Cocoa-nut in tropical, insular, and maritime countries generally; the Palmyra (Borassus flabelliformis), in India, and the Ita or Moriche (Mauritia flexuosa), in South America; but there is only one extra-tropical Palm of great importance to mankind, and that is the Date Palm (Phœnix dactylifera). The Date Palm is the Palm of the deserts, just as the Cocoa-nut Palm is the Palm of the sea coasts; the former renders the deserts passable, and, to a certain extent, habitable; the latter colonises the otherwise barren islands and islets of the tropical seas, and supports a large population without labour. Though second in some respects to the Cocoa-nut, the Date Palm is not less interesting. It is inseparably connected with the earliest races of mankind of which we have any history, and it exercised a great influence in early art and architecture. The "Ergänzungsheft," No. 64 of Petermann's *Mittheilungen*, is entirely devoted to the history, culture, and geographical distribution of the Date Palm, by Theobald Fischer, from which we have made some extracts, condensed in the following paragraphs:—

### NATIVE COUNTRY AND DISTRIBUTION.

The wild original of the Date Palm is not known with certainty. Some writers regard Phœnix spinosa as the wild form from which it has descended, whilst others would trace it to P. sylvestris. Fischer does not mention the latter species, which inhabits the warmer parts of India; but he combats the view that the former can be the parent of the cultivated Date, because its distribution affords proof of a totally different constitution. It inhabits tropical Africa, and is restricted to regions enjoying copious rain. Our author agrees with Cosson that it is far more probable that the progenitor of the Date Palm was a native of the extra-tropical desert region, the strongest evidence in favour of this being a record that it existed in a wild state in the Canary Islands anterior to their settlement. This record has been in a measure confirmed by Bourgeau's explorations. Nevertheless, it is noteworthy that both of the species of Phœnix mentioned closely resemble the Date, especially when the latter has run wild, yet they do not overlap the Date in their distribution. P. sylvestris is one of the commonest plants in India, but it ceases growing where P. dactylifera is cultivated or has run wild. A peculiarity of the latter is to produce suckers in abundance, both under cultivation and in a wild condition; and left to itself it forms impenetrable thickets. The lofty columnar trunk surmounted by an ample crown of feathery leaves, with pendent heavy golden or red clusters of dates, is a product of art, not of Nature, for the leaves naturally persist and conceal the grace and elegance of the tree. The true Date exists in a wild state in many places throughout its cultivated area. Roughly this area may be described as the extra-tropical rainless and slightly rainy region of North Africa, from the Atlantic to Egypt, and through

Arabia, Persia, and Afghanistan, to the Punjab in India. This zone lies between the 15th and 35th parallels of latitude. It is also cultivated in some situations in Southern Europe, where the climatal conditions are similar. We have not sufficient space to enter into the history of the cultivation of the Date, and the impress it has left on the works of the ancients; but we may recall the massive pillars in the ruins of Edfoo (Apollinopolis Magna) surmounted by gigantic capitals, about 7 yards in circumference, faithfully representing the crown of foliage.

### Oases.

The Date Palm alone preserves, and to a great extent constitutes, those small isolated spots of vegetation characteristic of the wide, wide Sahara. In their figurative language the Arabs say "this King of the Oases plunges its feet into water, and its head into the fire of heaven." This pretty accurately describes the conditions under which it flourishes best. Where the atmosphere is humid or the rainfall considerable, there the Date Palm will not ripen its fruit. Cosson (*Le Regne Végétal en Algérie*, p. 53) states that if there is such a thing as an oasis in Europe it is at Elche in Valencia, where there is a plantation of 60,000 Date Palms ripening their fruit. Under the shade of the Date cereals and many other plants are cultivated.*

### Cultivation.

Abundant moisture at the roots, great heat, at least during the summer, much sunshine and little rainfall, are the most essential conditions in the cultivation of the Date. Neither the fiercest heat of the sun nor the strongest winds injure its foliage. The wind may bend the crown to the earth, or even uproot the tree, but it is incapable of breaking its trunk, and it will bear without injury 10° or 12° of frost, as well as very low night temperatures succeeding very high day temperatures. The nature of the soil is of little importance, provided always there is plenty of water, which may be either fresh or brackish. Like most of our fruit trees that have been long under cultivation, the Date Palm has given birth to innumerable varieties, and these increase in number as we recede from either the Polar or Equatorial limit of its cultivation, whereas only two are distinguished at Elche in Spain, and Thebes in Persia. Cosson enumerates seventy-five for the Oasis of Zibau. These varieties differ in the consistence, shape, colour, and ripening season of the fruit, and they bear such names as the Beauty of Mimon, the Gazelle's Horn, Dove's Egg, Bird's Brain, Bitter-sweet, Sweetness Itself, &c. Propagation is usually effected by means of suckers, as they not only perpetuate the variety pure, but come into bearing much younger, and the cultivator runs no risk of over-production of the male plants. In five years they produce fruit, though they do not come into full bearing until they are about thirty years old. After they attain eighty or ninety years the crop begins to diminish, yet they sometimes continue bearing until they are 200 years old. The trunk is of very slow growth, and eventually reaches a height of 70 or 80 feet. An old tree that produces fruit of a superior quality is sometimes rejuvenated by banking up the trunk with mud to a depth of 2 yards. In about a year's time it is rooted in the mud; it is then cut off above the old roots and transplanted.

### Destruction of Date Groves.

Generally speaking the destruction of a tree is regarded as a sinful act, and the most deplorable results have followed the cutting down of the enemy's Date Palms in warfare. Extensive areas have been thereby rendered permanently desolate.

* For an account of the wild and cultivated plants of the Oases of the Libyan Desert, see *ante*, vol. ii. (1874), pp. 646 and 743.

### Importance of the Fruit.

Although the inhabitants of the desert subsist for long periods almost or quite upon Dates, yet these do not replace every other article of diet as the Cocoa-nut does in some regions. They may replace milk, fish, and meat, but grain is regarded as a necessary concomitant. Dates are prepared for eating in a variety of ways. An Arabian proverb says that a good housewife knows how to dish her husband up Dates differently every day for a month. Animals as well as human beings draw a great part of their nourishment from Dates—the seeds are given to animals. Fresh fruit is very largely consumed, and may be had for several months in the year in the most favourable situations, but immense quantities are dried and stored, and if properly done will keep good for years. It is estimated that many millions of persons derive the greater part of their nourishment from the Date Palm, and by far the greater part are inhabitants of extra-tropical regions.

## New Garden Plants.

Lastrea Maximowiczii.* (Nephrodium Maximowiczii, *Baker, Syn. Fil.*, 499. Aspidium sanctum, *Maximowicz MSS.*—f. Baker.)

This is an evergreen Fern of considerable interest and beauty, its glossy bright green concave fronds indicating that it will take a conspicuous place amongst the ornamental hardy species of this family. The fronds are triangular-ovate, the basal pinnæ being broadest, and this with the divergence of the enlarged posterior pinnules give them rather a pentangular outline, with the apex drawn out so as to become acuminate; the larger basal pinnæ are very oblique, while the upper ones are nearly equal-sided, but whereas in the basal ones the lowest posterior pinnule is largest, in the upper one it is the lowest anterior pinnule which is more developed than the rest. The fronds are of a glossy green colour, the pinnæ and pinnules densely set, and venosely striate on the upper surface from the depression of the veins, which are deeply sunk above, and prominent on the under side. The sori are large, situate at the apex of the anterior venule of each lobe, the other venules being thickened at the apex, and terminating before reaching the point of the tooth towards which they are directed. The marginal teeth are bluntish or shortly triangular.

In its aspect this Fern is somewhat suggestive of L. dilatata and L. aristata, from both of which, however, it is abundantly different. It seems likely to be useful as a dwarfish, dense-growing evergreen species, which, from its neat habit and the glossy surface of its fronds, will be by no means wanting either in distinctness of character, or in utility as an object of ornament in the sheltered outdoor fernery. It is a Japanese plant, which has been recently introduced to our gardens by Messrs. Veitch & Sons, of Chelsea, by whom it has been exhibited at the shows of 1880. *T. Moore.*

Scilla (Ledebouria) humifusa, *Baker, n. sp.*†

Imported lately from Natal by Mr. William Bull, along with Scilla spathulata, Baker. In habit it most resembles S. paucifolia, Baker, in Saund. *Ref.*, t. 181; but the inflorescence is different, and the sessile ovary is not dilated at the base.

Bulb ovoid, 1¼—1½ inch in diameter, not narrowed into a neck. Leaves two large ones, with one small one between, spreading on the surface, the ground sessile, cordate-oblong, obtuse, 3—4 inches long, more than half as broad, fleshy in texture, pale green on the surface, with a few blotches of darker green, the under side a uniform glossy pale green. Scape slender, terete, erect, 3—4 inches long, purple at the base, green upwards, not purple-spotted. Flowers in a lax oblong-cylindrical raceme 3—4 inches long; pedicels not more than ½ inch long, central patent, lower cernuous; bracts obsolete. Perianth campanulate, ⅛ inch long, reddish-green outside; segments falcate only towards the tip. Stamens more than half as long as the perianth, inserted at its base; filaments filiform; anthers minute, yellow, subglobose. Ovary sessile, oblong; style short, cylindrical; stigma capitate. *J. G. Baker.*

* Fronds ovate-deltoid acuminate, coriaceous, glabrous, tripinnate; lower pinnæ unequal-sided, the posterior side most developed, with the basal pinnule much the larger; upper pinnæ nearly equal-sided with the basal anterior pinnule largest, decreasing gradually into the somewhat attenuated point; basal posterior pinnule of lower pinnæ oblong, pinnate at the base, the pinnulets trapezio-oblong, ½ inch long, shallowly lobed, the lobes with triangular teeth, the upper pinnules more or less confluent; veins pinnate, free, much sunken on the upper, rather prominent on the lower surface; directed towards the apex of the teeth, and terminating in somewhat thickened apices within the margin; sori large, terminal on the anterior venule of each lobe; indusium reniform; stipes green, clothed with numerous narrow hair-like scales mixed with a few broader lanceolate ones of a pale reddish-brown, the narrow ones continued along the primary and secondary rachides.—Hab. Japan.

† *Scilla (Ledebouria) humifusa*, Baker, n. sp.—Bulbo ovoideo in collum haud angustato; foliis 2—3, parulis humifusis oblongis obtusis; amplexicaulibus glabris subcarnosis pallide viridibus facie maculis paucis saturatioribus decoratis, scapo tereti 3—4 pollicari; floribus in racemum laxum oblongo-cylindricum dispositis; pedicellis brevissimis; bracteis obsoletis; perianthii campanulati purpureo-viridis segmentis imbricatis apici solum falcatis, staminibus perianthio subduplo brevioribus; ovario sessili oblongo stylo brevi.

## THE YORK NURSERIES.

In a large nursery, and one containing such a varied and interesting selection of plants as this, there is always something to be admired, something to please, and something of an instructive character. Of all seasons in the year I think that is the best for a visit, when the spring flowers are breaking into renewed life and beauty. But I think of all the seasons I have ever known, the present has been worst of all for an April visit. For many weeks the keen, bleak east wind had been blowing, and the very hardiest of spring flowers could scarcely lift their heads against the biting blast. In open and exposed borders there was no chance for them, but in the sheltered nooks of the rockwork, and in places where the force of the east wind was modified, many things were flowering well, and others that would have been over in ordinary seasons in March were yet bravely lifting up their heads.

I am more and more impressed with the importance of selecting suitable sheltered positions for early spring flowers. Few, if any, could present anything but the most woe-begone appearance in such a season as the present unless they were sheltered in some way. Amongst the prettiest and easiest grown flowers for early blooming are the many varieties of Hepatica triloba. I have seen them do well in light soil, and better in medium clay, but they are not very particular in this respect if they can be left alone. Let them be in the same place for ten years, and they make grand clumps. The new variety, H. triloba purpurea, introduced by the Messrs. Backhouse last year, is a very distinct and free-growing form; it is also a treat to see the double blue form growing freely on the let-alone system. If you want to kill it plant a big scarlet Pelargonium within a foot of the plant. If it does not kill it entirely what is left will probably be torn out with the Pelargonium when the frost has done its work in the autumn. There are two white forms, but the one with white stamens is by far the best. Scillas were in great beauty, such as S. sibirica, S. bifolia, &c. S. taurica, a major form of bifolia, is a very desirable kind.

The Chionodoxa Luciliæ had been protected by hand-lights, though it does not need this protection. So much has been written about the "glory," &c., of this plant that some who have bought it have been sadly disappointed. It is a very pretty spring flower, and will be more beautiful when established, but I think quite enough has been said in its praise. Leontice altaica is very pretty, and as early as the Snowdrop; its flowers are drooping and bright yellow; they were scathed by the east wind. Two early flowering Drabas were dwarf, pretty plants; D. cuspidata is the earliest, followed by D. Sauterii. Two Fritillarias, growing and flowering side by side, are very desirable—F. Moggridgei, for its large golden blossoms, spotted with dull crimson internally; and F. tulipifolia, with dull purple flowers; F. pudica, with clear yellow flowers, is early, and very pretty; Crocus Aucheri was yet in flower, and is distinct and pretty; Crocus albiflorus, pure white, very pretty, but very scarce. Two of the prettiest of the Narcissi were in flower—N. minor, very dwarf, and N. pumilus, a taller form, with small flowers of good shape.

One of the prettiest of Saxifragas, if not the prettiest of spring flowers, was very plentiful; the flowers are of large size, pure white, and perfectly circular. There are several varieties; the flowers of some were were much larger than others. Amongst hardy Primulas, P. marginata cœrulea has quite a blue tint, and the nearest approach to this colour I have yet seen in a Primrose. The Crimean Snowdrop was yet in flower, while a week or two of warm weather would bring out hosts of hardy Primulas, little Soldanellas, and so forth. Winter bedding is practised to a certain extent at the York Nurseries, but the best species and varieties of coniferous trees have been frequently described; a few of the best here were

Thuyopsis lætevirens, Cupressus Lawsoniana nana, Retinospora plumosa aurea, Cupressus Lawsoniana lutea, and there were neat tufts of Retinospora leptoclada.

Passing through the long ranges of plant houses many interesting plants not usually seen in collections are noticed. Psychotria cyanococca, with small compact clusters of bright blue berries; Disa grandiflora growing freely in a cool house; a fine plant of Rhododendron Veitchii, flowering freely; and Rogiera gratissima, with clusters of pink flowers, must be most useful to cut and come again. Amongst Ferns, a very striking species is Lomaria l'Herminieri, the young fronds of which are tinted red. Messrs. Backhouse are also distributing a new and distinct species of Gleichenia from South Africa, G. lycopodioides. To most gardeners the great feature of the York Nurseries would be the Orchid-houses: these are very extensive, and well furnished with immense quantities of newly imported and specimen plants. I had heard a great deal of the Burton Constable Orchids and was very anxious to see them, and certainly it was worth while going a long journey for this purpose. There is a good deal to learn from a study of these Orchids. Evidently many of them have been under cultivation for years, and the natural habits of the plants as they are found growing in their native forests have been imitated to a considerable extent.

The late Mr. Lees, of Tynningham, used to grow Saccolabiums remarkably well by fixing the plants in the clefts of large branches of Apple trees: this plan has been followed with the Burton Constable Orchids. There is a very large and characteristic specimen of Saccolabium guttatum growing in this way, and sending its roots down several yards. Dendrobiums of different species succeed remarkably well in the same manner; there are immense masses with nothing to root into. The roots seem to form a mass which increase in size yearly. Amongst the most conspicuous were D. Pierardi latifolium with fifteen spikes; a fine D. aggregatum majus; D. macrophyllum giganteum, with very large flowers; and I think the best D. Devonianum I have ever seen—it was fine both as a specimen and a variety: there were eight spikes, the pseudobulbs being densely flowered. We learn from these plants that it is a mistake to place masses of decaying organic matter near the roots of such plants. If pots, baskets, or pans are used for such Orchids, they will do better rather under than over-potted.

In another house are immense masses of Cattleya Skinneri, a very desirable, easily grown species. The plants were necessarily in large pots, the compost used being turfy peat and lengths of Tree Ferns split up. There were two large specimens of a well-marked form named oculata; instead of the usual white mark at the base of the lip there is a dark spot like the marking on the lip of Dendrobium nobile. Dendrobium densiflorum has twenty spikes. Large specimens of Lælia purpurata are grown well on blocks. In the Cattleya-house, where these large specimens are grown, may be noticed flowering plants of the curious Epidendrum amabile, its yellow maroon-spotted flowers are sweet-scented. There are also some very good varieties of Cattleya Trianæ. Sobralia macrantha nana, also growing very freely, is, I think, the best form of this species. Lælia albida, grown in quantity, comes in useful to cut from. The very distinct and pretty Odontoglossum nebulosum baffles some growers to do it well; the young growths have an inveterate tendency to rot off, treated as one would O. crispum, &c.

In the cool-house there were quite a number of fine plants growing in nothing but broken charcoal and potsherds. There is a house devoted entirely to Odontoglossum vexillarium and kindred species; this is probably the most interesting of all the Orchid-houses here. This species and O. Phalænopsis are grown in considerable quantity. Of the latter there are many fine dark labellum varieties; of the former many splendid dark-coloured varieties have flowered here. At present there is a superb richly-coloured form; the flowers are 3½ inches across, with a score of flower-spikes on it. In this house, the temperature of which is 60° at night, Bollea cœlestis in quantity is making strong healthy growth. Most of the plants stand well up out of the pots. Colax jugosus is also quite at home and flowering freely. This is one of the prettiest of Orchids, and is not so much grown as it ought to be; the white sepals and petals, richly spotted with bluish-purple, have a charming effect. Odontoglossum cirrhosum seems to do quite as well in this house as it does in the very coolest temperature—a fact worth noting, as it is a pretty thing to cut from. Oncidium fuscatum is also in flower, and Aerides japonicum is flowering very freely; this novel Japanese species does well in a cool-house, and its white rose-spotted flowers, though not as showy as some, are very welcome. Dendrobium Cambridgeanum was showing numerous spikes of its golden flowers from the young growths.

Lastly, in the same house I noted a fine batch of Cymbidium eburneum in fine health, and potted in loam, kept porous by the addition of nodules of limestone. The recent importations have much reduced the price of this fine Orchid, which succeeds best treated as an ordinary stove plant and potted in turfy loam, which can be obtained anywhere. *J. Douglas, Loxford Hall, Ilford, E.*

## COLONIAL NOTES.

Saharunpore.—Dr. Duthie's annual report on the condition and progress of the Botanic Garden contains some details of interest beyond such as are peculiarly local. Experiments have been made with nineteen kinds of vegetables to ascertain the relative value of home-grown Indian seeds and imported ones. In the case of Beet it is pointed out that in India the plants have only about eight months available in which to pass through the several stages of growth, which require eighteen months in England. Indian raised Cauliflower seed is good for early sowing, but useless for successional sowings. The four best Peas were Little Gem, Bijou, Best of All, and Advancer, and these can be grown from Indian seed. The general conclusion is that with few exceptions the seeds of European vegetables ripened in this part of India rapidly degenerate. At Lucknow, on the other hand, the results have been different. The Carob tree has not yet been successful, while the Euchlæna luxurians has proved useless as a fodder crop, and the Rain tree (Pithecolobium) has failed utterly. Dr. Duthie suggests that various medicinal plants, such as are sold in the bazaars, should be grown for commercial purposes. Mention is made of various seeds and fruit tree grafts received from Candahar, some of which may probably turn out of importance; in any case, it may be hoped that some may also find their way to this country.

Among other interesting phenomena attributable to the change of climate, it is mentioned that no seed ripens of German Asters; that the flowers of Brachycome and Petunia invariably become white.

A variety of the Mulberry known as multicaulis, though not the same as the Chinese plant of that name, is the one recommended for cultivation in North-West India as food for the silkworms. It comes into leaf a fortnight earlier than other varieties. The cultivation of Rhea and of Hops does not seem likely to succeed in the dry atmosphere of this part of India.

## SIDE-SADDLE PLANTS.

### SARRACENIAS.

Strange are the chances of botanical names. Tournefort's little known Quebec correspondent, Dr. Sarrazin, is commemorated by the cognomen of a group of plants more familiar to us now-a-days than the genus of Boraginaceæ, that bears the name of the great botanist himself. For such a chance horticulture is, of course, mainly answerable; but we occasionally hear complaints as to the length and difficulty of Latin names from persons who never call a Geranium a Cranesbill, a Begonia an Elephant's Ear, or a Sarracenia a Side-saddle flower. Yet these three colloquial names are free from most of the objections to such ones as Cress or Cuckoo-flower.

There can hardly be any group embracing as small a number of species of flowering plants round which centre so many important points of both anatomical and physiological interest as the last-mentioned Sarracenias and their two allied genera, Darlingtonia and Heliamphora. Nor are they interesting only to the vegetable anatomist and physiologist, their "hexicology" (to use a good term introduced by Professor Mivart for that branch of natural history which deals with the distribution and surroundings of living creatures) is also important both to the botanist and to the horticulturist.

The order Sarraceniaceæ consists of ten or a dozen species, eight of which form the genus Sarracenia and inhabit the swamps of America east of the Mississippi—the best known kind, S. purpurea, occurring from Newfoundland to Florida. Darlingtonia californica, the sole representative of a nearly related generic type, grows at an elevation of 5000 feet in the Sierra Nevada of California; whilst Heliamphora nutans, less closely related in structure, inhabits the mountains of Roraima, in Guiana. It is probably the moist cold of our English winter as contrasted with the Continental climate of Eastern America that renders the genus Sarracenia only half-hardy with us. The three genera consist of perennial, herbaceous plants, with a reduced root-system of fibrous roots and a circle of radical leaves, all of which, with the exception of the earliest embryonic ones, are pitcher-shaped, or, in our much abused jargon, "ascidiform." The leaf-stalk forms a tube on its ventral or upper surface, the leaf-blade which forms the lid being turned towards the centre of the plant, and not away from it, as in the Australian Pitcher-plant, Cephalotus. Thus the inner surface of the pitcher would seem to be the upper surface of a leafy petiole, whilst the lower, which in ordinary leaves is physiologically more active, becomes the external surface. It was on account of this combination of normal leaf-action with the absorption of decayed nitrogenous matter to be presently described that the present writer ventured to term the group "hemi-saprophytes" (*Gardeners' Chronicle*, 1878, vol. ix., p. 202), classing them physiologically with Utricularia. Rain-water has more or less access to the pitchers; but apparently in every case a fluid is secreted from some part of their inner surface, and a sugary honey from some other part near the mouth. Part of the inner surface is studded with converging, rigid, glass-like hairs pointing downwards, so as to remind one of the interior of an eel-trap or lobster-pot.

The flowers are solitary on a scape, generally with two or three bracts, except in Heliamphora, which has a raceme, and is also aberrant in being without petals. It is from the flower that Sarracenia obtains the fanciful name of Side-saddle Flower, Darlingtonia being very similar. The sepals and petals are five in number, the stamens numerous with versatile anthers, and the five-chambered ovary surmounted by a remarkable umbrella-shaped style, beneath the lobes of which are five small stigmas. This dull-coloured leafy organ seems to have suggested a comparison with the flaps of a Spanish saddle.

The whole structure of the group, though showing affinity to the Poppies, still more strongly confirms the sagacious grouping of Linnæus, who first compared them to the Water Lilies, a comparison confirmed in detail by Baillon.

Sarracenia purpurea is an American-Indian remedy for smallpox, perhaps, according to a "doctrine of signatures," similar to that which once prevailed in European medicine, from the spots on the pitcher. This is the only use to which the group are known to have been put by man; but, whilst Linnæus suggested that they stored up water for the use of birds, other writers suggested that the pitchers served as a secure refuge for insects. The teleology of the last century had not learnt that every adaptation in an organism is primarily for its own benefit.

The whole history of our knowledge of the Sarracenias was summarised and considerably added to by Sir Joseph Hooker, in his address to the British Association in 1874 (reported in full in *Gard. Chron.*, 1874, vol. ii., p. 260), to which this article is much indebted for many facts.

The species of Sarracenia may be arranged according to leaf characters and physiology into three groups; the first containing the well-known S. purpurea only; the second S. flava, S. rubra, and S. Drummondii; and the third S. psittacina, and S. variolaris.

S. purpurea has its pitchers sloping and the lid bent back, so that all the rain falling on it will run into the pitcher. The tissues of the inner surfaces of the pitcher have been described by Auguste Vogl. He mentions honey-secreting glands on the exterior of the pitcher; but no such secretion has been found in the interior. The dark red veins in the lid are perhaps as attractive to insects as the somewhat dull coloration of the flower, and just below it we have the smooth and polished surface, affording no foothold for the descent or ascent of an insect, the upper part of which (termed by Sir Joseph Hooker the conducting surface) consists of glassy cells produced downwards into closely overlapping spinous processes, whilst the more extensive lower portion is termed the "glandular" surface, being studded with numerous glands. Below this again is the detentive surface covered with rigid, deflexed, glassy hairs. The most probable explanation of the action of this pitcher is that there is no secretion, the glands serving simply to absorb the products of the decomposition of drowned insects.

Of the second class it is important to note the facts, stated by Mr. Meehan in his *Flowers and Ferns of the United States*, that S. rubra and S. flava hybridise and that S. Drummondii is very variable. These

three species have honey-secreting glands all along the broad ventral wing with which the pitchers of the whole genus are furnished, forming a lure for insects from the ground to the mouth of the pitcher. There are also other honey-glands on the outside, and on the inner surface of the lid, the "attractive" surface of Sir Joseph Hooker. The pitchers grow in a more erect manner than those of S. purpurea; and, though the lid in a young state arches over the mouth, when older it stands nearly erect with its sides so reflected as to shoot off rain falling on its upper surface down the outside of the back of the pitcher. There is no special glandular surface; but glands occur among the hairs on the upper part of the detentive surface. Here again there is no satisfactory evidence as to the secretion in the pitcher of any digestive fluid.

Mr. Meehan remarks of S. psittacina that it is intermediate between S. rubra and S. variolaris, and variable in its characters. In both this species and S. variolaris the lid so closes over the mouth that rain-water can hardly enter; honey is secreted as in the last group and also a fluid at the bottom of the pitchers. We have some most valuable observations on S. variolaris, made nearly sixty years ago by Dr. M'Bride in South Carolina, and recently extended by Dr. Mellichamp. The attractive, honey-secreting surface only extends a quarter of an inch below the margin and the secretion takes place chiefly in May, being absent in young or old pitchers. It is led up to by the honey-glands on the wing mentioned in the other species. The secreting glands of the interior occur on the detentive, and not on a special glandular surface, and the fluid they secrete is described as mucilaginous, astringent, as having a deadening or anæsthetic effect upon insects immersed in it, and as causing decomposition more rapidly than ordinary water. Butterflies and even grasshoppers have been found among its victims; but spiders come after the flies, and manage to escape; whilst some flies, too wary to be entrapped themselves, drop their eggs into the mouth of the pitcher, thus utilising the accumulated food for the nourishment of their grubs, and the round of relations is completed by insectivorous birds, that slit open the pitchers for the sake of the flies and grubs.

The putrefying effect of the fluid is so wholly unlike the antiseptic properties of the peptic fluids in Droseraceæ, Nepenthes, or in animals, as to render it improbable that there is any true digestive process in Sarracenia. The products of decay are probably partly absorbed by the glands; but when produced in excess cause the rotting of the leaf itself, which then forms a rich animal manure to the roots.

### Darlingtonia californica.

If aught can intensify the interest of the fairy-tale of science told us by the Sarracenias and their victims, it is the relation borne to them by their geographically and structurally outlying relative, the Darlingtonia of the Californian Sierras. To some extent it combines the characters of the second and third groups of Sarracenias, having, when young, pitchers of a form different from those produced later, thus to some extent forming a generalised and possibly more ancestral type. The first formed pitchers are long, narrow tubes, widening slightly upwards, having a slight twist which causes their lids to turn in various directions. The lid is a long, slender, scarlet flap, arching over, but not closing the sloping mouth of the tube. Only small insects can enter these tubes. In the interior they have attractive, conducting and detentive surfaces, the latter with glands, as in Sarracenias of the second and third groups. The pitchers formed later are more inflated, slightly twisted, as in the others, but with the mouth completely arched over by the large swollen hood, from the front of which hangs a remarkable, orange-red, 2-lobed appendage, secreting honey on its inner surface. These pitchers capture larger insects, especially moths, and their internal structure being similar to that of the earlier pitchers and of the majority of Sarracenias, they act in the same way, putrefaction and not true digestion resulting from the capture of the prey. Sir Joseph Hooker does indeed state that he has "found a slight acid secretion in the young states of both kinds of pitchers;" but, considering the antiseptic properties of most acids, this fluid would seem to be either accidental, transitory or too small in quantity to be operative for digestion.

Sir Joseph also remarked on the resemblance in form and colour between the mouth of the pitcher and the flower in this species. The petals are of the same colour as the flap of the pitcher-lip, and the notch between any two of them leading to the stamens and stigma is similar to the available entrance to the pitcher, so that it would seem that the plant by its flower lures insects in order to secure the benefits of cross-fertilisation, and then, with gross ingratitude, deceitfully lures them to destruction. The tendency throughout the plant to an excessive development of leafy structures, seen in pitchers, sepals, petals, and style, indicates what Mr. Meehan—in remarking that Geums with recurved styles in the fruit have recurved sepals and *vice versâ*—well terms "a unity of morphological law," a law termed by the present writer (*Brit. Assoc. Report*, 1877) "anticipatory inheritance," and by Professor Ray Lankester "precocity."

In conclusion, we must bear in mind that these marvels of vegetable life are not really anomalous when viewed by the light of the theory of evolution. Structurally we can see how the pitchers of a Sarracenia or Darlingtonia might arise from the peltate leaves of a Cabomba or Nelumbium; and physiologically we have the secretion of honey by many a floral leaf and by the ordinary leaves of the Drupaceæ, the power of absorbing ammoniacal salts in Primula, Pelargonium, and doubtless many others, the absorption of organic matter by embryos and by the numerous "saprophytes," such as the Bird's-nest Orchis, and the presence of acids in many ordinary plants. The transference of nutritive matter from one part of the plant to another presents also a close, though unsensational, parallel to the phenomena which we have been discussing. *G. S. Boulger.*

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Sarracenias.—For a long time these have been grown in gardens for the sake principally of their pitchers, and in the hands of Mr. Baines and others grand specimens have been produced; but it is clear, from the magnificence of their blossoms, that they amply deserve cultivation on this account also. In Mr. Bull's nurseries this spring the flowers have been specially fine and numerous. From specimens furnished us by Messrs. Veitch, Bull, Williams, and others, we have drawn up a series of descriptive notes which we hope to publish on another occasion; for the present we confine ourselves to the mention of some of the specimens now figured, and for which we have to thank Mr. Bull and Mr. Williams. Fig. 114, 1, p. 629, shows a flower of a fine variety of Sarracenia flava, called by Mr. Bull ornata, and imported by him. The blooms are 6—8 inches in diameter, the sepals greenish-yellow, ; the petals, in form resembling the "falls" of an Iris, are usually pendulous, of a rich canary-yellow. Fig. 1*a* shows a plan of the flower in section, showing the wide spaces between the lobes of the great umbrella-shaped style which allows access of insects to the numerous stamens which encircle the ovary. The direction of the arrow shows that insects visiting the flower for the sake of the honey juice secreted by the ovary must pass in between these lobes, especially when the petals are uplifted, as will be mentioned further on, and in so doing remove the pollen from the stamens. In their exit through the same apertures they must almost to a certainty come into contact with the minute stigma on the under surface of the tips of the lobes of the style. As the stamens and stigma ripen at different times, the pollen from one flower would not fertilise its own stigma, but, conveyed to another flower where the stigma was ripe, cross-fertilisation would necessarily ensue. In this figure, 1, the petals are shown in their ordinary pendulous condition, but in fig. 3, p. 633, the direction of the petals is different—they are now seen to be spreading more or less horizontally. Mr. W. G. Smith was the first to call our attention to this alteration in the direction of the petals, due perhaps to turgescence and the influence of light, and possibly connected, as we think, with the access of insects. The petals, as we learn from Mr. Smith, opened under the influence of a strong light whilst placed in damp air under a bell-glass. In any case this is a point worth the attention of those who grow these plants. 3*a*, p. 633, shows a section of the flower in the erect position; BR are the bracts; SEP, the sepals; PE, the petals; ST, the stigma: above it are shown the pollen grains. Fig. 2, p. 629, shows a flower of a hybrid form called S. Williamsii ×, a hybrid raised in the Holloway nurseries between S. flava and S. purpurea, the sepals, S, are of a reddish-brown externally, greenish within; the petals, P, are of a rich

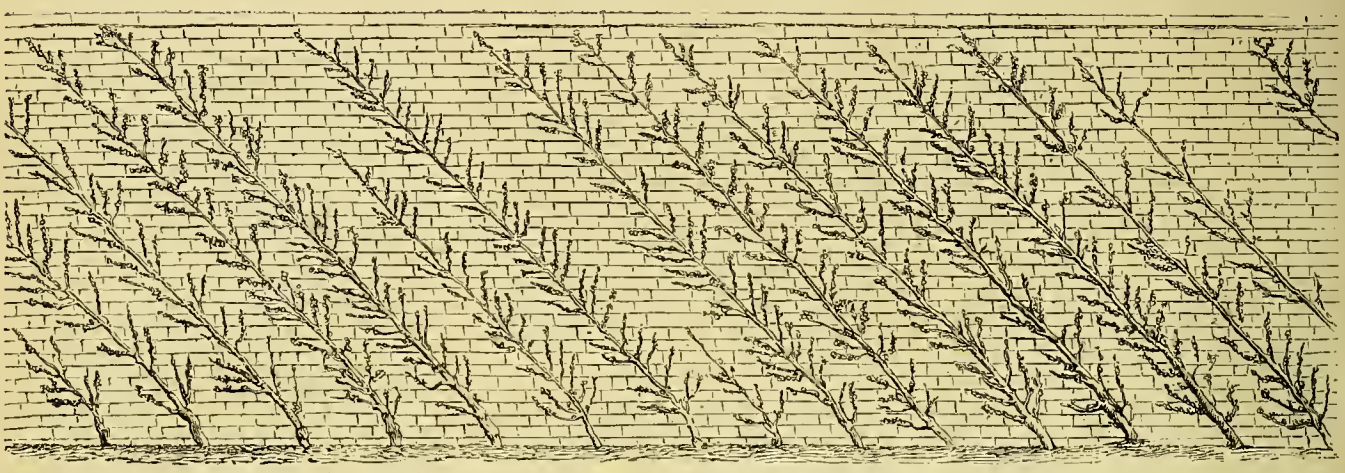

Fig. 113.—Cordon oblique peaches at Chiswick. (see p. 632.)

rosy-lilac, forming a pretty contrast with the greenish peltate style, over which they are bent. Fig. 2*a*, p. 629, shows a section of the style and ovary, and a section through a petal, showing the way in which it is bent. Fig. 4, p. 633, represents another variety of flava, called crispata. In it the flowers are fig. 5, p. 633, is that of Sarracenia Drummondi. The diameter of the flower is about 4 inches, the petals deep reddish-purple, and the disc of the style pale reddish, with green veins; a section of the style and ovary and a single stamen are also shown at 5*a*.

At another time we hope to illustrate other varieties, that the rotting mass is sometimes injurious to the pitchers, and that in cultivation the plants do quite as well without as with insect food, if food it be. We are not aware whether any advantage to the plant in the way of producing more numerous and better seeds has been demonstratively proved by actual

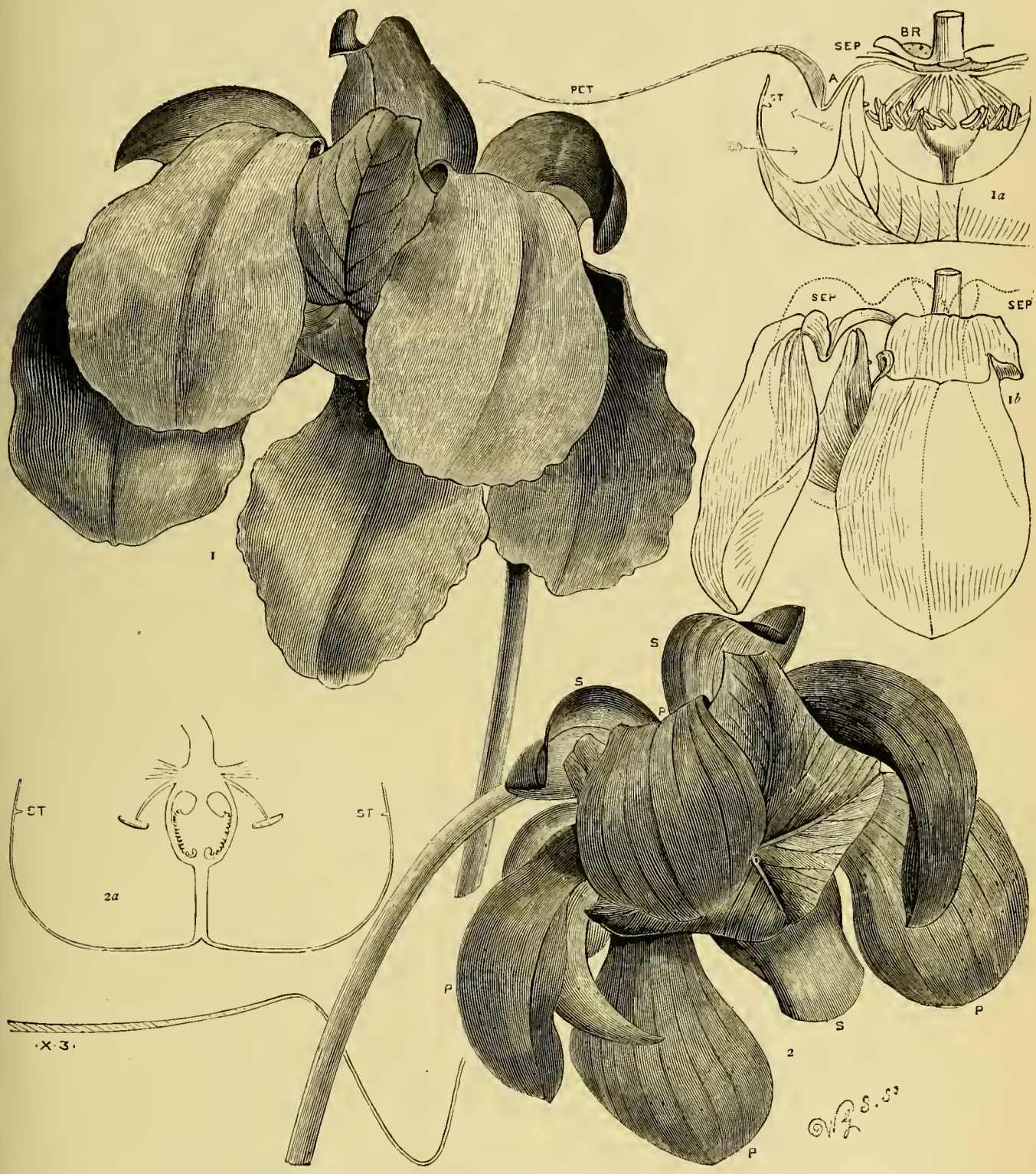


Fig. 114.—Sarracenia flowers: 1, 1*a*, 1*b*, S. flava ornata; 2, 2*a*, S. Williamsii ×.

4 or 5 inches across, the sepals spreading, greenish, folded back (reduplicate), the petals narrow at the base, ovate or roundish at the free ends, creamy-white, flushed with green at the edges, and the disc of the style also greenish. It is a remarkably beautiful flower. Fig. 4*a*, p. 633, shows a section through the disc of the style and the ovary; B, bract; S, sepal; P, petal; ST, stigma. The deep purple flower, and especially of the hybrids, in cultivation, and to give full descriptive notes both of the flowers and of the pitchers, to which end we should be obliged if those of our correspondents who feel interested in the matter would kindly send us specimens. In the meantime we may refer to Mr. Boulger's article in another column as to the peculiar property these pitchers have of entrapping insects. It is true weight and measurement, as has been done by Mr. Francis Darwin in the case of the Drosera, but it is curious to contrast our modern notions on this point with those of Catesby, who, in his magnificent *History of Carolina*, published in 1754, says that the "pitchers seem to serve as an asylum or secure retreat for numerous insects, from frogs and other animals which feed on them"!

## Orchid Notes.

Dendrobium thyrsiflorum.—D. thyrsiflorum is a very absurd name for this fine Dendrobe—the inflorescence is a simple spike, and not a thyrsus at all. I have never yet heard how the name originated. Mr. Marshall, of Enfield, bought several imported plants of Messrs. Low in 1865 under this name. One of them bloomed in March, 1866, and was exhibited at South Kensington, where it received a First-class Certificate. I have this certificate now before me; it is dated March 20, 1866, and the name here given is Dendrobium densiflorum var. thyrsiflorum. The plant is so thoroughly distinct from D. densiflorum in the form of the pseudobulbs that the specific name might, for convenience, be dropped, and D. alboluteum adopted, as this name expresses the colour of the flowers, whereas D. thyrsiflorum is positively misleading when applied to this plant. *W. Wilson, Priory Lodge, Isle of Wight.*

The Fernfield Orchids.

I recently had the pleasure of spending a few days at the Bridge of Allan with Dr. Patterson, and with him making the round of the Orchid growers in his district, in whose doings he takes quite a paternal interest, as well he may, for he it was who infected them with their first love for plants that are now the source of great pleasure to themselves and many of their neighbours, and that are making the names of their owners household words where they were unknown before. Messrs. Russell and Gair, of Falkirk, have now grand collections in splendid health, and Mr. Smith, of Bretham Park, Stirling, has in a few years made a collection that for choice varieties has few equals. The history of perhaps the only choice plant he has ever disposed of, is so peculiar, that I am tempted to give it here. Mr. Boyd, of Ormiston, near Kelso, when making the collection he sold a year ago, in consequence of his being about to change his residence, bought from Messrs. Low some recently imported Cattleyas; three plants of these proved remarkably fine varieties of Mendelii—so much so as to be quite unique. When the collection was dispersed Messrs. Veitch purchased one, Mr. Smith a second, and some gentleman near Birmingham the third. Mr. Smith's was recently seen in bloom by Mr. Marshall, of Messrs. Backhouse's establishment, and he succeeded in persuading Mr. Smith to part with it for 100 guineas. No sooner had Messrs. Veitch learned that the plant was in commercial hands than they offered 200 guineas for it, and secured it; the original cost to Mr. Boyd was 7*s.* 6*d.* This is perhaps the highest price ever paid for an Orchid, and from Mr. Smith's remarks I feel certain that he would rather have the plant still in his collection than the extra £105 on the credit side of his bank account.

To avoid occupying too much of your space I must return to Dr. Patterson's collection, and my original intention of giving a notice of a few remarkable plants in it. His row of Vandas standing in the centre of his largest house is unique for the size and health of the plants, as well as for the masses of bloom they bear. His imported variety, named V. tricolor Pattersoni, is a fine one, much in the way of Dalkeith tricolor, equally good, though distinct from that fine variety; he has also a very fine variety of V. suavis, which he calls the "Dublin suavis." There are, in addition, a number of ordinary tricolors and suavis, all in rude health, and, with one exception, clothed to the pots with foliage. Perhaps from a cultural point of view the gem of his collection is a plant of Odontoglossum vexillarium. It is in perfect health, and I counted on it twenty-eight spikes of bloom, with seven to eight blooms on a spike—somewhere over 200 blooms in all. This plant he speaks of exhibiting at one of the next London exhibitions. A fine plant of Aerides Fieldingii had seven large branching spikes on it—a grand specimen. There was a very fine variety of Cymbidium Lowii, with three fine spikes. A good variety of this plant is a most interesting Orchid, and stands four months in bloom. Cattleya Skinneri, with forty-eight blooms on six spikes, also a noble plant. In all I counted 105 Orchids in bloom in his collection. He pulled down his old houses a year ago, and built much larger ones; but his collection is as crowded as ever, so rapidly have his plants increased in size. I endeavoured to persuade him to dispose of some of his duplicates to make more room for the others, and at times thought I had succeeded, but no, he cannot part with them; to sell one of his favourite Orchids would be a wrench to his nervous system he seems afraid to encounter.

Every time I visit the Bridge of Allan I find increasing shoals of the visitors to that favourite and delightful health resort flocking into the Doctor's Orchid-houses to admire his plants, and one can but equally admire his patience with and attention to all visitors, and his anxiety to engraft on them a taste for that which has yielded so much pleasure to himself. No man in Scotland, and few out of it, has done so much for Orchid culture as Dr. Patterson has done. When singing their praises he gives way to an eloquence which is all but irresistible. That he may long continue to do so is the wish of all who know him as I do. *Wm. Thomson, Tweed Vineyard, May 9.*

Oncidium phymatochilum.

At p. 598, amongst a list of Orchids stated to be in flower, I notice the name of Oncidium phymatochilum. This is a very interesting species. The flowers are not very large or showy, but they are very numerous on long, upright, branched spikes. It seems to flower very freely in its native habitat, but it does not do so under cultivation. It frequently flowers in our collection, and is in flower at the present time. I find the plants do not care to be disturbed, and they succeed best when the roots are allowed to form outside of the pots. The plant in flower at Loxford has been allowed to make five annual growths over the side of the pot. Plenty of roots are formed every time a growth is made, and they have formed a compact wig on the outer surface of the pot. The plants should be grown in the warmest house. The roots are syringed daily without wetting the leaves. We pot them much the same as Cattleyas, and do not give more water than a Cattleya would receive. *J. Douglas.*

Dendrobium mesochilorum.

A nice plant of this chaste Dendrobe, that has been recently brought from India by Mr. Elwes, is now well in flower at Kew. It is somewhat in the way of D. Pierardi, but the deliciously violet-scented flowers are pure white, with the tips of the petals and labellum slightly washed with lilac-purple, the disk of the labellum is hairy, and of a bright yellowish-green colour. One branch of the plant now in flower bears two or three remarkable-looking flowers, in which the labellum is entirely wanting, and the two lateral sepals are united throughout their length by their lower edges into what appears to be a single sepal, which occupies the position of the labellum, except that it is external to the petals. These abnormal flowers are entirely white.

Vanda teres.

This singular looking Orchid finds a place in nearly every collection of Orchids, but though grown by many it is flowered satisfactorily by few. There is a notion abroad amongst Orchid growers that some varieties are free-flowering and others very shy indeed. This may be true or it may not—I have no means of deciding the question; probably a good deal depends upon the system of culture pursued. There is, of course, a growing period and a time for the plant to rest. From the beginning of March until the end of October it should be grown near the glass in the temperature of the East India-house, and should be freely syringed in hot dry weather. During the winter months the plant should be placed in a cooler house near the glass, where it can catch the sun's rays for the greater part of the day, and should not receive a drop of water all that time. Some time in March the flower-spikes will appear, and the flowers open in June. We have a plant here treated in that way, and it has two flower-spikes on one stem pushing freely. *J. Douglas.*

—— Any lover of this grand Orchid would have a real pleasure in seeing it now in full bloom in one of Baron Rothschild's houses at Ferrières. It is very successfully cultivated in those gardens, and hundreds of blooms are cut annually. There are in the lot some plants of a very dark variety better than the ordinary pale one. We hope later on to tell our readers how this plant is grown at Ferrières. The main points seem to be air and light.

Sale of Mr. Day's Orchids.

The following prices amongst others were realised at the sale of the third portion of Mr. Day's collection on May 4 and 5:—Cypripedium Stonei var. platytænium, 212*o*s. (Baron Schröder); Lælia crispa superba, 210*s.*; Cattleya labiata, 840*s.*; Angræcum Ellisii, 335*s.*; Cymbidium Parishii, 189*s.* 6*d.*; Masdevallia Chimæra, 315*s.*; M. bella, 336*s.*; Odontoglossum nævium, 231*s.*; O. Andersonianum, 180*s.*; Aerides Veitchianum, 357*s.*; A. Dayanum, 336*s.*; Lælia anceps rosea, 252*s.*; Saccolabium guttatum var. Holfordianum, 441*s.*; Lælia anceps alba, 336*s.*; Cattleya Mendelii, 252*s.*; Vanda insignis, true, 714*s.*; Cattleya exoniensis, 231*s.*; Aerides Fieldingii, 462*s.*; Phalænopsis Wightiana, very rare, 336*s.*; Masdevallia Harryana, Bull's-blood var., 200*s.*; M. Wallisii, 189*s.*; Saccolabium Turneri, 504*s.*; Aerides Lobbii, 442*s.*; Dendrochilum filiforme, 210*s.*; Lælia elegans, 336*s.*; Cattleya labiata, 294*s.*; Cypripedium Spicerianum, 882*s.*; Oncidium ornithorrhyncum album, 756*s.*; Lælia elegans var. Wolstenholmiæ, 588*s.*; and Cattleya labiata Warneri, 336*s.* Total amount of sale, £1888 1*s.*

## Garden Operations.

*KITCHEN GARDEN.*

The nature of the weather which we have been and are still having has been such as to necessitate the almost daily watering of freshly planted subjects—such, for instance, as Cauliflower, Cabbage and Lettuce plants, Brussels Sprouts, Globe Artichokes, Celery plants, and also Asparagus; the latter, after the first watering after planting, we covered with a couple of inches of leaf-soil, as a means of conserving the moisture at, and keeping the roots cool. Seed-beds and seedlings will also require attention in this direction, as also will early and successional crops of Peas, Beans, Carrots, and Turnips, which, when growing on warm and sloping borders, require copious supplies of water at the roots. This operation, for the present, should be carried out sufficiently early in the afternoon to allow of the plants getting dry before sunset, so that in the event of frost intervening between that and sunrise, the plants may not be so likely to experience a check in their growth as if they were wet. All ranks of Peas which have been landed-up and sticked should now, if not already done, be mulched with rotten dung—a procedure that will not only stimulate growth by the substance of the dung being washed to the roots of the plants at each successive watering, but also be the means of conserving the moisture so applied at, and thereby maintaining the roots in a more equable condition than would otherwise be the case. Young plants of Cauliflowers, Cabbages, Brussels Sprouts, Savoys, Lettuces, and Leeks, resulting from sowings made in warm borders in February and March last, should now be pricked out in beds, preparatory to being finally planted out. The plants should be allowed sufficient room to develope themselves during the time they are intended to occupy the nursery beds. This is a procedure that deserves more practical attention and adoption than it always receives, for it not unfrequently happens that seedling Cabbages, &c., are allowed to grow closely together in the seed-beds until they are required for finally planting out; and, under these conditions, the plants, instead of making a stocky and consolidated growth, become lanky and weak. Peas now in flower should have the points of the haulm nipped out, which, owing to the slight check thus given to the plants, will hasten the podding process. The same remark is also applicable to Broad Beans in a similar stage of growth. Ere this the Seakale season will have terminated; therefore, the pots and boxes with which the plants were covered, as well as the material which has been used as a covering for the same, should be removed forthwith. The flower-stalks on Rhubarb plants, which in some cases will be showing somewhat freely, should be removed therefrom as soon as they appear. Continue to make small plantings and sowings of Cos and Cabbage Lettuce at regular intervals, so as to maintain a good succession, and in order to ensure crispness keep the plants well supplied with water at the roots. Plant out Cauliflower and Cabbage Plants, including the Red Dutch Cabbage, where not already done, and in quantity according to the demand, when the ground is sufficiently moist, and see that they are subsequently watered when necessary. Make another sowing of Early London and Veitch's Autumn Giant Cauliflowers, and Carter's Heartwell Marrow and Wheeler's Imperial Cabbages to come in for autumn and winter use; also another sowing of Early Horn Carrots for drawing from, and of Early Ulm, and Dwarf Curled Savoys for late planting should be

made; as also another sowing of Turnips, and thin out successional crops to 6 or 9 inches in the row. Make a good sowing of Canadian Wonder French Beans, and earth up and protect early sowings from the effects of frost by putting a few forky sticks and stretchers between the rows, and covering them with mats or whatever protecting material necessity may at the time suggest. Sow some more Spinach and clear the ground of the winter crop as soon as the spring-sown one is fit for use, getting the ground manured and dug in readiness for other crops. Where Parsnips are much sought after, a sowing made now will come in well for late use. Asparagus, which, with us, has come up kindly, should be looked over daily, and all the "grass" cut as soon as it is fit, washed, sized, and tied up in bundles, and stood on the ends in saucers of water in a cool room until required for use. Attend to the sowing (every fortnight or three weeks) and watering of Radishes, Mustard and Cress. Prick out young Celery plants in 2 inches of finely-sifted soil which has been placed over 2 inches of short dung on a hard surface out-of-doors, and water and shade the plants for a few days until they have established themselves, and see that the plants have plenty of water afterwards. Carrots and Potatos growing in pits and frames will require plenty of water at the roots, but see that the latter are not overdone with water, and that the pit or frame in which they are growing is not shut up until the sun has partly gone off it, or else peradventure the disease may appear amongst them. *H. W. Ward, Longford Castle, Wilts.*

## *FLOWER GARDEN.*

Bedding-out.—It will now be safe to plant out all kinds of summer bedders except the most tender, and the work should therefore be commenced in earnest—of course all arrangements being first completed, and the spaces for tender plants labelled—and, so far as is possible compatible with the varied tastes to be studied, the fewer of this section the better, that the garden may continue in beauty, in spite of a few degrees of frost in early autumn. Coleus, Iresine, and Alternantheras are colours that cannot be quite dispensed with, but by every move possible endeavour to use them sparingly. I have nothing to add to what has so often been mentioned in these columns in regard to arrangement, viz., that the less gaudy they are the more lastingly beautiful they become, and that by way of variety, free use should be made of suitable small shrubs, Yuccas, Dracænas, Grevilleas, Abutilons, indeed, any kind of standard plants that will withstand wind and rain to break the formality of flat surfaces. Another excellent way of adding variety to the arrangements, and at the same time eking out a scanty supply of any given plant—say, for instance, choice variegated Pelargoniums; the plants at command should be disposed equally over the entire arrangement, or bed, after which the bed should filled out with a dwarf surfacing plant of any colour that will contrast or harmonise with the variety of Pelargonium the best. Sedum glaucum does well for any of the tricolor kinds, and Sedum lydium or Herniaria glabra for the white variegated kinds, or, if flowers are preferred, an undergrowth of dwarf Lobelia may be used. The same rule of planting is also applicable to tender plants, one of the most pleasing arrangements of which we ever had, was occasioned through the supply of Alternantheras running short, and so the few we had were spread over the bed, and the space filled out with Sedum acre elegans; a double advantage was thus accidentally gained, namely, improved summer effect, and winter brightness after the Alternantheras had ben destroyed. There are many other equally simple yet very telling arrangements that might be alluded to did space permit; but these will suffice to show the direction in which we may, at one and the same time, get out of the ordinary ruts of bedding-out, and yet attain a greater degree of beauty.

Subtropical Plants.—Few of these should yet be planted out, but all should be afforded plenty of room, and be well exposed to the atmosphere. Castor-oils, Hemp, variegated Maize, and other free growers, if at all pot-bound, should have another shift, the check they would otherwise receive would tell in a stunted growth throughout the season. These we usually plant but thinly, and fill in the beds with dwarfer plants, such as, for instance, Harrison's Musk, as an undergrowth for Ricinus Gibsoni—the bronzy foliage is well set off by the beautiful yellow flowers of the Musk, which does all the better for the shade the Ricinus affords; moreover, by this mode of planting a few plants of Ricinus go a long way, half-a-dozen being ample for the planting of a large bed. Of course there are many subtropicals that do not require an undergrowth, but, as a rule, the less bushy growers are more telling when dwarfer—and contrasting as to colour—plants are used in this way. Another advantage of the plan is that there are some few kinds of hardy plants every way suited for such planting; among these are Cerastiums, Ajugas, Saxifragas, Sedums, &c., these, therefore, may be planted at once, leaving an open space for each subtropical plant to be put in as soon as it is safe to do so. As mentioned above, so it is also with this class of plants, sometimes a haphazard or make-shift arrangement proves to be the most effective. Such a one we had last year, composed of tall plants of Acacia lophantha and Grevillea robusta alternated, between each of which, forming an undergrowth, was a plant of Chamæpeuce diacantha, the bed being edged with Veronica incana. This year, by way of increasing the variety (and at the same time to be orthodox, because fashionable) we purpose using the tall-growing single Dahlias amongst the less graceful-growing subtropicals, planting them only amongst those plants that they will be sure to overtop, to ensure the flowers having a plentiful setting of foliage.

Rockwork and Mixed Flower Borders.—Early spring-flowering plants, such as Arabis, Aubrietias, Myosotis, &c., that have done flowering should have the old flower-stems removed; the whole rockwork should be weeded, and if needed fresh soil given. At the present time the most beautiful plants here consist of large patches of Phlox verna, Aubrietia Campbellii, Lithospermum fruticosum, and golden-tipped Stonecrop—this last the perfection of a plant for growing on dry portions of rockwork where nothing else will grow. Mixed borders are now beginning to get very gay with Pyrethrums, the tall flower-stems of which require supports, and so do those of Dielytra spectabilis. Keep the surface-soil well stirred, to prevent the growth of weeds, and in dull showery weather fill up vacant spots by planting out Asters, Stocks, Everlastings, Zinnias, Phlox Drummondii, Marvel of Peru, and also by sowing patches of Mignonette, Sweet Peas, and other hardy annuals. The ground above any bulbous plants that have done flowering may be clothed with any kind of surface-rooting plants, the most suitable types being the gold and silver-tipped Stonecrops and the grey and green Sedums.

General Work.—Anent the preservation of neatness, mowing is now the principal operation in demand; neglect of it now would cause annoyance for the rest of the season, for the simple reason that the present being the grass-growing period it soon gets thick at the bottom, and unless regularly mown the bottom grasses get smothered and die, leaving a patchy turf throughout the season. Shrubs still unpruned, because of the waiting desirable on account of the severe winter, may now be operated on; any that are not by this time showing signs of vitality will never do so again, and so should be removed forthwith. The only plants hereabouts that have suffered severely are the variegated Euonymus and Laurustinus. We find it necessary to cut both these quite down to the ground line. *W. Wildsmith, Heckfield, Hants.*

## *FRUIT HOUSES.*

Peaches and Nectarines.—As we have had much warmer weather and a moderate amount of sunshine of late, the fruit in the early house will have commenced their last swelling, in fact I have to-day (10th) gathered two fruit of Early Beatrice. They are very small indeed, and we have a thin crop, this variety being a very shy bearer with me. It shows plenty of bloom, and appears to set well, but the majority of them fall off, although trees of Royal George, Stirling Castle, and other old varieties, with the same treatment in every respect, carry full crops of fruit. Go over the trees and tie down any shoots that require it, and get the fruit well up above the foliage. For this purpose I use ceiling-laths cut in short lengths and placed under the fruit from wire to wire. Ply the syringe very freely until they begin to colour. The winter covering may now be taken off the outside borders, leaving a small portion of the most decayed manure by way of mulching, and if dry weather continues a good watering of tepid manure-water will do them good. On mild nights keep a chink of air on the front ventilators. The trees in succession-houses will be making rapid growth. Follow directions given in former Calendars as regards tying down, thinning fruit, and watering. Trees on outside walls will soon require disbudding, &c. We have a nice lot of fruit set that look promising for a fair crop. *J. Wallis, Keele Gardens.*

### Melons.

The period of genial warmth and brilliant sunshine which set in a short time ago has had a most beneficial effect upon all crops, and especially upon Melons in the last stages of ripening, which require abundance of warm dry air playing amongst them. The finishing process I regard as the critical stage with Melons, as unless there is flavour the result, whatever it may be in other respects, must be considered as unsatisfactory. The point of importance, then, is to be extremely cautious to guard against over-watering the plants at their roots. It is a good plan to give plants a moderately good watering before the fruits commence to change colour, and mulch the surface of the bed with some clean open material to arrest evaporation, through which means the soil will retain sufficient moisture to nourish the roots until the fruits are ready to cut. Where there are any symptoms of cracking after the preventive remedies recommended in a former Calendar have been tried, the stem of the plant should be partially cut immediately below the fruit, which will regulate the flow of sap to the proper requirements of the fruit. It will also be advisable to maintain a sufficiently high night temperature to admit of a chink of air being left on all night in order to dispel anything like a damp or stagnant atmosphere, which is fatal to high finish and flavour. Succession crops that are swelling will require constant attention of a routine description, such as stopping, training, and removing unnecessary growths, which have a tendency to debility, and deprive the fruits of so much extra nourishment which they would otherwise enjoy. Sowings for special purposes of exhibiting may be made, allowing from thirteen to fifteen weeks at this season from the time of putting in the seeds until the fruits are ready to cut under ordinary favourable circumstances. Melons in frames will still require fresh linings of fermenting materials whenever the bottom-heat shows signs of abatement, and protection over the glass early in the evening as a means of retaining sun-heat. *W. Hinds, Canford, Dorset.*

### Cucumbers.

Where plants that have fruited through the winter are showing signs of diminished vigour, and there are plenty of others in full bearing, the place of the former had better be filled up either by extending the growth of vigorous plants that have been restricted to space or by planting afresh with strong young plants, which soon come into bearing at this season. We are now cutting from Pettigrew's Cardiff Castle for the first time—a variety that is destined before long to find its way into every private garden. It is a well-formed fruit, about 18 inches in length, and is the most useful and most prolific Cucumber that has appeared for many years. This variety is just the thing for winter fruiting. The principal labour required at present among fruiting plants is incessant attention to stopping, training, and regulating the growths, so as to render much cutting away at any one time an unnecessary operation. The fruits should be cut regularly as they attain a usable size, in preference to having a temporary show, which is detrimental to the longevity and fruitfulness of the plants. The condition of the oots should be examined at regular intervals, and they should be kept well supplied with liquid-manure, or surface-mulched with solid cow-manure, which is equally invigorating and beneficial to the roots. Shade from strong sun, and let fire-heat be dispensed with at night as far as possible. *W. Hinds, Canford, Dorset.*

### Orchard-house.

The trees will now stand a higher temperature in the earliest house, and especially so if the fruit has taken its second swelling. Give a good drenching with the garden engine night and morning; if the water is applied with considerable force against the under-surface of the leaves they will be kept free from red-spider, and the syringing must be continued until the fruit is within about ten days of being ripe. Where the trees are in pots a considerable quantity of water is required at the roots. Surface dressings must not be forgotten either; about two handsful should be given to a 12-inch pot. The mixture previously advised is the best, viz., one part of good clayey loam, one of kiln dust, and one of fresh stable manure from which the straw has been taken out. These should be thrown into a heap to heat, and the heap should be turned over every day until the heat declines. It ought not to be necessary to advise the destruction of aphides, as this pest should be destroyed in a very early stage of the trees' growth. Stop the young shoots as they require it. If the trees have grown to their full size the shoots ought to be stopped at every third or fourth leaf. Shut up the house as early as possible in the afternoon, and admit air very gradually in the morning. I like to open the ventilators just a little at six o'clock, and as the heat increases the ventilation is also gradually increased. No trees or plants can be kept in good health if hothouses are shut up until the heat has run up nearly to the maximum, and then the ventilators are thrown open to allow the cold air to rush in as the heated air is driven out.

The instructions for the late house are similar to that given earlier in the year for the forcing department. The fruit has set well on Peaches and Nectarines; the Pear and Plum trees are now shedding their blossoms, and the Apple trees are just coming into blossom; owing to this it is not possible to keep the house so closely shut up nor so moist as we otherwise would. None of the other fruits named will stand so high a temperature nor so close an atmosphere as the Peach and Nectarine; indeed for this reason no other fruits except Peaches and Nectarines are grown in the forcing department. *J. Douglas, Loxford.*

## APPOINTMENTS FOR THE ENSUING WEEK.

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| Tuesday, | May 17 | Sale of Stove and Greenhouse Plants, at Osborn's Nursery, Fulham, by Protheroe & Morris (two days). |
| Wednesday, | May 18 | Flower Show at Bath. |
| Thursday, | May 19 | Royal Horticultural Society of Ireland's Spring Show. |
| Friday, | May 20 | Floral Exhibition at the Alexandra Palace (two days). |

We referred recently to the effects produced on the growth and blossoming of the Pear by working on various stocks, as seen in the gardens of the Royal Horticultural Society at Chiswick. The results in the case of the Apple are equally remarkable. There are rows of various kinds of Apples, some worked on the Doucin, others on the Paradise, the growth on the former being invariably greater than on the latter. In another series of experiments the same description of Apple (Blenheim Orange) is grafted on various stocks growing side by side under the same conditions. At the present time the following results are obvious:—On the Crab and on the Dutch Paradise there is no flower, but much growth of wood; on Rivers' Paradise there are but few flowers; on the English Paradise the bloom is fair; on the true French Paradise growth is dwarfed and the bloom is abundant, as it is also on the Doucin. The influence of the stock is shown, not only in the varying amount of bloom, but quite as markedly in the difference of size and growth. For this particular Apple under these particular conditions it is clear that the two last stocks are much the best, and of the two the Doucin is the strongest grower. It is a remarkable fact, showing the effect on the stock itself of the scion, that the Paradise stock ungrafted will not live at Chiswick, but when worked with some other variety it thrives.

We give these as only a few illustrations, but very striking ones, of the interest and value attaching to such experiments. We could wish them extended a hundredfold, and the results carefully registered from year to year; but even as it is Mr. Barron is carefully accumulating and registering from year to year a large body of evidence, which we trust will be collated at regular intervals, so as to ascertain how far the results obtained in one season tally or contrast with those in another, when the conditions of the climate are different. How valuable it would also be if precisely similar sets of experiments could be set on foot in some other locality where the soil was chalky or otherwise different from what it is at Chiswick. If some of our local horticultural societies, especially those which can obtain the use of an experimental garden—such as those of Manchester, Edinburgh or Glasgow, for instance—would cease to occupy themselves so exclusively with flower shows, and expend some, at least, of their energies on experiments of the kind indicated, they would render services to horticulture generally which would in their degree be at least as important as those resulting from flower shows, and at considerably less cost.

As to the question of pruning or non-pruning, practical men judge by results. There is a universal agreement that injudicious pruning is, as we have already said, worse than none at all, that in certain cases it is better to let Nature have her own way, but that in other cases, and especially in small gardens, where space is an object, and where superior quality and variety are wanted, cultivation, as contradistinguished from doing nothing, pays best. The outcry should not be against pruning, but against bad pruning. As a matter of fact, the Chiswick trees, being well managed, need comparatively little interference, and get little. The illustrations which we give this week, in continuation of those given before, represent some of the oblique cordon Peaches (fig. 113) which form so remarkable a feature on one of the walls at Chiswick at this season.

The other illustration, on p. 637, is a pyramid Pear (fig. 116), taken from a photograph before the buds were expanded, but now full of bloom, and it affords a better illustration of what has been advanced on the question of pruning and training than many pages of letterpress.

—— Dracæna Goldieana.—The flowering of this remarkable species, introduced from West Africa by Mr. Bull, in 1872, has been anxiously expected for years past. It was even thought doubtful whether the plant was a true Dracæna, though Mr. Baker, in his revision of the Liliaceæ (*Journal of the Linnean Society*, vol. xiv., p. 535), did not hesitate to place it near to D. elliptica, densiflora and Fontainesiana, of which latter it has entirely the habit. We now learn from the *Belgique Horticole* that the plant flowered in February at Marseilles, in the garden of M. Renouard, who contributes to the Belgian journal some interesting particulars. An engraving and detailed description are promised in a subsequent number. Now that the plant has flowered once, we may expect to hear of its blossoming elsewhere.

—— Fruit Growing in Kent.—We are glad to see that Mr. Whitehead has issued in a separate form his interesting essay on *Fruit Growing in Kent*. Let us hope that this essay, which is necessarily a mere summary, may be followed by a more exhaustive treatise showing the mode of culture, the kinds grown, the average cost of production, and the returns. "The delicate and important operation of pruning, which makes all the difference between high and low production, is, it must be confessed, but imperfectly understood by many Kentish fruit-growers." In this Mr. Whitehead is within the truth. In our time pruning in the proper sense of the word was unknown, or at any rate unpractised.

—— The "Journal of Forestry."—The fifth volume of this useful and well-edited journal opens with certain changes and additions which will increase the value of the periodical. Henceforth the journal will cater, not only for practical foresters, but for landed proprietors, estate agents, and others interested in timber growing and estate management generally. Mr. Watney states that his practice in valuing timber is to value "the ornamental trees at their full commercial market value," and not at half price, as done by Mr. Burrows. This opens up a most difficult question, because the commercial value as timber—which is, of course, what is meant—of ornamental trees is in many cases quite unknown, and the money value of merely ornamental trees is a matter of opinion rather than definite law.

—— Asparagus Culture.—M. Lainé recommends the use of silicate of potash as a manure for Asparagus grown on mounds, in the French fashion. The manure is said greatly to increase the size of the shoots.

—— Professor Grisebach.—The *Belgique Horticole* for January, 1881, contains a well executed portrait and biographical notice of the late Prof. Grisebach, best known in this country for his works on Botanical Geography and on the Flora of the West Indian Islands.

—— The Frost and the Fruit Blossoms at Chiswick.—We regret to hear that the frost on Thursday morning nearly destroyed all the Apple blossom at Chiswick, especially on the lower trees. The Pears are not so much injured, but all the fully developed Strawberry flowers are gone.

—— Traps for the Unwary.—What a chapter might be written on the stumbling-blocks and pitfalls which beset the path of the suburban, and particularly of the metropolitan possessor of a villa garden, who is imbued with a love of horticulture, and blessed with but scanty knowledge thereof. The other evening the writer of this was eloquently pressed by a sleek specimen of the genus "Coster" to invest in the contents of a large basket filled with Willow herbs, which had evidently been taken from their native ditches or along the Thames bank a few hours, or at most a day, before. Epilobium hirsutum (Codlins and Cream), E. parviflorum, and others, were represented, and promptly dubbed "Rosanthus" when the name was asked. A glowing word-picture of the beauty and various colours of Rosanthus was painted, and the description clenched by the information that they were something like Sweet Williams, but very much better.

—— Mr. William Heale.—On Friday evening, May 6, Mr. William Heale, who for several years has been manager of the Perth Nursery, but who is leaving there to occupy the post of traveller and salesman to the firm of Messrs. Samuel Finney & Co., of Newcastle-upon-Tyne, was entertained by his friends and professional brethren at a complimentary supper given in his honour at the King's Arms Hotel, Perth.

—— Saxifraga peltata.—What a conspicuous and attractive object this Californian species would become if planted along the edge of a watercourse or near a piece of ornamental water. Its tall stout scapes are developed and the heads of rose or pinkish flowers produced before the large leaves appear; these latter, too, are remarkable in being truly peltate, a peculiarity exhibited by no other species of the genus. S. peltata, moreover, is probably the largest known Saxifrage. It is perfectly hardy, and well worth growing where sufficient space can be allotted to it. A good clump is now in flower at Kew.

—— "Herefordshire Pomona."—We understand that the fourth part of this beautiful publication is in an advanced state of preparation, and that it will contain twelve plates, illustrative of sixty-three varieties of fruit, so that the work may be completed in three more parts.

—— Daffodils.—Mr. Burbidge sends us flowers of a seedling form of Narcissus bicolor raised by M. De Graaf, of Leyden. Three flowers are produced within one spathe, but two of the three are joined together Siamese twin fashion. These things are curiosities and scientifically interesting, but we doubt the policy of perpetuating them for garden flowers.

—— Pictairnia tabulæformis.—This interesting and most distinct Bromeliad is now flowering in the T range at Kew. In general habit the horizontally-spreading, closely overlapping green leaves put one much in mind of the mode of growth in the well-known Sempervivum tabulæforme. The scape is only 2 or 3 inches high, but the rather large deep orange-yellow flowers are somewhat numerous. First sent from Chiapas to Linden's famous establishment by Ghiesbreght more than twenty years ago.

—— Double Primroses.—Mr. Boscawen sends us flowers of the double yellow Primrose found wild in Cornwall, of great size and beauty. Some of the flowers measure over 2 inches across, and they are very double.

—— Rubus arcticus.—This is a pretty dwarf rock plant, with rose-coloured flowers. The species was an especial favourite of Linnæus, who tells us that he had often been refreshed with the nectar of its berries. At Kew, where it is at present growing and flowering freely, it does not fruit, but now and then with Mr. Niven at Hull it bears its bright red fragant fruits, which are said to combine the flavour of the Raspberry and Strawberry. Once upon a time this was looked upon as a British plant, but its claims to native rank are not now accepted.

—— Tobacco in Italy is said, by the *Journal of Applied Science*, to be a monopoly of the Italian Government, which buys largely Kentucky, Virginia, and Ohio brands. Kentucky leaf makes all the "Cavour cigars," or three-fourths of all cigars smoked in the peninsula; Virginia leaf is manufactured into the "straw cigars" of Milan, and Ohio leaf turns out the "Havana cigars" somewhat after our own plan of Havana fillers and Connecticut wrappers. There are in the kingdom eight principal manufactories, which turn out 6,000,000 cigars daily. There is very little cigarette or pipe-smoking. From the king to the *lazzarone* the whole nation smokes the "Cavour." They cost only one half-penny.

—— Esparto for Paper Making.—At a time when the supply of Esparto for paper-making is being calculated upon in view of its not very distant failure,

FIG. 115.—SARRACENIA FLOWERS: 3, 3a, S. FLAVA ORNATA; 4, 4a, S. FLAVA CRISPATA; 5, 5a, S. DRUMMONDI. (SEE P. 628.)

the returns of the export of this substance from Tripoli proves the probability of its rapid exhaustion. 47,144 tons is no small total, and the value, £188,576, is a good round sum for one article; indeed Esparto figures as the most important item in the exports from Tripoli during the year 1880. For the purpose of economising space on board ship, so as to reduce the cost of carriage, we are told that the first steam-press for pressing Esparto fibre into bales has been introduced into Tripoli by a mercantile firm. Hitherto this grass has been pressed by simple hand-presses, which only work imperfectly and slowly, producing light bales, for which high freights are usually paid. It is said that should this press succeed others will become general.

—— FRITILLARIA RECURVA. — Some good examples of this rather rare Californian plant are now in flower at Kew. In a recent volume of the *Botanical Magazine*, in which a figure appears, Mr. BAKER states that in colour this is the finest of all the Fritillaries, the red being as bright as that of a Lily, and intermixed, especially in the inside of the flower, with bright yellow. It is a neat dwarf grower, and cannot fail to win the admiration of all lovers of hardy plants.

—— THE COMING SUMMER.—There is abroad a wide impression that we are going to have a hot dry summer. If this impression be realised it will have begun early. For more than six weeks only the smallest quantity of rain has fallen in the home districts, and the stiff lands are baked, and to a degree that renders cultivation a matter of the greatest difficulty. It is not only a lack of rain which has prevailed, but there have been associated with the drought winds of an unusually drying, withering kind, and as a rule exceedingly cold, so that all vegetation is backward, and growth very slow. This is particularly the case with pastures, and the promise of a hay crop is at the best but a poor one. So far it has been a rare time for the utilisation of irrigating powers, and sewage farms that have in wet cold seasons fallen into disrepute may now find, in a dry time, and with possible heat, their credit re-established. If we were but a corn-growing country we should rather welcome a hot summer. It is then, as a rule, we get the best corn crops. At the same time we should no doubt find that the fruit was all the better for more heat and less rain. We should find not only that, but the trees which bore it better ripened and matured. These things are, however, not the only valuable products of the soil. Grass and hay are so very much dependent upon spring rains that a falling off in these may mean but half a crop. Potatos, perhaps, are best in warmth, and heat helps to keep the dreaded fungus in check; but nearly all other vegetables need moisture, and without an average of rain these will inevitably be short crops. A dry hot summer is not an unmixed good, though, perhaps, on the whole better than a moist one. If some interests gain, others materially suffer, and the happy medium is very rarely hit. But the other day water was an incubus; we had far too much of it, and a Rivers' Floodings Bill is the consequence. If we could but have stored some of that surplus moisture how useful it would have been now; but storing water on any wide basis is more easily written of than done.

—— THE FROST AND THE FRUIT CROPS.—Mr. T. LLOYD, gardener, Spring Grove, Bewdley, thirteen miles north of Worcester, and close to the Severn, states that 13° of frost was registered at that place on the night of May 10. The Potatos and Scarlet Runners are completely cut, and thousands of Gooseberries are quite destroyed. At Lower Woodside, Hatfield, 9° of frost was registered on the morning of the 11th. Pears, Cherries, Currants, and Potatos have suffered very much.

—— REDUCTION IN GARDENS.—We are sorry to learn that through the present depressed state of agriculture, and the gloomy prospects in this the most important of all industries, not a few proprietors feel disposed to make a reduction in their garden establishments, in some cases commencing with the heads, who have to give place to men that can be had at a lower figure. This is a delicate matter to touch upon, but having at heart the interests of all concerned with the pursuit, and all that in any way influences its progress, we respectfully question the soundness of such procedure, even viewing the matter in a purely financial aspect. With the opportunities offered by a wide field of observation, we have generally found that such men as can be had to undertake the management of a garden of even moderate extent for low wages, are far from being the cheapest in the end. Good management, with wise economy, are part and parcel of the acquirements which fit a man for a head gardener's place; and it will usually be found that the man who most fully possesses these qualifications will give a better return for the money expended under his direction than the individual who can be had for less. Where something is to be curtailed we would far rather counsel some reduction in the extent under cultivation. A well-managed garden, though limited in size, is vastly preferable to one that is larger but with less skill and intelligence brought to bear on the management. Even in small places the apparent saving of a few shillings per week, that makes the difference between the capable man in charge and one who is only partially so, generally ends in a good deal that is expended being so much thrown away.

—— ANDROSACE SARMENTOSA. — Unlike some plants from very high elevations, this lovely species takes quite kindly to cultivation, and is readily propagated by means of the numerous long stolons given off from the central rosette of leaves. In general appearance it is not much unlike A. lanuginosa. The pale rose darker-centred blossoms are produced in rather large heads. Specimens in bloom may now be seen on the rockwork at Kew.

—— THE METEOROLOGICAL SOCIETY.—At the ordinary meeting of this Society, to be held by kind permission of the Council of the Institution of Civil Engineers, at 25, Great George Street, Westminster, on Wednesday, the 18th inst., at 7 P.M., the following papers will be read:—"Comparison of Robinson's and Osler's Anemometers, with Remarks on Anemometry in general," by RICHARD H. CURTIS, F.M.S. "Notes on Waterspouts observed at Cannes in January or February, 1872," by the Hon. F. A. ROLLO RUSSELL, M.A., F.M.S. "On some Swedish Meteorological Observations in connection with the Return of the Seasons," by ALEXANDER BEAZELEY, M. Inst. C.E.

—— ALLOPLECTUS PELTATUS. — To Messrs. VEITCH belongs the credit of introducing to cultivation this Gesnerad, which is not only of great botanical interest, but of some horticultural merit. It is an odd-looking plant, with one of the leaves of each pair permanently rudimentary. It is besides unique in its way, as no other species of the genus to which it belongs has peltate leaves. The large calyx is of a red-purple colour, and the corolla pale yellow, with orange-brown throat. A native of Costa Rica.

—— EPPING FOREST.—The bye-laws made by the Conservators of Epping Forest have been allowed by the Duke of CONNAUGHT AND STRATHERN (the Ranger), and are now in force. We (*City Press*) are glad to learn that now the Corporation have Epping Forest entirely under their control they intend to make more satisfactory arrangements for keeping it in good order and preserving it from such injury as it has recently been subjected to. Only a few days ago 12 acres of brushwood were destroyed by fire, and other lawless acts have been committed. We trust the keepers will be more vigilant, and bring to justice any offenders who may be found damaging the forest, which has been secured for the public at so much trouble and cost.

—— HOLLIES AT THE BARNET NURSERIES.—The effect which a highly elevated, airy situation has in imparting a robust, cold-resisting condition to trees and shrubs is usually so well understood as to scarcely need being repeated. Yet the last two winters have given such opportunities for confirming the views already entertained on the subject, and which moreover is of such importance that it is well to draw the attention of those engaged in planting to it. Where evergreen trees or shrubs at all liable to be affected by the severest winters that from time to time occur are to be now seen in the best condition, is where they have been grown more than ordinarily high and dry. And as a matter of course the opposite exists where the situation is warm and sheltered, so as to induce luxuriant growth. Not only have the leaves, under such circumstances, but also the shoots suffered correspondingly more, often to such an extent as to be all but or quite destroyed. Of the many places that have lately come under our notice there are none that more fully bear out this view than Messrs. CUTBUSH'S Barnet Nursery by the condition of the Hollies and other evergreens growing therein, which collectively may be said to scarcely show a trace of the two long, scathing winters passed through. This nursery is in one of the highest—if not the highest—most exposed situations in the neighbourhood of London, and has long been noted for the quantities and excellent condition of the Hollies it contains, including the best green and variegated kinds, and which are now full of healthy bright foliage borne on wood sufficiently strong, but not too much so, to show their favourable condition for removal. Such portion of the stock as was transplanted early last autumn, among which are some thousands of the best gold and silver varieties, from 5 to 7 feet high, show no further signs of removal than casting a few leaves from their strongest shoots, and are pushing their buds strongly.

—— EFFECTS OF THE WINTER'S FROST ON TREES AND SHRUBS IN THE EAST OF BERWICKSHIRE.—Mr. C. STUART, M.D., Hillside Cottage, Chirnside, writes to the *Scotsman* of May 7:—"Now that the country is beginning to assume the appearance of spring, the blasted appearance of the woods must strike every observer. The Scotch Firs, Spruces, and Silver Firs are browned, especially on their sides exposed to the weather, to an extent never remembered by the oldest men; and what with the withered vegetation on the hedge banks, the complete destruction of the hardy Whin, and, until within the last few days, the absence of all green to relieve the eye, the country presents a sombre aspect, quite unusual at this season. Except in sheltered nooks, the common Primrose is not generally in flower; and the Kingcups are only just opening. In low-lying situations, where the temperature was many degrees below zero, the Oaks are killed outright. For three years in succession it has been observed that large limbs of these trees were in a dead condition. But it was only last year that a few watery shoots, with enlarged leaves, showed to what an extent some of them had been damaged. The past winter seems to have finished many of these. Last week I visited a place on the Teviot, where the temperature closely resembled our low readings of the thermometer in Berwickshire. Several of the Oaks were completely dead: a few whip-like shoots from the trunk constituted all the growth made last year. These shoots are now entirely killed by last winter's frost. Great sheets of bark, completely decayed, were falling from one of these trees on the lawn, plainly indicating that the tree was entirely dead. Two very old Spanish Chestnuts were also killed, and all the tenderer shrubs, fruit trees, and Conifers. In low-lying situations, especially in the course of the rivers Blackadder and Whitadder, in Berwickshire, a similar destruction among trees, shrubs, &c., has taken place. 198 dead or fatally damaged fruit trees were dug up out of one garden, while not a Holly remains alive on the same estate. Beautiful specimens of the rarer Coniferæ, planted with great judgment and taste, are either killed outright or fatally damaged; while the fine old Ivy that festooned many of the older trees is lifeless. Many years must elapse before the effects of the weather on vegetation for the last three seasons can be rectified. Owing to the wetness of the first of these years the woods never ripened. In consequence it was ill-prepared to endure the extreme temperatures it was subjected to. When the frost was most severe the trees were heard to rend both in their trunks and branches from the expansion of the moisture they contained. This was heard both in Northumberland and Berwickshire by credible witnesses, who can point out the trees, principally Limes and Elms. These persons describe the sounds heard as most peculiar, something like a sharp report. A very painful lesson has been given to all persons engaged in beautifying their policies with the tenderer shrubs, who will, I should suppose, be very chary in future in planting any but the hardiest varieties, especially in low situations, with the prospect of other Arctic winters."

—— BELLIS SYLVESTRIS. — Probably this pretty Daisy is now to be met with in but few English gardens, nevertheless it is a desirable plant. It has stout scapes 9 inches or a foot in length, crowned by flower-heads like those of the common Daisy (B. perennis) exaggerated in size. In the herbaceous

ground at Kew some tufts are now flowering freely. It is a native of Portugal, where it grows chiefly in woods and under shady hedges.

—— Mr. W. G. Smith, who is special artist and engraver to the Cambrian Archæological Association, and one of the engravers to the Historical and Archæological Association of Ireland, was last week appointed draughtsman to the British Archæological Association.

—— Plums Under Peaches.—There are few fruits more acceptable in a dessert than Plums, especially when these are to be had from trees grown under glass, and consequently earlier than obtainable from out-of-doors. The largest Peach-house at Lambton, 90 feet long, a lean-to facing south, with rafters some 18 feet long, and a high back wall, has a row of trees planted in front in the ordinary way; these are confined to a trellis that comes up under the roof, about 10 feet from the front. On that portion of the border next the path which runs on the back of the house is grown a row of large bush-shaped Plums; these are not in reality overhung by the Peaches so as to keep the light from them, through the fact of the upper portion of the roof not being covered with the Peaches, but the Plums cannot get much sun except what comes to them through the branches of the Peaches, yet each season they have borne good crops, except last year, when, following such a sunless summer as 1879, there was comparatively little bloom on them. The kinds grown are Jefferson, Coe's Golden Drop, Yellow Gage, Kirke's, Prince of Wales, Prince Engelbert, and Reine Claude de Bavay. The upper part of the back wall is covered with standard Peaches and Nectarines, the base is planted with Camellias and Roses. In a narrow house it would be useless attempting so much, as what was gained in one place would be lost in another, but where there is room it is a question if so much could be grown under any other arrangement, as the Plums do not show the want of full exposure to the sun. The Peaches in this house, as in the others, have their shoots kept far apart. With the trees confined to less room there is one advantage—that of more variety, giving a supply for a longer season than if they were larger and fewer.

—— Salicylic Acid in Sugar-making.—Recent advices from British Guiana state that in consequence of reductions in the price of salicylic acid the Sugar planters have been enabled to use it largely, and with great advantage, in the manufacture of sugar. Salicylic acid has long been known to possess high antiseptic qualities, but hitherto its price has prevented its general use. Its power of destroying ferments is astonishing, and cane-juice may be kept by it for days perfectly sweet which would, in its natural state, turn acid in a couple of hours. It enables much of the lime hitherto used to be dispensed with, and this allows of the bright yellow colour of the sugar being retained.

—— Royal National Tulip Society.—The next exhibition of this Society is announced to be held at the Manchester Botanical Garden on June 8—the Wednesday of the Whitsun week—where it will be held in connection with the Great Horticultural Show of the Royal Botanical and Horticultural Society. The schedule of prizes is now ready, and may be had on application to the Hon. Treasurer and Secretary, S. Barlow, Esq., Stakehill House, Castleton, near Manchester. The schedule extends to nine classes for rectified Tulips, and four classes for breeders; and Certificates of Merit will be awarded to rectified seedlings of any class which may be considered worthy of that distinction.

—— Hard-wooded Heaths at the Barnet Nurseries.—Fits and starts in the fashion of flowers and plants, as in other things, there have been, and no doubt ever will be; but beauty and delicacy of form and colour in any particular plant, or family of plants, remains the same, whether the plants in question happen to be fashionable or not. Those who find fault with the work of the florists in having changed the form of many of the flowers they have taken in hand so as to scarcely leave their parentage recognisable, cannot raise this objection so far as regards the Cape Heaths. The handiwork of the hybridiser is well marked in the beautiful varieties now existent of this numerous family, so far as giving unlimited variety and delicacy in colour and shade, but little, if anything, that is objectionable in change of form. There are few flowers equal to those of many varieties of Heath for the rough usage they will bear, as also for the delicacy and variety of the colours they afford. In this age of bouquets and coat-flowers, when all classes, from prince to plebeian, wear their button-holes, it seems strange that the bright coloured, non-sticky flowered kinds, are not more generally used for coat-flowers. For the many ways ladies now wear flowers there are few things that at once possess so many properties to fit them for the purpose as Heaths. Their presence in greenhouses, where they once were a principal feature, is missed, giving as they did relief to the limited variety of things often made to suffice in these structures. Messrs. Cutbush still cultivate a good collection, representing all the best and most distinct section of the family, including the finest varieties such as aristata, Cavendishiana, candidissima, Candolleana, cerinthoides, coronata, depressa, Devoniana, eximia superba, Exquisite, ferruginea, Fairlieana, Hartnelli, Holfordii, Irbyana, Jacksoni, Lindleyana, Marnockiana, Massoni major, obbata, Parmentieriana rosea, Shannoni, Victoria, retorta major, the best of the tricolors, ventricosas, and many others, in the shape of half and quarter specimens, in such faultless condition for health and vigour as would gladden the eyes of the old growers, who used to delight in the cultivation of these neglected but beautiful plants.

—— Wheat Culture under the Electric Light.—We would call attention to the mention in another column of the sample of Wheat grown by Mr. Buchanan in Dr. Siemen's garden near Tunbridge Wells. Of course, cultivation under the electric light is at present a mere experiment, and a costly one; but it is impossible to overrate the future possibilities that are opened up by these experiments. It may be long before any directly profitable results will be obtained, but the practical results already demonstrated at least suggest the desirability of continuous experiments of a more strictly comparative nature being carried out.

—— Arthropodium cirrhatum.—This is precisely one of the plants which can be safely recommended to the amateur who possesses but little horticultural skill, and can find but little time to attend to his greenhouse. It is a native of New Zealand, and will thrive well in a cool conservatory. The arching Iris-like leaves and panicles of white flowers make a combination at once graceful and striking. In the winter garden and elsewhere at Kew plants of this species are now in flower. An illustration appeared in our columns for 1874, vol. i., p. 661.

—— The International Vine-louse Convention.—The Continental gardening journals are constantly endeavouring to expose the absurd restrictions on the trade in plants in order to prevent the spread of the Vine-louse. It would appear that the Customs' officers on the Austrian frontier are left to their several interpretations of the conditions of the Convention, hence what is regarded as illegal at one station is passed at another. One firm writes to the effect that, after having made numerous consignments from Prussia to Austria, in which they carefully complied with all the prescribed conditions, even to washing all the earth off the roots, their packages were all at once returned, with the intimation that each package must be accompanied by a special permit from the Minister of Agriculture in Vienna, or they would not be forwarded to their destinations. Another firm, in Erfurt, sent half-a-dozen Hyacinth glasses and the same number of bulbs to an amateur in Italy: the person to whom they were consigned received the glasses all right, but not the bulbs, because, as it afterwards came out, they had been seized on the frontier on account of the danger of their being infested with the Vine-louse. A still more ludicrous case is related of the Italian officials, who stopped a parcel of Latania seeds, declaring that they were not seeds, but bulbs, and as bulbs grow, and the Vine-louse lives in the ground, their importation must be forbidden. Some weeks after, this sapient decision was communicated to the consignors, who had imagined their Palm seeds germinating in Italy.

—— Chlorophyll.—We have previously alluded, on more than one occasion, to M. Pringsheim's researches on the formation and decomposition of the green colouring matter of plants, as observed by concentrating the solar rays on the growing plant by means of a lens, and observing the effects under the microscope. We are now in a position to give a brief summary of the author's researches, for which we are indebted to the distinguished author himself. The author first of all alludes to his discovery in chlorophyll of an oleaginous, crystallisable substance, which he calls "hypochlorine," and which is a powerful solvent of chlorophyll. This hypochlorine is always present in the green parts of plants. It is probably, therefore, an immediate product of the decomposition of carbonic acid, and is the only one that phanerogamic plants in the course of their germination cannot form without the aid of light. As to chlorophyll itself, it is not decomposed during the assimilation of carbon, and therefore cannot be considered chemically as the substance from which the hydrocarbons of plants are derived. In the living cell, exposed to light in the manner above indicated, the chlorophyll becomes decomposed under the eye of the observer, but its decomposition is independent of the absorption, and even of the presence of carbonic acid. It is effected by the absorption of oxygen in the act of respiration, which, like that of animals, is continuous day and night. Pringsheim's observations have shown that the absorption of oxygen by the living green cell increases in proportion to the intensity of the light, and especially to that of the chemical rays of the spectrum. But this process of respiration, augmenting more and more in proportion to the light, ends by becoming detrimental, by burning up the combustible elements of the cell, and by destroying, in the first place, the hypochlorine, which serves to support respiration. Light, then, which is so essential within certain limits becomes injurious in excess, as it is when the energy of oxidation (respiration) becomes greater than that of the assimilation of carbon (nutrition). Chlorophyll balances these two functions by absorbing the chemical rays of light, it checks the respiratory process, and it is owing to the protective screen furnished by the chlorophyll that even in full sunlight the assimilation of carbon exceeds the oxidation of the carbon compounds. Thus, contrary to the generally held impression, chlorophyll has no direct relation to the decomposition of carbonic acid, but plays rather the part of a regulator of respiration. The chlorophyll corpuscles are porous, sponge-like bodies, whose pores are filled with oily matter, in which the green pigment is dissolved, and which generally contains the crystallisable substance hypochlorine, the mother substances of the hydrocarbons, and which is protected from too rapid oxidation by the green colouring matter. Deprived of this protection the hypochlorine is rapidly destroyed by excess of light, always provided oxygen be present. If oxygen be absent, light, even when concentrated, has no effect either on chlorophyll or on hypochlorine.

—— The Weather.—General remarks on the weather during the week ending May 9, issued by the Meteorological Office, London:—The weather has been, on the whole, fine and bright; some rain occurred in the west and north during the earlier part of the period, and in the north-west of England and west of Scotland the fall was heavy. The temperature has been equal to the mean for the period in Ireland, but again a little below it in all other parts of the kingdom. The highest of the minima occurred generally on the 7th, when the thermometer rose to 71° at Strathfield Turgiss, to 70° at Southampton, and to 68° or 69° at several other southern and central stations as well as in the west of Ireland. The temperature was lowest during the first few days, and at Hillington a shade reading as low as 26° was recorded early on the 4th; at other south and central stations the minima varied from 27° to 32°. On the grass the readings were, of course, much lower. The rainfall was more than the mean in "Scotland, W.," and "England, N.W.," and equal to it in "Ireland, N.;" but in all other districts the fall was less. Bright sunshine was much more prevalent than of late, the percentage ranging from 60 in "Scotland, W.," to 49 in "England, N.E.," and "England, E." Depressions observed:—During the first few days of the period a rather extensive but not deep depression was passing slowly from west to east across Scotland, and some shallow subsidiary disturbances over England; these caused fresh or strong winds from between west and south. By the evening of the 7th, however, these depressions had disappeared, and from that time until the close of the period the wind was anti-cyclonic, being moderate from the north-west and north in the east, from east in the south, and from south in the west.

# Home Correspondence.

**Crystal Palace Company's School of Gardening.**—The communication signed "Practice" in your journal of last week concerning the Crystal Palace School of Gardening seems to me to call for a few remarks—some explanatory, and some in correction of misconceptions your correspondent appears to entertain. One may speculate, indeed, whether your correspondent is himself in the profession, or only an astute critic, since he seems to be under the influence of the curious popular fallacy which so often confuses the profession of landscape gardening with the work of the practical gardener—a distinction analogous in some degree to that of the architect and the builder. One division of the school is intended to provide a training for gentlemen, who, having already received a liberal education, purpose making landscape gardening their profession; the other is intended for the training of young men as gardeners. "Practice" confuses the curriculum set forth for the landscape gardener's training with that set forth for the practical gardeners. His arguments would have some force if the tuition proposed for the landscape gardening division were offered to students of the practical gardening division. Much thought has been given to the curriculum set forth for the landscape gardening division, which being theoretical as well as practical, and requiring more knowledge of the applied sciences, can be more easily defined, and we maintain that a thorough knowledge of most of the subjects, and the understanding of the principles of the others enumerated, should be possessed by the landscape gardener. There has as yet been no opportunity presented, but a great deal can be learned in a systematic two years' course. To the landscape gardener a knowledge of surveying, drawing, office work, designing and superintending earthworks and constructional works, practical work in the laying out of grounds and estates, together with the cultivation of artistic taste, is more essential than the knowledge of how best to strike a cutting, though, as will be seen by the prospectus, practical botany, and a knowledge of plants and their growth and grouping is by no means neglected. The Crystal Palace School endeavours to provide a practical training in a systematic manner, and not in the haphazard and tedious way which has hitherto prevailed. "Practice" refers to the drainage, to the constructional works, and to the planting of the Crystal Palace. As to the first-named arrangement there he can know nothing; with regard to the second, though there are some failures, yet there is plenty of good work to serve as text for many a lecture; as to the last, he only gives his opinion as to the planting, happily not shared by many. Besides sweeping, which seems, according to "Practice," to be the permanent employment of the Crystal Palace gardeners, and which is, perhaps, most conspicuous to visitors, there is the work necessary to the maintenance of such a great place—work of which the ordinary public have little opportunity of judging. The Crystal Palace Company is now making some experimental houses, and though the cultivation of vegetables and fruit is not the strong point of the Crystal Palace training, yet it must have escaped his notice that, independently of special arrangements already available, or to be made, a provision exists and is defined in the prospectus for the "reception of students in other known gardens, nurseries, &c., in pursuance of the particular branch of the profession or trade of which they are seeking special experience," and forms part of our purpose. There are one or two words as to the premiums. The £110 required is for the two years' course in the first division (landscape gardening), and is not high for those for whom this division is intended. The students in practical gardening only pay £30 a-year, of which sum they receive the greater part back as wages. *Edward Milner.*

—— The prospectus put forth by the Company in laying their scheme before those interested in such matters certainly loses nothing for want of being sufficiently taking. The occupation of a landscape gardener is essentially pleasurable, the associations connected with it are of a nature calculated to elevate the mind. If a young man could by a simple course of instruction, such as here held out, be fully qualified for the profession, so as at once to be capable of stepping into a good practice, with a still further certainty that he could secure the practice, and with no uncertainty of misfitting and without the disagreeable hope deferred process of waiting, why then landscape gardeners enough would soon be manufactured to convert the whole world, including the Russian steppes and the African deserts, into one universal Paradise. But there are more things than one to be taken into account, that have an important bearing on the subject. The first essential is that the raw material to be worked upon is of the right stamp, without which all that can be done will turn out useless. It is not every one who feels inclined or would like to be a landscape gardener that possesses the natural ability to become one in a sense that is worth the name, any more than it is possible for every one to become a great painter. The man who has the ability to mould, to arrange Nature's objects in a way to make the landscape fair, has at all events as much of high art within him as he who depicts it on canvas. And it no more follows that because an individual gives his time and attention to a study of the pursuit that he will ever possess the requisite ability to even reach mediocrity, than it does that the man who grinds the painter's pigments must needs be able to fill a picture with them. And even where natural ability is present in the individual the landscape gardener's art can only be learnt by a conjoint study of Nature in her many and varied aspects, by close observance and comparison of the mature works of those who in the past have excelled, and, what is of equal importance, by actually participating in carrying out like work during its progress. There seems to be little of all this within the reach of the students in the scheme under notice, especially in the all-important matter of practice. Admitted that the grounds at the Crystal Palace are laid out in a way best suited to the particular but exceptional purpose for which they are required, the same may be said of the arrangement of the squares on a draughtboard, yet the latter has as much pretension to represent the work of the skilful inlayer of wood as the former has to be copied by the aspirant to landscape gardening. This is not in any way intended to disparage the grounds at Sydenham; there, as already intimated, the object was to meet the requirements of the sight-seeing public—not by any means to be followed generally. The landscape gardeners who have made their mark on the fair face of this country have hitherto sprung from two sources—those who by their natural liking for and study of rural scenery have become capable and may be said to have drifted into the pursuit; many have sprung from amongst those who in early life have been engaged as gardeners, and whose abilities and opportunities have gradually led them to take to the profession. It is very doubtful if from either of these sources there have been any who ever in practice accomplished much who at the time of their first connection with gardening contemplated adopting the landscape profession. It is well that in the prospectus the necessity for an acquaintance with practical gardening is admitted. The want of this, so far as regards the requirements of the great numbers of trees and shrubs that the landscape gardener has to deal with, by the majority of those who have not begun life as gardeners, is the rock upon which not a little of their work is wrecked. The curriculum further includes "floriculture, outdoor work (whatever that may mean), greenhouse work, study of plants and their cultivation, land-surveying, levelling, practical field-work (this, too, is rather hazy), office-work, drawing, plotting, surveys, levels, drawing out plans of estates and gardens from dimensions, constructional works, earthworks, drainage, roads, lakes, bridges, hothouses, designs of various forms and requirements for heating; practical constructional works, order of proceeding with and best time; designing, sites and approaches; formation and planting, plants and planting, woodcraft and forestry, superintending, &c.; besides attending lectures on art, architecture, engineering, and agriculture." Even if the opportunity for practically carrying out such work existed, the idea of its being put into the heads of the students in two years is enough to take away one's breath; at all events, they cannot find fault at not having enough offered for their money. In a country like this, where people are essentially fond of gardening, with the large and ever-increasing population, there are consequently great numbers of young men with more education than means, and who naturally feel anxious to adopt some profession that will place them in a respectable position, and bring in the wherewithal to live. Amongst these it is not unlikely that many will be attracted by the programme laid before them. Verily, if ever a "royal road" to learning is to be discovered this must be it, and let us hope they will realise their expectations; but most assuredly it is not by such means that those who have ever been able to get beyond the performance of fashioning a tea garden have got their learning. And how stand the other divisions of the prospectus; that is, the practical training of young men for professional gardeners and nurserymen? If the term practical training has any meaning, so far as fitting young men to become gardeners in private places, it would be a difficult matter to see how this is to be attained in such an establishment as the Crystal Palace, where the field of practice does not include more than a very limited portion of what is wanted in a private garden, and where there is not an atom of opportunity for teaching by practice, or of proving how much or how little has already been taught the individuals who aim at becoming gardeners, especially as regards the things which are far the most important they should know to make them fit for the description of places they are to occupy. It has hitherto been thought that the best school in which to learn was the place where such work as is desired to be learnt was actually done. How a knowledge of the cultivation of the fruits and vegetables wanted to meet the demands of a gentleman's table to be acquired? and this, it may be observed, is looked upon by far the greater number of employers as much more important than the decorative department; and, so far as concerns the latter, either out-of-doors or under glass, the opportunities in any good private garden are equal to those present in any public establishment. There is no place equal to a well-managed private garden, of which there are plenty in any part of the country, where a young man has such an opportunity of learning that which will best fit him to occupy a like situation, and without paying £30 a year for it. As to the course which it is advisable to follow, by those who intend to become nurserymen, there is not much doubt but they will be able to see their way. Yet here again most people would suppose that a well appointed nursery was the best school to learn in, unless it comes to be discovered that those engaged in the pursuit have hitherto been on the wrong track, and that some sort of change would be an advantage. The Sydenham establishment was never the place to make into a School of Horticulture: and it is somewhat too late in the day to start it, when the garden is cut down so as not to be half as well done as it used to be. It may suit the directors to get their work done for little, but how about the workers, whose disappointment seems more than likely? This is not my view alone, but that of plenty more well able to judge. Nothing is more wanted in this country than a School of Horticulture—the advantages of an establishment of such a description cannot fail to be apparent to any one who has given a thought to the subject; but such a school to be of any use needs to be thoroughly representative of all it professes to teach—a finishing establishment in the fullest sense, not a place for elementary instruction. Will the Royal Horticultural Society never be in a position to undertake this so far as to meet the requirements of practical horticulture? Beyond this it is not desirable to go, for the simple reason that all attempted should be accomplished. If every town were to have its Sydenham grounds, and every parish a tea-garden, then it would be well enough to train men to do such work; but Sydenham is not the place to school gardeners, either landscape or ordinary; neither is it the place to confer the qualification stamp on the schooling they already have had. *O. P.*

**Pyrus Malus floribunda.**—This is one of the most beautiful shrubs that adorns the shrubbery border at this season. There are, however, certain positions where the plant is seen to best advantage. It is of irregular habit, and one of its loose branches arrayed with hundreds of its showy pink blossoms, and associated with or overhanging a mass of green, is as handsome a sight as could well be desired. *Cultivator.*

**Blue Wood Anemone.**—It would be interesting to know whether the blue Wood Anemone found near Tunbridge is the same as has been sold for several years by Mr. Ware and other nurserymen as a precious gem of horticulture. It increases slowly and is said to be an accidental variety of the Wood Anemone found by Mr. Robinson in a wood in Kent. I enclose a flower for identification. A flower of the same variety has just been sent to me by a lady living near Abergele, who found it near Llanrost. She tells me that, though it has flowered in her garden for several years, it has never increased. *C. Wolley Dod. Edge Hall, Malpas, May 4.* [We believe the specimen sent to be identical with the wild one found near Tunbridge. In Hooker's *Students' Flora* the flowers of A. nemorosa are described as rarely purple. In Grindon's *British and Garden Botany* the same variety is mentioned. Eds.]

**Chamærops Fortunei.**—A plant of this 20 feet high, and furnished to the ground, with large fan-shaped leaves, is now an object of great beauty in the conservatory at Holkham. It is in bloom, having eight panicles of a beautiful golden-yellow, each a yard or more in length; and standing as it does in a carpet of moss and small Ferns, and apart from other large plants, its beauty can at once be seen. *A. B.*

**Alexandra Park, Manchester.**—Any one who is interested in spring bedding with bulbs may have a treat by visiting the above park, where at the present moment there are in bloom some 20,000 Tulips of all shades, varying from pure white to deep crimson, violet, scarlet, canary-yellow, white tinged with cerise, orange-yellow, &c. If the visitor entering the gateway proceeds up the terrace walk as far as the clock and takes up a position on the steps the vista of beds on either side will present to his view a sight almost indescribable. The colours in each of the beds are blended with those of the beds nearest to it. On each side are fourteen circular beds containing each 200 to 250 bulbs which consist of eight or ten of the leading

arieties, viz., Chrysolora, deep golden-yellow; Cottage Maid, rose and white; Crimson King, deep ed; Potter, white; Rosa Mundi, delicate rose; Dussart, vermilion-scarlet (this is by far the best edding Tulip both in colour, substance of petal, and n its power of standing longer than any other variety); Van der Helst, red and white (which is also a very fine variety); Le Cœur de France, red and yellow (an excellent variety). The whole of the Tulips in the twenty-eight beds are uniform in height, and are now in bloom at the same time, and make such a picture when looked at from the terrace that it is worth a journey of miles for any one interested in spring bedding. Taking the semicircular walk on the left from the bottom of the terrace you see forty-four beds beginning with a small one and a larger one of various shapes and continuing this order to the end; these contain 350 bulbs in the larger and 150 in the smaller beds, the colours being harmoniously blended and forming a charming line from end to end. Space will not allow a detailed description of each bed, but among the most prominent varieties are Keizer Kroon, golden-yellow, striped with red; Dussart holds the chief place, and Potter also is prominent; Le Cœur de France, Cottage Maid, White Pottebakker, Scarlet Van Thol, Purple Crown, a double of a rich crimson colour, very effective; Standard Royal, white striped with red; Proserpine, rich silky rose, an excellent Tulip for beds, but rather expensive for general use; Molière, purple-lilac; and many other good varieties. Leaving the charming scene and strolling up to the houses, we see some 100,000 of the finest bedding plants one could wish to see, and can judge of the treat the public may expect in a few weeks' time, when they are planted out in the terrace beds and in the other beds in succession to the Tulips. There are thousands of each variety of Pelargonium, among which prominence may be given to the following varieties:—Mrs. Pollock, Happy Thought, Waltham Seedling, Violet Hill, Miss Kingsbury, May Queen, Lord Stamford, Cleopatra, Vesuvius, Mrs. Fenn, Crystal Palace, Beauty of Calderdale, &c.; there are also Calceolarias of the variety Golden Gem, Centaurea candidissima, Iresine, Lobelias, Violas, &c. With a propitious season, there is every reason to expect a grand display throughout the summer and autumn months for those who may take the trouble to visit this popular park. The trees and shrubs have not been exempt from the destructive influence of the severe winter, and many have been destroyed; but although much damage has been done, by replanting,

Fig. 116.—Pyramid Pear Tree at Chiswick: from a photograph. (see p. 632.)

the indefatigable superintendent, Mr. Manderson, has again brought his excellent taste into requisition to make good all deficiencies; and with the fresh foliage of spring the park is now in excellent condition. *T.*

Phlox verna.—Whoever asserts that there is nothing in Nature to represent our tawdry, miffy carpet bedding, should see two whole beds of this little gem in full flower with us at present. True, it is not cut up into tile-like patterns, but as a dense carpet and a glowing mass of colour it certainly holds its own with any embossed arrangement that can possibly be made artificially. Perhaps, however, it has this advantage—that it comes into flower at a season when its rivals are few out-of-doors, and this fact alone should commend it to the notice of those who have not hitherto possessed it. *Cultivator.*

Hand Garden Cultivator is the title of a new garden implement made and weekly advertised by Follows & Bate, which took my eye and fancy, so I ordered one and I must say that I am delighted with the machine as a hoe, for a quick, active youth can go over an incredible breadth in a day. We all know what a job it is to keep pace with the work in our gardens during the summer months, and none of us are overstocked with hands, so that in introducing any implement like the present, whereby one man can do the work of three, the inventor deserves credit. When Sigma sent out his spokeshave hoes, some twenty years ago, I quite honoured him for the invention, but now this wheel machine leaves the weed shaver far behind. The continued dry weather has been all on the side of keeping the weeds under, but come rain or come sunshine, I shall now be more than a match for them in time to come. I may mention that the machine in question drills and sows, but of this I cannot yet speak positively, farther than that I don't see why it should not answer. *J. Rust, Eridge Castle.*

Erythronium purpureum.—This beautiful Dog's-tooth Violet, obtained last year from Mr. Ware, and planted out in a Lily bed of nearly pure peat, is now in flower in my garden. It is described as bearing several flowers on a stalk, but mine bears a single, large, elegant flower of very pale rose colour on a stalk about 6 inches high. The leaves, two in number, are glossy black, with irregular bright green stripes. The plant is distinct in appearance from the common Dog's-tooth Violet, as well as from E. giganteum. *C. Wolley Dod, Edge Hall, Malpas, May 8.*

Wallflowers.—In various quarters complaints are rife respecting the high death rate amongst these, and it is said that where there are only hundreds there ought to be thousands. This for various reasons is very much to be regretted, for not only is it the sweetest of spring flowers, but it belongs to that class of popular flowers which always command a ready sale in the market, and is the means of brightening and cheering up to a certain extent thousands of homes of the poorer class of people in our large cities and towns, by affording such a pleasant sniff of the country as they, in too many instances, rarely get. To the aviculturists it is also a great loss, for where there are strong stocks of bees and plenty of Wallflowers, May swarms are almost a certainty; still of the bee-keeper it may be said, that for this season at least, his course runs almost parallel with that of the beggar—although he may have lost his Wallflowers there is an abundance of fruit tree blossoms. I will not pretend to account for all the losses, but at the same time I really believe that nine-tenths may be traced to two things, viz., sowing the seed too early, and in growing the plants afterwards in too rich a soil. To add force to this belief, I will merely say that we annually plant out in beds and borders from 3000 to 4000, and in looking over the entire stock this day, I have not found more than a dozen dead ones. Our *modus operandi* consists of sowing the seed about the middle of May, and in pricking out the young plants when large enough in rows 9 inches apart each way in the poorest soil we have; here they remain till the end of October, when they are transplanted to where we wish them to flower. *J. Horsefield, Heytesbury.*

Who are our Teachers?—Who indeed! Let me call attention to a sample of teaching in one of your garden contemporaries (*Garden*, p. 400), where a writer who signs himself "Peregrine" discusses Orchids, Camellias, Roses, Bugs, and Vines, and concludes with ancient Britons and (his idea of) their mode of life. This teacher in the same article compares the editor of another paper to a "wiseacre," and terms a third a "scientific Jinkins." He then says:—"The balance of life was evenly enough maintained when the ancient Briton carried his coracle on his back and lived on the flesh of the bos primogenus (*sic*), wild deer, and boars," &c., "but when his descendants took to growing corn," &c. Now, you will observe that this self-appointed teacher, who abuses his betters, begins by putting a small "b" to "bos," and makes two errors in spelling the word primigenius. Our teacher calls the ancient wild bull "primogenus," and tells us the "ancient Britons" "lived" on it. This they never did, for Bos primigenius was a very rare animal in ancient British times. The ox the ancient Britons dined off was B. longifrons. Our teacher then tells us the ancient Britons lived on "boars"! This is ridiculously wrong; they had the domestic hog for dinner. What the teacher means by a "wild deer," I do not know—perhaps he means the reindeer, or the Irish elk. He then teaches his readers that the "descendants" of the ancient Britons "took to growing corn"—clearly not knowing that the ancient Britons themselves had farms, flocks, and herds, and knew perfectly well how to grow flax and corn. Of course I, like "Peregrine," refer to the Britons who carried their coracles on their backs. When ignorant persons set themselves up as teachers of those better instructed than themselves, it is clearly the duty of some one to show who and what such writers are. *W. G. Smith.* [Great charity should be exercised in the matter of printers' errors so called. Eds.]

Double Ladies' Smock.—Cardamine pratensis is an interesting plant, both from its peculiar power of producing young plants on the edges of the leaves when detached and inserted in very wet sand, and from the frequency with which it bears double flowers in a wild state. I have found it doing so in many other places, and about 4 miles from Malpas there is a warm wet meadow sheltered by woods, where it grows in great abundance, and nearly all the flowers are double. In this form it makes a fine garden plant for a moist, retentive soil, almost rivalling the double white Rocket, for the tendency to double in this meadow is confined to the light-coloured variety, the darker flowers being single. The doubling of the flowers is remarkable, being produced by three or four flowers growing inside one another, in the form of the hose-in-hose Polyanthus. *C. Wolley Dod, Edge Hall, Malpas, May 9.*

Royal Horticultural Society's Committees' Meetings—All conversant with this matter will agree that it is inconvenient to have these meetings in conjunction with the great show of the Society as hitherto, and it would appear to be a good thing for the new plants, &c., that the opening day of the grand show does not fall on an ordinary committee day. A "rush" has generally been made to get through the business of the committees, the one thought uppermost in the minds of the gentlemen present being to see the show (and quite natural, too!) so that perhaps the subjects brought before them have (unintentionally doubtless) not had that careful attention which they would have received on a quieter occasion. One cannot, therefore, agree with the remark of your correspondent "D.," that it becomes worthy of consideration whether the committees should not sit to suit the convenience of many coming from a distance. They sit only about a week previous to the great event, and then again a short period after it. So that should there be a glut of novelties they could be brought to these meetings, their fame would not be impaired thereby. At any rate do not let us be hard! Let the great day itself be one on which the members of the committees, so generally hard-worked, may feel that on that occasion, at least, they are free. *X.* [It is greatly to be desired that the Floral Committee be divided into different sections—one for florists' flowers, one for new plants, one for Orchids, &c. Eds.]

School Gardening.—The advocates of "school gardening," such as "T. W.," seem to entertain the opinion that it is the duty of the State to give all children a technical education. That is the outcome of their arguments, more or less. If gardening and agriculture, or the elements of these professions, should be taught in our schools, then why not the elements of all other trades and vocations—carpentering, weaving, mining, engineering, and all others?—for, after all, only a very small portion of the millions of children who attend elementary schools become either gardeners or farm-labourers. Why now in any village school in the most rural of districts not one-half of the boys will become farm-servants; and why, for the sake of the minority, should the majority have to learn work that may be of little or no service to them in after-life? This fact is fully recognised in our large pauper and specially industrial schools, where all sorts of trades are taught; and I must hold that practical culture in any technical work can only be given in such schools, and that in Board, National, or other elementary schools, only theory can be taught, and little or no practice. Only a revolution in our elementary school system would enable such enormous demands as are made to be satisfied—in fact, the conversion of every elementary school into an industrial school. Close by here is one of these great institutions—the Middlesex Industrial School—where some 800 boys are maintained, educated, and industrially trained in such various things as darning stockings, cooking, washing, baking, shoemaking tailoring, painting, bricklaying, carpentering, gardening, farming, sailoring, bandsmen, and other vocations, thus reducing the wishes of enthusiasts to practice. None of this is possible in our ordinary day-schools, and any reforms in the direction of teaching trades, or giving technical training, can only be of a theoretical kind. I have often felt—and I think the matter will force itself upon the notice of our educational authorities by-and-bye—that poor but honest children are placed at a great disadvantage as compared with the children who for their misdeeds get sent to industrial schools. The former are left to shift for themselves, and get on in life as best they can; the latter are so favoured in their teaching and skilled training as to actually find special encouragement given them to do wrong, and thus become qualified to receive the training of which children who have "kept on the square" have none of. "T. W." has somewhat misread my views on this matter, as previously expressed. I think that I then said I regarded drawing and music as more useful than what I might term dead history; but from a gardening aspect I decidedly favour, in what are termed extra or science subjects, that natural history, vegetable physiology, and elementary chemistry, should be taught as far as possible, as these things relate more or less to matters of the first moment to all, and especially so to future gardeners. I cannot accept the high compliment paid to the clergy in relation to education. If they were so generally the disinterested friends of it, they would not so universally be the chief antagonists of School Boards. Whatever they may claim for the past we must put this and that together. Still farther, the greatest advances in a liberal spirit made in education have come from a totally different source. I still prefer to place more faith in a liberal exponent of educational views like the present Vice-President of the Department than I should in the "parson, the squire, and the farmer," all the representatives of the greatest obstruction to everything liberal and progressive. In writing of special subjects, which "T. W." terms class subjects, I meant by them what are practically optional subjects other than reading, writing, and arithmetic, which are, and properly, compulsory. *A. D.*

Garden Forget-me-nots.—On p. 600 is a notice of Myosotis dissitiflora. This plant, which is said to be found wild amongst the Alps, near the Vogelberg, and to be synonymous with M. montana[no], is quite hardy in English winters, but its flowers are so early and so tender as to be invariably spoilt by spring frosts on this cold soil, and after several years' trials in various situations I gave up growing it several years ago. Amongst many names and forms of garden Forget-me-nots I call attention to two especially good perennial varieties, the one bought from Messrs. Backhouse as M. rupicola, the other given me as M. palustris semperflorens. M. rupicola is undoubtedly the M. alpestris of Sowerby, and it is generally said that Messrs. Backhouse obtain their plants from Teesdale. On dry exposed limestone rockeries it is a lovely flower, but seedlings from it show an evident tendency to degenerate in the direction of M. sylvatica, a native plant common in woods near Matlock and other parts of the Northern Counties. Mr. Bentham makes the two species into one, and as I know the subject has been discussed by good botanists I will give no further opinion about it; but I wish to call attention to the ambiguous use of the name M. alpestris, which is used by Sowerby and by some dealers in alpines to designate the plant sold by Backhouse, Ware, and others as M. rupicola, but which in ordinary seed and plant catalogues denotes the common garden Forget-me-not generally treated as a spring-flowering annual. I observe that Messrs. Frœbel, of Zurich, sell the common garden variety as M. alpestris at 2 francs per 100, but amongst their alpines offer both M. alpestris vera and M. rupicola at twenty times that price. I hope to have compared these two by this time next year. On the other hand, I can see no difference between the common garden Forget-me-not and the native M. sylvatica. I enclose flowers of what is commonly grown as M. alpestris and of M. sylvatica, gathered wild in Staffordshire near Dovedale. The latter have suffered from two journeys. The other garden Forget-me-not which I have recommended, M. p. semperflorens, flowers freely here all the summer; it seems to me identical with the native M. cæspitosa of Sowerby, united by Mr. Bentham with M. palustris. I sent a piece to an authority on botanical names, and it was named M. cæspitosa. Is the spring garden Forget-me-not properly named alpestris or sylvatica? *C. Wolley Dod, Edge Hall, Malpas, May 8.* [The two plants sent appear to be identical. Eds.]

Anthurium Andreanum.—Having some time since expressed an opinion that the Anthurium Andreanum, introduced by M. André, and that introduced by M. Lehman under the same name, were two different, although equally beautiful species—an opinion founded upon the different form of the leaf of a dried

specimen of Lehman's in the Kew herbarium, as compared with André's plant, I am now enabled to state that my opinion was utterly incorrect, for having recently seen at Mr. Bull's nursery, at Chelsea, several plants of A. Andreanum from both sources, growing side by side, all doubt is set at rest in my mind as to their sameness, for they are perfectly identical. Mr. Bull has several plants of this glorious Aroid now in flower, and those who have never seen it, and have the chance of doing so, should not lose the opportunity. A. Scherzerianum is a very beautiful and brilliant Aroid, but it is not equal to A. Andreanum, for in this latter, as compared with the former, the scarlet of the spathe is more intense, and instead of the spathe being smooth, flat, and opaque, it is very shining, and full of large depressions, which greatly increases the effect; and the different colour of the spadix (which at first is golden-yellow, but becomes white during pollenation), offers a very pleasing contrast. Altogether, there can be little doubt that beautiful as A. Scherzerianum is, it is eclipsed by this new introduction, which seems to be quite as free to flower and lasts as long. Those who have seen the original figure of A. Scherzerianum in the *Botanical Magazine*, t. 5319, where the spathe is only 1¼ inch in length, and have compared it with some of the finer forms now to be found in cultivation, with spathes 5, 6, 7, and even 8 inches in length, will readily believe that the dimensions of the spathe of A. Andreanum, as figured in the *Gardeners' Chronicle*, 1880, n.s., xiii., p. 497, and in *L'Illustration Horticole*, t. 271, will be increased by cultivation; and a great increase in size has already been arrived at, for M. Linden informs me that he has now in flower a plant of A. Andreanum with a spathe over 6 inches in length! And as the breadth in this species is nearly equal to the length, such a blaze of colour must make a grand show. *N. E. Brown.*

**Florists' Specialities.**—I note precisely the same foundation error in "Dietes" which I remarked in the leader writer of April 23—the perfect absence of any practical knowledge of what he calls the florists' "points," "properties," "standards," or "dogmas," as the case may be, and their application. How else can we reconcile the otherwise extravagant assumption that the "florists' standards of perfection are traditions handed down from old times, the echoes of tastes now gone by," "standards the modern florists may accept and defend, but not such as he would himself create"? Is it possible for "Dietes" calmly to think of Mr. Horner, Mr. Tymons, Mr. Barlow, and many others, some of whom at least have shown that they have brains and ability even to investigate the æsthetic difficulties of the subject, as mere "echoers of tastes now gone by," and sustainers of standards they would not of themselves create? I agree with "Dietes" that "æsthetic discussions" are not likely to be profitable, but I think æsthetics as applicable to flowers may be most profitably dealt with in a theme, and if "Dietes" or the leader writer of April 23 will favour us with some essay enlarging our intelligence in that direction, I for one, if spared to read them, will be ready with my thanks. Again, the simplicity of the writer is testified in the appeal he makes to young florists. Does he think florists come into the world bound and tied, and growing as they advance to maturity only more and more in love with their stringent, inelastic bonds? Does he imagine there ever was diversity of opinion? and cannot he find some small point of ground for avoiding condemnation in that consent of opinion to which all florists sooner or later—sooner always as there is better trained intellect [!], come? The aspirations of the ardent florist, young or old, are large and wide; there is no need for the spur to him, and he will never rest whilst yet, as there ever will be, there be some new beauty to be obtained on earth. No mistake can be more fatal than the assumption that his creed is exclusive and his tastes narrow. The very assumption is a proof of absolutely inadequate knowledge of the subject. The creed of the florist is catholic, because it is based on Nature herself, and his tastes are as wide and as boundless. With "Dietes" I also would be practical. Let me, then, if I am spared to that day, have the pleasure of seeing him and the leader writer of April 23 in my very humble garden any time from July 10 to, say, July 25, and we will go together over the flowers, old and new, and discuss the reasons for why florists accept or reject. Perhaps, too, I may then be favoured with some indication, in the case of the Carnation and Picotee, of the new type I should proceed to work from or for, and the new blood I should import. I shall most gratefully receive such assistance if practical. But if these gentlemen will not teach us the application of æsthetics to flowers, and think they are offering an original practical suggestion in urging that which has been the course of every generation of florists, always resulting in the same consent of opinion, then very respectfully I presume to say to them, they had better not meddle, for neither florists or floriculture can be advantaged by muddle. Florists may sometimes seem impatient, naturally they are most placable; their delights enlarge their minds and open their hearts; but there is a point at which patience may fail. The Rev. George Jeans gives at the close of his *Essays on the Philosophy of Florists' Flowers* a synopsis, as follows:—Beauty in a flower is produced by—I. Form, consisting of outlines general and subordinate. First: Absolute, requiring (1) Unity: infringed in idea by a plurality of equivalent parts; in outline, by intervals—by abrupt changes. (2) Variety (effects of straight lines and curves): of form, of number, of colour. Second: Relative. Best dependent on characteristics of the flower and mode of colouring: actually hemispherical the most perfect. II. Colour. First: In general, or separately; must be bright, distinct. Second: In union; must be in juxtaposition, and mutually adapted, producing (1) Combination, if in natural agreement: and this is distinct, clouded or compound. (2) Contrast, if in natural contrariety. Will "Dietes" show what æsthetical difficulties are left unsatisfied in this synopsis?—and will he further show wherein the florist fails to apply the principles set out? *E. S. Dodwell.* [In questions of taste there is room for the greatest diversity of opinion. So far as Mr. Jeans' synopsis, here quoted, is intelligible this is assuredly true. The naturalist, in spite of Mr. Dodwell's contrary opinion, probably knows a good deal more of the conformation of the particular flower and the reasons for it than the "florist" does, and when he sees these indications of Nature, as shown in any given flower, all of which have a distinct purpose, set at nought and, as he thinks, perverted, in order to comply with the standard which the florist assumes to be the best and most natural, he objects, and not without reason. In the case of the Auricula the form of the flower and the disposition of its colour are altered from the indications afforded by the natural flower. Instead of these indications being acted upon and improved in the right direction, they are, to the eye of a naturalist, perverted, if not destroyed, and the whole significance of the flower is thereby obliterated. If we were dealing with a piece of cardboard, there would be less reason to dissent from the ideals of the florist. The flower left to itself says one thing, the florist (like a judicious editor) may cause it to say what it has to say in the best and most suitable manner; but he is not justified in making it say what it did not intend to say, unless indeed for some special reasons duly assigned, and which have nothing to do with a "standard of perfection." *M. T. M.*]

**Reversion of Colour.**—It may interest some of your readers to hear of reversion of colour in three different species of plants, which I have observed in my own little garden this spring. The first to flower was a seedling Hepatica (Anemone Hepatica) which produced single red flowers from the single white form. This was a great treat to me, as I had long been trying to procure this variety about here. The second and third were seedlings from Scilla campanulata alba and Scilla nutans alba, both of which have produced the normal blue flowers. *J. E. Daniels, Epsom.*

**Anemone nemorosa β cœrulea.**—This is no novelty at all. Pritzel's *Anemonearum revisio*, 1842, p. 92, quotes it; Gallia, DC. !—Deutschland ad Rhenum legit Zeyher !—L. Reichenbach, *Flora Saxonica*, 1842, p. 409; *Dresdner flora*, Schieritz, G. Rchb.; C. T. Timm, *Verh. Naturw. Vereinicon*, Hamburg-Altona, 1877, p. 25; Niendorfer, Holz bis Hamburg. Those indications I had in memory when hunting over the *Flora;* one may find, no doubt, many more. *H. G. Rchb. f.* [It is mentioned also in some of our text-books. Eds.]

## Apiary.

Mr. Pettigrew's *Handy-book of Bees* (Blackwood) needs no more at our hands than the announcement of a fourth edition. Mr. Pettigrew is still of opinion that straw hives are incomparably better for bees than any other kind of hive yet introduced, and he cites a remark of Mr. Ollerhead in support of his opinion. Nevertheless, in the supplement to this edition the advantages of the bar-frame hive, which admits of the ready examination of the contents of the hive, are fairly pointed out, but the disadvantages, especially of those arising from condensation of moisture, are even more strongly insisted upon. The Stewarton hive is acknowledged to have done wonders, nevertheless Mr. Pettigrew asserts that "he can never tire of, or grow out of love with the large straw hive and its system of management." A useful feature of this little book is the monthly calendar of operations.

—— In *The Stewarton, the Hive of the Busy Man* (Longmans), the Rev. E. Bartrum publishes a lecture delivered before the British Beekeepers' Association, devoted to the exposition of the merits of the Stewarton hive, which consists of a series of octagonal boxes placed one on the top of another, the breeding boxes at the bottom, the supers or honey boxes at the top, or, rather, when it is required to extend the hive, a second box is placed below the first, the slides from the top of the lower box being withdrawn, the bees can enter the second box from above; thus a 7-inch box may ultimately grow into a column 3 feet high. Of the supers there may be from one to eight, according to season. An outer case is recommended to protect the octagons, dry fern being thrust in between the outer case and the hives in winter. The manner in which this hive can be extended at will prevents swarming if the beekeeper does not wish his bees to swarm; it requires less time and trouble than other hives; and, third, if well protected, as above described, it bears the winter well. The cost of the hive and cases is put at £2. For purposes of manipulation and examination Mr. Bartrum prefers the bar-frame hive. "Any one," he says, "who wishes to become an advanced skilled beekeeper will never be without bar-frame hives . . . [but] many persons wanted a hive which they could keep and work without constant supervision, and for such persons the Stewarton was a very valuable hive . . . the hive for the busy man," thus justifying the motto prefixed to the pamphlet—"The maximum of honey with the minimum of trouble." From the discussion which followed it appears that the beekeepers were by no means unanimous in their opinion, though the straw hive found few advocates.

## Florists' Flowers.

The Auricula.—It may not be out of place, now that the Auricula exhibitions are over, and the bloom nearly over, to make a few remarks gleaned from the experience of the present season. The cool weather has been very favourable to a greatly prolonged bloom. Our first flowers were open towards the end of March, and there will be good trusses of alpines and show varieties till the middle of May. On April 6 was the great North of England exhibition at Newcastle-upon-Tyne, where both small amateurs and gentlemen's gardeners exhibited, the principal prizes being awarded to a working chemist, Mr. T. Hay. The examples of the principal varieties, such as Lancashire Hero, were very fine, showing very conclusively that the Auricula will bear forcing in the hands of careful cultivators. Two weeks later was the exhibition of the Southern Section of the National Society. There was some complaint about the show being too early; but the committee having to fix the date in November of the previous year could not do otherwise than arrange for it as near to April 20 as possible. Some of the exhibitors and others thought it ought to have been held with the Royal Horticultural Society's bi-monthly meeting on April 26; but this was impossible, as the Northern Section had already arranged to have their show on that date. The fact is, when a day is fixed, and it is known to be unalterable, exhibitors must do their best to get the plants up to time. The large number of good seedlings exhibited at the Southern exhibition show conclusively that in the course of a few years many of the old and justly-valued varieties will be discarded. Every grower of Auriculas should be a raiser of seedlings. I have been fairly successful during the few years that we have grown them, and have not been slow to tell all I know in the pages of the *Gardeners' Chronicle*, not only how to raise seedlings, but how to grow them. After the report of the show was published in the *Times* and other daily papers I received numerous letters, some of them from persons of high standing, asking for information not only how to grow the plants, but where to get them. I can only answer that ample cultural notes are to be found in "Notes on Hardy Florists' Flowers," and any of the principal nurserymen can supply plants. If they do not grow them they can obtain them for their customers.

The National Exhibition, Northern Section, was held on April 26, but the plants were not in such good condition as they have been in former years. There are many of the growers who have not a heated house in which to place their plants, and the frosts, with keen east winds, had been very trying to the plants for a long time previous to the show. There did not seem to be any very striking new varieties exhibited. On the following day there was a goodly

display of Auriculas at the Regent's Park Botanic Gardens. There was a small competition, and an excellent group of show and alpine varieties from Mr. Charles Turner, of Slough, who also exhibited a very distinct and really good white-edged seedling Auricula named Mrs. W. Brown. On this occasion the alpine varieties were very much admired. These are not only useful for growing in pots, but establish themselves in suitable positions planted out in the open ground. I find some varieties are better adapted for this purpose than others. The double yellow increases very freely in the open border; we have a mass of it in flower now, and it has been growing on the same spot for several years. We have an alpine which has been seventeen years in the same spot of ground without being interfered with; it is now a large mass, or rather quite a colony, of plants, and there are nearly fifty good trusses of flowers on them. Where the soil is suitable alpine Auriculas succeed remarkably well out-of-doors. They must not be overgrown with other plants, nor should they suffer for lack of water in summer. The alpines are also much better adapted for the requirements of those who have not had much experience, or who may not have much time to attend to their plants. They are more hardy, and can be propagated with much less trouble. The collection in pots, whether they are show or fancy varieties, should now be repotted. I find that many of the growers give their plants an over-rich surface-dressing in February; where this has been done it is all the more necessary to have it removed, and the plants potted in a sweet well-aired compost. *J. Douglas.*

## Reports of Societies.

**Royal Horticultural**: *May* 10.—Colonel R. Trevor Clarke in the chair. The Rev. G. Henslow took the tribe "Pomeæ" of the Rose family (Rosaceæ) as the subject of his remarks, as Mr. Barron exhibited from Chiswick several branches of Apple trees illustrating considerable variety of form, size, colour, &c., in their blossoms; remarking that, as a rule, when one organ is more especially attended to by horticulturists the organs of a plant are not usually liable to vary to any great extent; thus the variety of pods and Peas are innumerable, but the same white flower is common to all. He described the flower of the Apple, and pointed out the affinities with the Plum, Blackberry, Strawberry, and Rose, as well as their differences, especially in the characters of their fruits, respectively, which separated them. He dwelt upon the so-called "calyx-tube," or, rather, "receptacular-tube," and showed how it was characteristic of the whole family under modified forms; constituting the thin tube of the Cherry, the flatter dishlike process in the Blackberry and Strawberry, the tubular haw of the Rose, and the fleshy part of the Apple and Pear.

As the season of the year has arrived when frosts prove so disastrous to fruit trees, the lecturer proceeded to make some remarks upon it. He first observed the importance of understanding the external conditions which were favourable or otherwise to the acquisition of hardiness to plants. One of the most important facts is that in low-lying situations (if away from any large body of water which might act as a radiator of heat and so moderate the temperature in the neighbourhood of it) frost almost invariably proves more destructive to vegetation than in higher and more exposed situations. That such was the case had long been observed. Mr. Henslow ventured to offer the following explanation. In the first place valleys accumulate heat, and, being naturally moist, vegetation is earlier, more stimulated, and later in drawing its period of activity to a close. Hence there would be a less capability of consolidating wood and hardening the constitution in autumn. It is thus in a condition prone to suffer. On the other hand, when frosts occur the atmosphere is clear, cold, and comparatively free from moisture, so that radiation can proceed rapidly and without interruption. Now, since moisture is slow to acquire heat, and equally slow in parting with it, from this cause alone one would infer that the temperature of valleys ought to be slower in reaching the freezing point than that of higher ground. But evaporation from a moist surface would take place, especially under just those atmospheric conditions which favour frost; and it is this (the lecturer suggested) which may probably be one of the causes of the increased lowering of temperature, since to evaporate moisture a considerable amount of heat is required, as may readily be recognised by wetting the finger and allowing it to dry by evaporation.

The chief cause, however, of valleys being colder than the higher situations at night, was probably that, although radiation takes place from both, yet, in consequence of the air on higher ground being more agitated than that in the valley, no portion of it rests long enough in one place to become much colder than the general mass of the atmosphere at the same height. Moreover the chilled air on the hills, being heavier, slides down into the valleys, making room for the arrival of a fresh supply of warm air on the hills. With regard to spring frosts, what usually caused them to be so disastrous was a previous condition of wet, as so often occurs in April. When vegetation is started the tissues are loaded with moving sap, having awoke out of their winter sleep, and begun their annual course of vital activity; then, if a frost comes and a bright hot day follows, the sudden transitions of temperature from below 30° to over 100°, as very often occurs in May, prove most disastrous. If the frozen trees be syringed with cold water early in the morning, so as to raise their temperature slightly above freezing point, the intense heat of a May sun may be powerless to injure.

The presence of a surface of water near fruit trees has been suggested as a preventive to frost, just as pails of water are sometimes placed in storerooms, which are said to protect Apples, Potatos, &c., from being frost-bitten, while the water in the pail is itself hard frozen. If it be correct, the interpretation would be that, in order for water to freeze, it must part with a relatively large amount of heat. This is distributed to the atmosphere about it, and its temperature will be obviously raised. The lecturer suggested that fruit growers should experiment on this point by placing pails or troughs of water at the foot of the walls whereon Peaches, &c., grow, leaving certain other trees in the same situation without the water, so as to test the truth of the assertion.

Besides adopting any methods which may keep the air above freezing-point, protection against radiation is especially to be considered. It is astonishing what a very slight protection will sometimes suffice. Various kinds of fruit trees in which the petals happen to be more incurved than in others are found sometimes to save their ovaries from injury. So, too, in Cherries, it has been noticed that in those fruits from

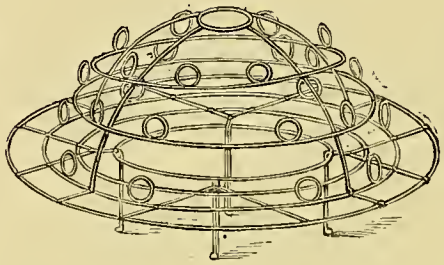

Fig. 117.—New Flower Support.

which the withered "calyx-tube" had not fallen, the ovaries were not cut, whereas others from which it had fallen perished.

Scientific Committee.—Dr. Maxwell T. Masters, F.R.S., in the chair.

*Podisoma Sabina.*—Mr. Bunyard sent specimens of this fungus, which when growing on the Pear assumes a different appearance, and is known as Rœstelia.

*Narcissus.*—Rev. G. Henslow showed a specimen of N. incomparabilis, fl.-pl., in which the spathe, instead of splitting on one side, split in a circular manner, so as so leave the spathe in the form of a tube.

*Pansy.*—Mr. Noble sent a flower with the two upper petals blue as in a Pansy, the three lower ones brown with reddish stripes as in a fancy Pansy.

*Willows.*—Mr. Marshall sent male catkins of Salix Helix flowering from above downwards, and stated that all the monandrous Willows flowered in this manner, while the catkins of the triandrous group opened from below upwards.

*Miltonia spectabilis.*—A specimen was sent in which the flowers were produced from the new growth instead of from the base of the old bulb as usual.

*Sarracenia petals.*—Mr. W. G. Smith, reverting to this subject, stated that since his previous communication he had reason to think that the uplifting of the petals was partly due to the action of light.

*Wheat Grown Under the Electric Light.*—Mr. Buchanan, gr. to Dr. Siemens, exhibited specimens of Wheat, the straw of which was already more than 2 feet in height, with broad deep green foliage. The seed was sown in the open border near a wall on December 17. The young plants had no protection other than that furnished by the snow, but were subjected at night to the influence of the electric light. The growth had latterly been very rapid. It was considered that the heat of the electric lamp had some influence in addition to the light, as it was found that water did not freeze within a short distance from the lamp. A Melon was also shown which had been ripened under the influence of the light, but from various circumstances the experiment was not wholly satisfactory. The plants were planted on November 6, but the light was at first placed at too great a distance and was brought nearer in January. The plants were however but weakly, and only one fruit ripened. Mr. Buchanan alluded to the fact that it takes longer to ripen the fruit if only one or a few are produced, than if several are formed. The wish was expressed that in future these experiments should be conducted in a more strictly comparative manner.

*Hybrid Elisena.*—Col. Clarke showed a plant in flower, the result of a cross between Elisena longipetala and Ismene calathina. The flowers showed their hybrid origin amongst other things in the disposition of the stameos, the upper three of which were bent abruptly inwards as in Ismene, the other three being spreading as in Elisena.

*Growth and Repair.*—Dr. Masters alluded to a Thorn tree in his garden, around the trunk of which a loop of wire had been placed as a support to an adjacent Rose growing on an arch. The wire-loop had cut almost through the stem, which, however, had grown up behind the wound, so that, although the wire had literally cut through the stem, no severance had taken place, the wound healing up behind the wire, so that the loop was now on the opposite side of the trunk, but still embedded in a thin layer of bark. Dr. Masters alluded to another instance, showing the great power of repair in the Thorn after injury.

*Plants Exhibited.*—Col. Clarke showed flowers of Tulipa undulatifolia and T. Orphanidis, and Cyrtanthus Macowani (?). Mr. Baines sent a flowering plant of Liparis liliiflora, a terrestrial Orchid collected by Mrs. Wakelin of Southgate, on the American side of Niagara Falls, and since grown by her for the last three years in her sitting-room. From Messrs. Veitch came the elegant Chionographis japonica, a curious Japanese Melanthaceous plant mentioned last year. Dr. Masters showed a white-flowered Saxifrage from his garden, supposed to be a white form of S. Megasæa ciliata.

Floral Committee.—W. B. Kellock, Esq., in the chair. First-class Certificates were awarded at this meeting to Messrs. James Veitch & Sons for Gloxinia Radiance, a glowing crimson erect-flowered variety, of great merit on account of its high colour; and for Aralia Chabrieri, a dense bushy-habited plant, with the leaves divided into long narrow linear segments. To Messrs. John Laing & Co., Stanstead Park, for Begonia Davisii flore-pleno superba, a remarkably fine novelty, the flowers measuring 2½ inches in diameter, and being of a bright crimson-red colour. To Messrs. Osborn & Son, Fulham, for Ribes alpinum pumilum aureum, a golden-leaved form, of a very dwarf and compact growing habit—a choice plant for the rockery. To Messrs. James Carter & Co., Forest Hill, for Primrose Cloth of Gold, a good double sulphur-yellow large-flowered variety. Sir Trevor Lawrence, Bart., M.P. (Mr. Spyers, gr.), showed a plant with two flowers of a lovely variety of Cattleya Mossiæ, thought to be the same as the rare Cattleya Reineckiana, but described as differing from that plant as it flowered with Mr. Stephenson, of Timperley, in the rich colour of the lip being broken up, whereas in C. Reineckiana the blotch is solid. W. F. Dick, Esq., Thames Ditton House (Mr. W. Fyfe, gr.), sent a nice lot of blooms of the Maréchal Niel Rose; and Mr. Croucher, gr. to J. T. Peacock, Esq., showed a most beautifully coloured form of Masdevallia Harryana. From Chiswick Mr. Barron sent the pretty blue Tropæolum azureum and Onychium auratum, a free-growing Indian Fern. Mr. R. Dean sent along with several laced Auriculas, a fine black self-coloured Polyanthus with a pure yellow centre, named Arthur; and a flowering plant of the new dwarf red Wallflower, a very dwarf, neat, and compact and free-flowering plant. Mr. G. Bethell, gr., Sudbourne Hall, Suffolk, showed Tradescantia argentea, a gold and silver variegated form of T. zebrina. The Messrs. Veitch also exhibited a small well-flowered plant of Indigofera decora alba, and Primula Ichang, a hardy form, the flowers of which open pink, and gradually become white.

In the conservatory, Mr. B. S. Williams had a large and very meritorious collection of plants on view, for which he received a Silver Flora Medal. Mr. Barron also sent two excellent groups of flowering and fine-foliaged plants from Chiswick; and Messrs. Barr & Sugden again made a grand display of Daffodils, principally of the poeticus section. Messrs. Osborn & Son sent a group of stove and greenhouse plants, as also did Mr. Aldous.

A new form of wire flower-support, for arranging flowers in vases, designed by Mr. Percy Ingram of Belvoir, was also exhibited, and is illustrated in fig. 117. By its use foliage and flowers may be displayed in a very effective and elegant manner.

Fruit Committee.—Mr. Harry J. Veitch in the chair. Mr. Buchanan, gr. to Dr. Siemens, Sherwood, Tunbridge Wells, received a Cultural Commendation for a well ripened fruit of the Melon William Tillery, grown under the influence of the

electric light. Mr. Buchanan also showed some plants of Wheat grown under the influence of the electric light, and elsewhere referred to. Mr. Woodbridge, Syon House, showed a good dish of Sutton's Scarlet Globe Radish, a firm, crisp, mild-flavoured early variety, which appears to be the same as M. André Leroy & Co.'s Early Rose Globe, certificated at Chiswick in June, 1879. It is a fine early variety, coming into use a week earlier than Wood's Early Frame, sown at the same time. Mr. George, of Cuckfield, sent two fruits of the Ockenden Hybrid Melon, a large, oval, heavily netted green-fleshed variety of great excellence, but not well ripened as shown. Messrs. Charles Lee & Son sent fruiting plants of an alpine Strawberry named Durn, with long tapering fruits of exceedingly poor quality.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
FOR THE WEEK ENDING WEDNESDAY, MAY 11, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| May | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 5 | 30.03 | + 0.27 | 64.0 | 41.5 | 22.5 | 51.7 | + 0.5 | 45.7 | 80 | W. : S.W. | 0.00 |
| 6 | 30.15 | + 0.4 | 67.8 | 49.6 | 17.9 | 57.0 | + 5.4 | 50.7 | 79 | S.W. | 0.00 |
| 7 | 30.40 | + 0.65 | 67.6 | 45.8 | 21.8 | 55.2 | + 3.5 | 45.4 | 71 | S.W. : N. : E. | 0.00 |
| 8 | 30.44 | + 0.69 | 68.0 | 46.0 | 22.0 | 54.7 | + 3.1 | 44.5 | 69 | NNW : N. | 0.00 |
| 9 | 30.39 | + 0.64 | 60.4 | 40.6 | 19.8 | 49.0 | — 2.5 | 38.8 | 67 | N. | 0.00 |
| 10 | 30.46 | + 0.72 | 54.0 | 39.0 | 15.0 | 44.8 | — 7.5 | 37.2 | 74 | N.N.E : E. | 0.00 |
| 11 | 30.31 | + 0.57 | 59.6 | 35.0 | 24.6 | 45.9 | — 5.3 | 36.4 | 70 | N.N.W | 0.00 |
| Mean | 30.31 | + 0.56 | 63.0 | 42.5 | 20.5 | 51.2 | — 0.4 | 41.2 | 73 | N. : N.E. | 0.00 |

May 5.—A fine day. Sun at times warm. Lunar halo in evening. Fine night.
— 6.—A fine bright and warm day, and calm and warm night.
— 7.—A fine day and night; wind east at night.
— 8.—A fine day and night.
— 9.—Clouds moving from the north in the morning. Fine and bright at times: a cold wind.]
— 10.—Generally dull and cloudy: a cold wind. Fine but cold night. Thermometer on grass read 30°.
— 11.—Fine day, but cold and ungenial. Fine clear night.

LONDON: *Atmospheric Pressure.*—During the week ending Saturday, May 7, the readings of the barometer in the neighbourhood of London at the level of the sea increased from 29.68 inches at the beginning of the week to 29.71 inches on the morning of the 1st; decreased to 29.62 inches (the lowest in the week) by 3 o'clock on the 2d; increased to 30.08 inches by the morning of the 4th; decreased to 30.02 inches by the afternoon of the same day; and at the end of the week was 30.62 inches. The mean reading at the level of the sea was 30.07 inches, being 0.05 inch higher than that of last week, and 0.13 inch above the average for the week.

*Temperature.*—The highest temperatures were 67°.6 on the 7th, 67°.5 on the 6th, and 64° on the 5th. The lowest of the seven highest day temperatures was 50°.1 on the 3d. The mean of the seven high day temperatures was 60°. The lowest temperatures were 34° on the 4th, and 39° on the 3d. The highest of the seven low night temperatures was 49°.6. The mean of the seven low night temperatures was 42°.4. The greatest ranges of temperature in one day were 22°.5 on the 5th, 21°.8 on the 7th, and 18°.5 on the 4th. The least ranges were 11°.1 on the 3d, and 13°.9 on the 2d. The mean daily range was 17°.6.

The mean temperature on the 1st was 50°.2, on the 2d was 49°.5, on the 3d 42°.4, on the 4th 44°, on the 5th 51°.7, on the 6th 57°, on the 7th 55°.2; on the 1st, 5th, and 6th the mean temperatures were respectively 0°.4, 0°.5, and 5°.4 above their averages; on the 2d, 3d, 4th, and 7th they were respectively 0°.7, 8°, 6°.8, and 3°.5 below their averages.

The mean temperature for the week was 50°, being 1°.1 higher than that of last week, and 0°.8 below the average for sixty years of the corresponding week.

The highest readings of a thermometer with blackened bulb in vacuo placed in the full rays of the sun were 125°.5 on the 6th, 119°.5 on the 7th, and 115°.6 on the 1st. The lowest readings were 71° on the 3d, and 72° on the 4th. The mean of the seven daily readings was 103°.1.

The lowest readings of a thermometer placed on grass with its bulb exposed to the sky were 30° on the 4th, and 35° on the 3d and 5th. The highest readings were 42° on the 2d, and 44° on the 6th. The mean of the seven readings was 37°.8.

*Rain.*—Some fell on three days, the greatest quantities being 0.25 inch on the 2d. The total fall for the week was 0.43 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, May 7, the highest temperatures were —71.9° at Cambridge, 70° at Sunderland, and 68°.8, at Birmingham. The lowest of the high temperatures were 59°.3 at Liverpool, and 59°.6 at Bradford. The mean from all stations was 64°.8.

The lowest temperatures were—Cambridge, 28°.8; Hull, 30°; Norwich and Nottingham, 33°; and Blackheath, 34°. The highest of the low temperatures were—Truro, 42°; and Plymouth, 41°.2. The mean from all stations was 35°.9.

The range of temperature was greatest at Cambridge, 43°.1, the next in order being Sunderland and Norwich, 35°, and Blackheath, 33°.6. The least ranges were—Plymouth, 18°.8, and Bradford, 22°.1. The mean from all stations was 28°.7.

The mean of the seven high day temperatures was highest at Birmingham, 62°.6, the next in order being Cambridge, 62°.3, and Blackheath, 60°; the lowest means were—Bradford, 54°.2, and Liverpool, 55°.4. The mean from all stations was 58°.

The mean of the seven low night temperatures was lowest at Hull, 38°.3; the next in order being Wrottesley, 40°.1, and Nottingham, 40°.2. The greatest means were Truro, 45°.4, and Plymouth, 45°. The mean from all stations was 42°.3.

The mean daily range was greatest at Cambridge, 21°.2, the next in order being Nottingham, 19°.3, and Birmingham, 19°. The least ranges were—Plymouth, 11°.3, and Bradford, 11°.7. The mean from all stations was 15°.7.

The mean temperature in the week was highest at Birmingham, 51°.4, the next in order being Truro, 50°.6, and Blackheath and Cambridge, 50°. The means were least at Hull, 45°.9, and Bradford, 46°.7. The mean from all stations was 48°.5.

*Rain.*—Some fell at all stations, the greatest amounts being Liverpool, 0.62 inch; Sunderland, 0.58 inch; and Plymouth, 0.50 inch. The least falls were Brighton, 0.12 inch; and Norwich, 0.14 inch. The mean from all stations was 0.34 inch. The greatest number of days on which rain fell at any place was six, the least two, and the average number of days on which rain fell at all stations was four. *Snow* and *sleet* fell at Sunderland on the 3d, and a *thunderstorm* occurred at Cambridge on the 4th.

SCOTLAND: *Temperature.*—The highest temperatures were—Paisley, 62°, Aberdeen 61°.3, and Dundee, 60°. The general mean was 58°.9.

The lowest temperatures were 32° at Dundee, Paisley 33°, and Aberdeen 33°.9. The mean from all stations was 34°.5.

The mean temperature was highest at Paisley, 47°.8, the next in order Glasgow, 46°.8, and Aberdeen, 46°.6; the mean was least at Dundee, 45°. The general mean was 46°.2.

*Rain.*—The largest falls were Glasgow, 1.22 inch, and Greenock, 1 inch; the least fall was Dundee, 0.35 inch. The general mean was 0.83 inch.

JAMES GLAISHER, F.R.S.

# Obituary.

WE have to record the death, on the 5th inst., of Mr. ROBERT BENBOW, manager during the last six years of the seed department at Mr. B. S. Williams', Victoria and Paradise Nursery, Upper Holloway. Mr. Benbow, who had for some time been in a delicate state of health, had a thorough knowledge of his business, which he acquired in the establisments of Mr. Oldroyd, of Shrewsbury, Messrs. Sutton & Sons, of Reading, and Messrs. Waite, Burnell & Co., of Southwark Street; and with this good quality combined an amiable disposition, and a very unassuming gentleness of demeanour, that gained him the friendship and esteem of all who came in contact with him. He had only attained the age of forty-one years, and has left a widow and three children to mourn his loss.

—— The death of Mr. ANDREW TOWARD, of Amherst Villa, Newport, Isle of Wight, is announced to have taken place on May 7. Mr. Toward, who had reached the ripe age of eighty-five years, was scarcely known to the present generation of gardeners. In his younger days, however, he held the prominent position of gardener to their R.H. the Duke and Duchess of Gloucester, at Bagshot Park, Surrey, the present residence of H.R.H. the Duke of Connaught. At that time Bagshot Park was a well-known centre of good gardening, and Mr. Toward was recognised as a successful practitioner of the art. Bedding-out in some of its earlier phases was, we believe, practised there, but in a much more miscellaneous style than that which afterwards became so popular. Amongst the old-fashioned Pelargoniums is one called Bagshot Park Seedling, a cut-leaved sort, with pretty but small bright pink flowers, which was raised by Mr. Toward, and was, we believe, one of the parents of the more recent and somewhat similar Shrubland Pet. Subsequently, but now many years ago, the gardening establishment at Bagshot Park was broken up, and Mr. Toward's services were transferred to the Royal residence at Osborne, where he became steward of Her Majesty's estate, a position in which for a long period he enjoyed the Queen's confidence and approbation. Mr. Toward was of Scotch lineage, and was, during his long life, held in the highest respect and esteem by his contemporaries both of high and low degree.

## Answers to Correspondents.

APPOINTMENTS: *X. Y. Z.* No charge is made, but we cannot insert a notice of any changes that are not authenticated by the name and address of the sender.

BLIGHT ON BEECH: *D. P.* The insect is the Adelges fagi, which is sometimes very abundant on Beech trees, and is not easily removable on account of the size of the trees, and its consequent inaccessibility. It may be removed from the trunk by painting the surface over with a clay-wash, which will presently scale off and bring the insect away with it; but to remove it from the under-surface of the leaves, where it is sometimes found, syringing with the paraffin mixture, or some other easily applied insecticide, should be resorted to.

BOOKS: *W. Roberts. Clavis Agaricinorum* (Lovell, Reeve & Co., Henrietta Street, Covent Garden; 2*s.* 6*d.*). The plates are the same as those in Cooke's *Handbook*, but the letterpress is different.

BUTTERCUP: *H. A.* The Buttercups of the meadows belong to three species—1, Ranunculus bulbosus; 2, R. acris; 3, R. repens. They all belong to the family Ranunculaceæ.

CINERARIA, DOUBLE: *L. & S.* Your seedling double-flowered Cineraria is a very good one, in the way of one named Mrs. Thomas Lloyd, which came before the public last year, but not quite so fine as that variety.

ERRATA.—At p. 598, second column, for "praying" read "preying."—At p. 604, instead of "a plant of Woodwardia radicans," read "a few plants of," &c.

HOLLYHOCKS DISEASED: *C. & R.* Most probably the Hollyhock disease (Puccinia malvacearum), but it is not yet fully developed.

HOTBEDS.—How many cubic yards of manure will it take to make a hotbed 10 feet long, 8 feet wide, and 4 feet high? Answer, in round figures:—12 cubic yards. Thus, there are 27 cubic feet in one cubic yard, and $10 \times 8 = 80 \times 4 = 320 \div 27 = 12$ yards. A cartload is anything. We call a one-horse load a yard, and a two-horse load two yards. *J. D.*

LASTREA ARISTATA VARIEGATA: *Z. Z.* A native of Japan, and almost hardy.

NAMES OF PLANTS: *H. Roberts.* Narcissus poeticus var. It is not at all uncommon to see two or three flowers on one stalk. The other plant was not enclosed.—*M. B.* 1, Narcissus Jonquilla; 2, Cytisus leucanthus; 3, Prunus sinensis flore-pleno; 4 and 5, varieties of Pansy that we cannot name; 6, Alyssum saxatile. — *E. Jenkins.* Lathræa squamaria. — *E. Sladen.* Narcissus incomparabilis aurantius flore-pleno (the "Butter-and-Eggs" of cottage gardens).—*Carter, Page & Co.* Reseda alba, not wild.—*A. M.* 1, Phlox subulata; 2, Saxifraga granulata flore-pleno. — *J. W. H.* 1, Dendrobium macrophyllum; 2, Begonia Saundersii; 3, an Iris, collapsed; 4, Muscari racemosum; 5, Pulmonaria officinalis; 6, Doronicum caucasicum. — *D. P.* 1, Polygala Dalmaisiana; 2, Amelanchier Botryapium; 3, Amygdalus nana.—*F. P. Dartrey* A high-coloured variety of Honesty (Lunaria biennis); Ophiopogon Jaburan aureo-vittata. —*A Young Beginner.* 1, Athyrium Filix-fœmina Frizelliæ; 2, Davallia novæ-zelandiæ; 3, Adiantum formosum; 4, Adiantum concinnum.

PINGUICULA GRANDIFLORA: *W. Roberts.* It has already been figured in our columns. See our number for July 10, 1875, p. 37.

POTATOS DISCOLOURED: *C. & R.* We cannot explain the cause of the Potatos being discoloured at the heart.

POT-VINES FAILING: *H. Bond.* Clearly the Vines have failed from the roots having been mostly killed in December. You did wrong in exposing them to the weather unprotected at that time, and again in repotting them for starting them to produce fruit. They should only have been top-dressed under any circumstances.

ROCAMBOLE: *R. J. Wagstaff.* It is advertised by Messrs. Haage & Schmidt, of Erfurt; but no doubt any of our own large seed houses could supply you.

ROSES UNDER GLASS: *J. J. D.* Niphetos, white; Climbing Devoniensis, creamy-white; Madame de St. Joseph, pink; Ophirie, reddish-copper colour. There

are also White Banksian; Lamarque, white; Triomphe de Luxembourg, flesh-colour; and others that might be adopted if preferred.

## CATALOGUES RECEIVED.

WILLIAM BULL, King's Road, Chelsea—New Plants.
CRANSTON'S NURSERY AND SEED COMPANY, King's Acre, Hereford—New Roses, Bedding Plants, &c.
LOUIS DE SMET, Ledeberg, near Ghent — General Catalogue of Plants.
WOOD & INGRAM, Huntingdon—General Catalogue of Plants.
JAMES VEITCH & SONS, King's Road, Chelsea — New Plants.

COMMUNICATIONS RECEIVED:—F. W. B.—C. Kramer.—R. W.—T. R.—J. M.—P. G.—W. E.—H. G. Rchb.—X.—W. T.—J. C. McA.—J. R. J.—D. C J.—R. P.—J. H. M.—J. E. E.—F. P.—W. R.—D. S.—W. Barron.—W. T.—A. D.—Philodendron.

# Markets.

*COVENT GARDEN, May 12.*

Trade improving; supplies generally good. Prices as last week. *James Webber, Wholesale Apple Market.*

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Herbs, per bunch | 0 2– 0 4 |
| Asparag., Fr., bndl. | 2 0–15 0 | Horse Radish, p. bun. | 4 0– .. |
| — English, bund. | 6 0– .. | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| — Sprue, per bund. | 1 6– 2 0 | — Cos, each | 0 4– 0 6 |
| Beans, French, p. lb. | 1 0– .. | Mint, green, bunch | 0 4– 0 6 |
| — Broad, per lb. | 1 0– .. | Mushrooms, p. baskt. | 1 6– 2 0 |
| Beet, per doz. | 1 6– 2 6 | Onions, per bushel | 11 0– .. |
| Cabbages, per doz. | 1 0– 2 0 | — Spring, per bun. | 0 6– .. |
| Carrots, per bunch | 0 4– 0 6 | Parsley, per bunch | 0 4– .. |
| — New Fr., bund. | 1 6– .. | Radishes, per bun. | 0 2– 0 6 |
| Cauliflowers, English, each | 0 3– 0 6 | Rhubarb, per bund. | 0 4– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Seakale, per basket | 2 6– .. |
| Cucumbers, each | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| Garlic, per lb. | 1 0– .. | Tomatos, per lb. | 0 9– 1 0 |

POTATOS:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.; Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Cobs, per lb. | 2 0– 2 6 | Peaches, per dozen | 15 0–21 0 |
| Figs, per dozen | 9 0–12 0 | Pears, per dozen | 4 0–12 0 |
| Grapes, per lb. | 4 0– 8 0 | Pine-apples, per lb. | 1 0– 2 0 |
| Lemons, per 100 | 4 0– 6 0 | Strawberries, per lb. | 4 0– 8 0 |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 bunches | 6 0– 9 0 |
| Anemone, 12 bunches | 2 0– 4 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 0 6– 1 0 | Narcissus, in variety, 12 bunches | 6 0– 9 0 |
| Bouvardias, per bun. | 1 0– 2 0 | Pelargoniums, 12 sprays | 0 9– 1 0 |
| Calceolaria, 12 bun. | 12 0–15 0 | — zonal, 12 sprays | 0 4– 0 9 |
| Camellias, per dozen | 1 0– 4 0 | Primroses, 12 bunch. | 0 6– 1 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Primula, double, per bunch | 0 9– 1 6 |
| Daffodils, various, 12 bunches | 2 0– 4 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Daisies, 12 bunches | 2 0– 6 0 | Stephanotis, 12 spr. | 3 0– 4 0 |
| Eucharis, per doz. | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Forget-me-not, 12 bunches | 3 0– 6 0 | Tuberoses, per dozen | 2 0– 3 0 |
| Gardenias, 12 blms. | 1 6– 6 0 | Tulips, 12 bunches | 3 0– 6 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Violets, 12 bunches | 0 9– 1 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | — Neapolitan, Fr., per bunch | 4 0– 6 0 |
| — red, 12 blooms | 1 0– 3 0 | Wallflowers, 12 bun. | 3 0– 4 0 |
| Lilac, Fr., per bunch | 6 0– 8 0 | | |
| Lily of the Valley, 12 sprays | 0 9– 1 6 | | |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Foliage Plants, various, each | 2 0–10 6 |
| Azalea, per doz. | 30 0–42 0 | Genista, per doz. | 9 0–18 0 |
| Begonias, per doz. | 6 0–12 0 | Lilium longifl., doz. | 30 0–60 0 |
| Cineraria, per doz. | 8 0–12 0 | Lily of the Valley, per pot | 1 6– 2 0 |
| Cyperus, per dozen | 6 0–12 0 | Marguerite, white, per dozen | 18 0–24 0 |
| Dielytra, per dozen | 9 0–12 0 | — Yellow, per doz. | 12 0–30 0 |
| Dracæna terminalis | 30 0–60 0 | Myrtles, per doz. | 6 0–12 0 |
| — viridis, per doz. | 12 0–24 0 | Palms in var., each | 2 6–21 0 |
| Erica, in variety, doz. | 18 0–30 0 | Pelargoniums, doz. | 18 0–30 0 |
| Euonymus, various, per dozen | 6 0–18 0 | — tricolor, per doz. | 3 0–12 0 |
| Evergreens, in var., per dozen | 6 0–24 0 | — scarlet, per doz. | 4 0– 9 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Roses, various, doz. | 12 0–30 0 |
| Ficus elasticus, each | 1 6– 7 6 | Spiræa japonica, doz. | 9 0–18 0 |

## SEEDS.

LONDON: *May* 11.—The consumptive demand for farm seeds is now, of course, drawing to a close; however, a spell of warm rain, which is now much needed, would without doubt impart some stimulus to the sale. The stocks of all varieties remaining on hand are extremely light. The remarkably low price at which Hemp seed is now obtainable attracts attention. Tares are neglected. The Board of Trade returns just published state that the imports into the United Kingdom of Clover and grass seeds were for the past month 38,147 cwt., value £87,284. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## COALS.

The following are the prices current at market during the week:—Bebside West Hartley, 14s. 9d.; Ravensworth West Hartley, 14s. 9d.; Walls End—Hetton, 16s.; Hetton Lyons, 14s.; Hawthorns, 14s. 3d.; Lambton, 15s. 6d.; Original Hartlepool, 16s.; Wear, 14s. 6d. and 14s.; South Hetton, 16s.; South Hartlepool, 14s. 6d.; Tunstall, 14s.; Tees, 15s. 9d.


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*Post Free.*

| | Per packet—s. d. |
|---|---|
| **Auricula**, Show, from stage flowers | 1 6 |
| **Auricula**, Alpine, Choice Mixed | 1 0 |
| **Calceolaria**, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and | 1 6 |
| **Carnation**, Finest Mixed | 1 6 |
| **Cyclamen persicum**, Brilliant (New), 5s., 3s. 6d., and | 2 6 |
| **Cyclamen persicum giganteum**, 5s., 3s. 6d., and | 2 6 |
| **Cyclamen persicum giganteum rubrum**, 5s., 3s. 6d., and | 2 6 |
| **Cyclamen persicum**, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and | 1 6 |
| **Picotee**, Finest Mixed | 1 6 |
| **Polyanthus**, Wiggins' Prize Strain | 1 0 |

| | |
|---|---|
| **Primula sinensis fimbriata coccinea**, 5s., 3s. 6d., & | 2 6 |
| **Primula sinensis fimbriata alba magnifica** | 5 0 |
| **Primula sinensis fimbriata**, Chiswick Red | 5 0 |
| **Primula sinensis fimbriata**, Williams' Strain, Red, White, or Mixed, 5s., 3s. 6d., 2s. 6d., and | 1 6 |
| **Primula sinensis fimbriata rubra magnifica** | 3 6 |
| **Primula sinensis fimbriata**, Queen of the Whites | 3 6 |

## B. S. WILLIAMS,

Seed Merchant and Nurseryman,

VICTORIA AND PARADISE NURSERIES,

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# CORRY & SOPER'S NICOTINE SOAP

(PATENT).

An effectual and speedy Eradicator of

## Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight,

and all

## Parasites affecting Plants, without Injury to Foliage.

*It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.*

**Especially adapted for the Destruction of Blight on the Coffee Plant.**

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general INSECTICIDE.

It has now undergone a thorough test by some of the most Practical Men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with PERFECT SAFETY TO FOLIAGE.

It may be used as a Dip or Wash for any description of Out or Indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

Some hundreds of Testimonials lately received from men of considerable experience throughout the Kingdom.

**Sold in Jars, 8 oz., price 1s. 6d.; 20 oz., price 3s.; and in Tins, 14 lb., price 15s. 6d.; and Drums, 28 lb., price 25s.; 56 lb., price 50s.; 112 lb., 95s. Full directions for use on each package.**

**And 2 ounce Sample Jars, 6d. each.**
Full directions for use on each package.

Manufacturers of TOBACCO POWDER, TOBACCO JUICE (duty free), TOBACCO PAPER and CLOTH, at their Bonded Stores.

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*Plant Gladiolus during the Month of May for Autumn Decoration and to Cut for Vases, also the companion plants, the Flame and Orange-yellow coloured spotted Tiger flowers.*

# BARR AND SUGDEN,
## 12, KING STREET, COVENT GARDEN, W.C.

Free-flowering, robust-growing varieties of GLADIOLUS, in selections as under, for Grouping or Bedding :—

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|---|---|
| 3 roots each of 12 beautiful varieties .. .. .. .. | 15*s.* to 21*s.* |
| 5 roots each of 12 beautiful varieties .. .. .. .. | 25*s.* to 35*s.* |
| 3 roots each of 20 beautiful varieties .. .. .. .. | 21*s.* to 30*s.* |
| 5 roots each of 20 beautiful varieties .. .. .. .. | 35*s.* to 50*s.* |
| 1 root each of 12 varieties .. .. | 4*s.* 6*d.*, 6*s.*, 9*s.*, 12*s.*, and 18*s.* |
| 1 root each of 25 varieties .. .. | 10*s.* 6*d.*, 15*s.*, 21*s.*, and 30*s.* |
| 1 root each of 50 varieties .. .. .. .. | 30*s.*, 42*s.*, and 63*s.* |
| 1 root each of 100 varieties .. .. .. .. | 63*s.*, 84*s.*, and 105*s.* |

The following Mixed Varieties of GLADIOLUS, in many colours :—
Unnamed choice seedling varieties of the highest types, 30*s.* per 100, 4*s.* 6*d.* per dozen.
Splendid mixed varieties, from named sorts, 21*s.* per 100, 3*s.* per dozen.
Fine mixed varieties, from named sorts, 15*s.* per 100, 2*s.* 6*d.* per dozen.
The flame-coloured, spotted Tiger flower (Tigridia grandiflora), 21*s.* per 100, 3*s.* 6*d.* per doz.
The orange-yellow, spotted Tiger flower (Tigridia conchiflora), 21*s.* per 100, 3*s.* 6*d.* per doz.

New Double-flowering PYRETHRUMS, in pots, ready to plant out. These flower during May and June.

| | |
|---|---|
| 12 in 12 beautiful varieties .. .. .. | 9*s.*, 12*s.*, 15*s.*, and 18*s.* |
| 20 in 20 beautiful varieties .. .. .. | 18*s.*, 21*s.*, 25*s.*, and 30*s.* |
| 30 in 30 varieties .. .. .. .. .. | 25*s.*, 30*s*, 35*s.*, and 42*s.* |
| 40 in 40 varieties .. .. .. .. .. | 30*s.*, 35*s.*, 42*s.*, and 50*s.* |

### SEEDS FOR PRESENT SOWING.

Hardy ANNUALS, Half-Hardy ANNUALS, BIENNIALS and PERENNIALS, each in selections, 2*s.* 6*d.*, 3*s.* 6*d.*, 5*s.* 6*d.*, 7*s.* 6*d.*, 10*s.* 6*d.*, 12*s.* 6*d.*, 21*s.*, 30*s.*, and 42*s.*

Double ASTERS—Hamburgh Prize, Victoria, Pompon, Cocade, Hedgehog, Chrysanthemum, Bouquet, Elegantissima, Emperor, and Quilled, each in selections, 1*s.* 6*d.*, 2*s.* 6*d.*, and 3*s.* 6*d.*, or each in mixed colours, 1*s.* and 2*s.* 6*d.*

### SEEDS FOR PRESENT SOWING—(*continued*).

DOUBLE STOCKS, New Large-flowered Ten-week, Giant Pyramidal, Dwarf Bouquet, Imperial, Brompton, Intermediate and East Lothian, each in selections, 1*s.* 6*d.*, 2*s.* 6*d.*, and 3*s.* 6*d.* ; or each in mixed colours, 1*s.* and 2*s.* 6*d.*

DOUBLE GERMAN WALLFLOWERS, in selections, 1*s.* 6*d.*, 2*s.* 6*d.*, and 3*s.* 6*d.* ; in mixed colours, 1*s.* and 2*s.* 6*d.*

EVERLASTINGS, for Church Decorations and Bouquets, in assortments, 1*s.* 6*d.*, 2*s.* 6*d.*, and 3*s.* 6*d.*

ORNAMENTAL GRASSES, for Bouquets and Flower Border Decorations, in assortments, 1*s.* 6*d.*, 2*s.* 6*d.*, 3*s.* 6*d.*, 5*s.* 6*d.*, 7*s.* 6*d.*, and 10*s.* 6*d.*

Orders are now being booked for the beautiful Hardy WEARDALE and LONGFORD BRIDGE NEW DAFFODILS, which B. & S. have exhibited at the Royal Horticultural Gardens and the Royal Botanic Gardens for several years, and to which Exhibitors' Medals of the Highest Merit have been awarded.

| | | | |
|---|---|---|---|
| 12 in 12 new vars. .. | 9*s.*, 12*s.*, and 18*s.* | 30 in 30 new vars. .. | 30*s.*, 42*s.*, and 63*s.* |
| 20 in 20 new vars. .. | 15*s.*, 21*s.*, and 30*s.* | 40 in 40 new vars. .. | 42*s.*, 63*s.*, and 84*s.* |

SPECIES AND VARIETIES OF DAFFODILS.

| | s. d. | s. d. | | s. d. | s. d. |
|---|---|---|---|---|---|
| 1 each in 12 vars. .. .. | 3 6 | to 5 6 | 5 each in 12 vars. .. .. | 10 6 | to 15 0 |
| 1 each in 20 vars. .. .. | 7 6 | to 10 6 | 5 each in 20 vars. .. .. | 15 0 | to 25 0 |
| 1 each in 30 vars. .. .. | 10 6 | to 15 0 | 5 each in 30 vars. .. .. | 30 0 | to 42 0 |
| 1 each in 50 vars. .. .. | 15 0 | to 21 0 | 5 each in 50 vars. .. .. | 63 0 | to 84 0 |
| 3 each in 12 vars. .. .. | 8 6 | to 12 6 | 10 each in 12 vars. .. .. | 15 0 | to 25 0 |
| 3 each in 20 vars. .. .. | 12 6 | to 21 0 | 10 each in 20 vars. .. .. | 25 0 | to 30 0 |
| 3 each in 30 vars. .. .. | 21 0 | to 30 0 | 10 each in 30 vars. .. .. | 42 0 | to 63 0 |
| 3 each in 50 vars. .. .. | 42 0 | to 63 0 | 10 each in 50 vars. .. .. | 84 0 | to 105 0 |

Choice Mixed DAFFODILS, in Mixture for Naturalisation, per 1000, 63*s.* ; per 100, 7*s.* 6*d.*
Prime Mixed DAFFODILS, in Mixture for Naturalisation, per 1000, 42*s.* ; per 100, 5*s.* 6*d.*

**BARR & SUGDEN, 12, King Street, Covent Garden, W.C.**

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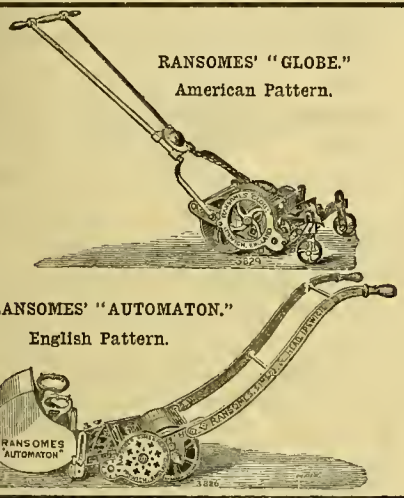


# RANSOMES' LAWN MOWERS
## ARE THE BEST.

MELBOURNE EXHIBITION, 1881, THE HIGHEST AWARD.

The "**GLOBE**" Lawn Mowers are intended to meet the demand for machines specially adapted for cutting long grass; and which, whilst similar to the Lawn Mowers imported from America, have the special advantages of the more accurate fitting and general durability of English manufacture and perfect adjustment.

**PRICES, without Grass Box.**

| | | |
|---|---|---|
| 8-in. for Small Lawns and Edgings.. | .. £2 | 2 0 |
| 10-in. ,, use by a Lady or a Boy .. | .. 3 | 3 0 |
| 12-in. ,, ,, ,, ,, .. | .. 4 | 4 0 |
| 14-in. ,, ,, Man .. .. | .. 5 | 5 0 |
| 16-in. ,, ,, ,, on Level Lawns .. | 6 | 6 0 |

Grass Boxes extra if required.
8-in., 5*s.* ; 10 and 12-in., 7*s.* 6*d.* ; 14 and 16-in., 10*s.*

The "**AUTOMATON**" Lawn Mowers are thoroughly strong, well made, and durable machines, and the best suited for *general* work and *Gardeners'* use. They cut the grass perfectly, leave no ribs, but produce a smooth velvety surface on the Lawn, and are light in draught.

**PRICES, including Grass Box.**

| | | |
|---|---|---|
| 8-in. for Small Lawns and Edgings.. | .. £2 | 15 0 |
| 10-in. ,, use by a Lady or a Boy .. | .. 3 | 10 0 |
| 12-in. ,, ,, Lad .. .. .. | .. 4 | 10 0 |
| 14-in. ,, ,, Man .. .. .. | .. 5 | 10 0 |
| 16-in. ,, ,, Man and Boy .. .. | 6 | 10 0 |
| 18-in. ,, ,, Man and Boy .. .. | 7 | 10 0 |
| 20-in. ,, ,, Two Men .. .. .. | 8 | 0 0 |
| 22-in. ,, ,, Donkey .. .. .. | 8 | 10 0 |

Boots for Donkey, 20*s.* per set.

**R., H. & J. also manufacture "Reversible" Lawn Mowers for Small Gardens and Amateurs, and "Horse-Power" Lawn Mowers for Large Lawns, Cricket Grounds, &c.**

*Machines sent on Month's Trial, Carriage Paid. Illustrated Price Lists free by Post.*

RANSOMES, HEAD & JEFFERIES, ORWELL WORKS, IPSWICH.

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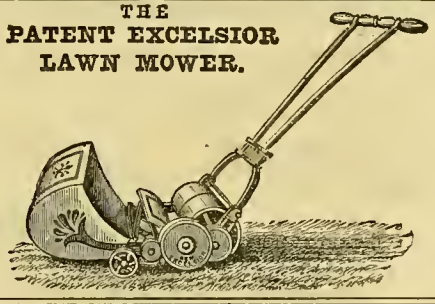
# EXCELSIOR LAWN MOWER

THE PATENT EXCELSIOR LAWN MOWER.



**The Original and Best American Lawn Mower.**

ALL OTHERS ARE IMITATIONS.

*Adapted for the requirements of Amateurs and Gardeners.*

Awarded the SILVER BANKSIAN MEDAL of the Royal Horticultural Society, June, 1880, for Special Merit.

CANNOT CLOG.
CUTS THE BORDERS.
DOES NOT RIB THE GRASS.
THE LIGHTEST IN DRAUGHT
THE LOWEST CUTTING.
IS A PERFECT MOWER.

**Used in the Royal Parks and Gardens.**

HAS NEVER BEEN BEATEN IN COMPETITION.

*Prices and particulars of any respectable Ironmonger or Florist, and of the Manufacturers,*

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223, UPPER THAMES STREET,
LONDON, E.C.

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# "ARCHIMEDEAN" AMERICAN LAWN MOWERS,

**Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.**

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

AWARDED
HIGHEST PRIZE AT
PARIS EXHIBITION, 1878;
and the Jury in their Report say :—
"The 'Archimedean' did the best work of any Lawn Mower exhibited."
Also
HIGHEST PRIZE AT
SYDNEY EXHIBITION, 1879-80.

**OPINIONS of the PRESS.**

"Far superior to any of ours."—*Vide* the *Field.*
"Remarkably easy to work."—*Vide* the *Gardeners' Magazine.*
"The quickest, most simple, and most efficient mower ever used."—*Vide* the *Gardeners' Chronicle.*
"We feel bound to recommend it to our readers as one of the best mowers we have as yet made acquaintance with."—*Vide* the *Floral World.*

PRICES from TWENTY-FIVE SHILLINGS.
*Warranted to give satisfaction.*
**Delivered Carriage Free to all Stations.**
Illustrated Catalogue post-free on application.

CAN BE USED EITHER WITH OR WITHOUT GRASS BOX.

**WILLIAMS & CO. (Limited),** Manufacturers and Patentees.

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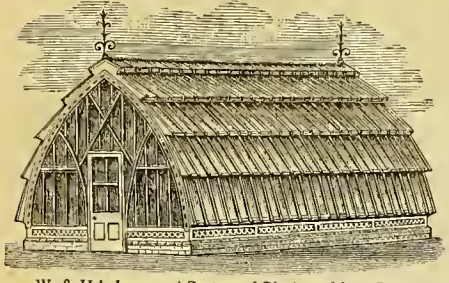
## WRIGHT & HOLMES,

Practical Horticultural Builders and Hot-water Engineers.



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Further particulars on application to

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Applied to Conservatories and Greenhouses.
With Illustrations, Prices, &c.
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Of every description Made, Erected, Fitted and Heated.
*ESTIMATES and PLANS GRATIS.*

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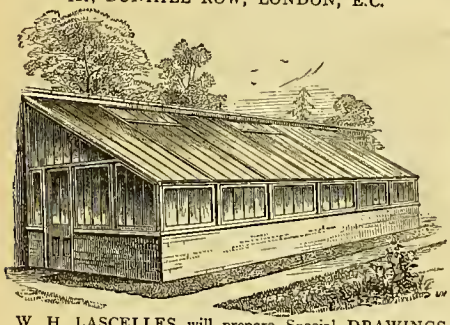

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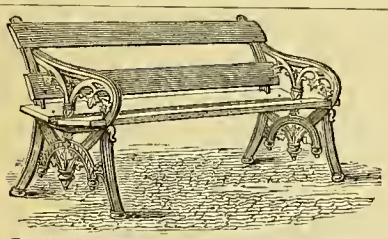

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Garden Seats, Awnings and Tents, Rustic Tables, Chairs, and Flower Stands, Lawn Mowers, Garden Rollers, Water Barrows, Wheelbarrows, Garden Tools, Summer-houses, Sun Dials, Fancy Wirework, Weather Vanes, Hammocks, and all kinds of Garden Furniture at lowest marked prices. *Catalogues post-free.*

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Made of Wood and Iron only.

Sole Agents for Great Britain—
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TENANT'S FIXTURE,
Of improved construction, can be erected in a few minutes, with Roosting House, Covered Run, Nests, Perches, &c., complete, 12 feet long 4 feet wide. Price £6 10s., carriage paid. Write for Illustrated Catalogue, containing useful Treatise on Poultry Management, free by post.
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*HORTICULTURAL BUILDERS*
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**HOT-WATER ENGINEERS,**
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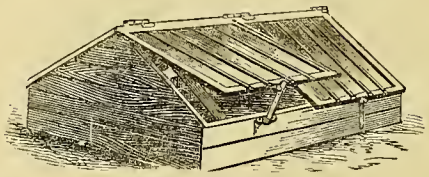
Plans and Estimates on application for every description of Horticultural Buildings in Wood or Iron.
*Garden Frames and Sashes in Stock.*



**Portable Plant Frames.**

R. HALLIDAY AND CO. desire to draw special attention to their Plant Frames, of which they always have a large stock, ready glazed and painted. They are made of the best materials, and can be put together and taken apart in a few minutes by any one.
Prices, delivered to any station in England, also Dublin and Belfast:—

| | £ | s. | d. |
|---|---|---|---|
| 6 feet long, 4 feet wide .. .. .. .. | 2 | 15 | 0 |
| 12 feet long, 4 feet wide .. .. .. .. | 4 | 15 | 0 |
| 6 feet long, 5 feet wide .. .. .. .. | 3 | 15 | 0 |
| 12 feet long, 5 feet wide .. .. .. .. | 6 | 10 | 0 |

The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.
R. HALLIDAY AND CO., Hothouse Builders and Engineers, Royal Horticultural Works, Middleton, Manchester.

## BOULTON & PAUL,

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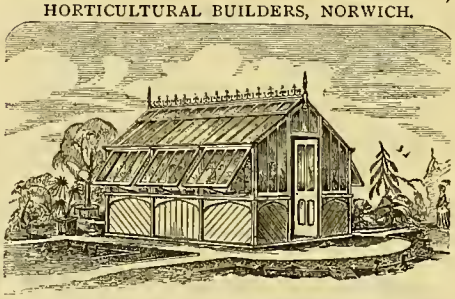
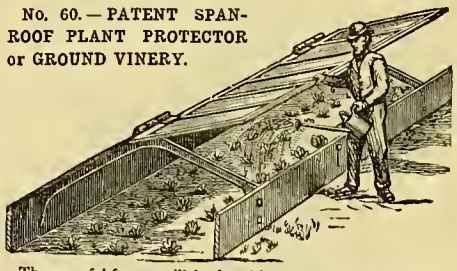


Portable Lean-to and Span-roof Greenhouses, with Fittings and Heating Apparatus complete in themselves. Delivered carriage paid to any Railway Station. Estimates given for any size Conservatories, Greenhouses, &c.
New CATALOGUE post-free for 12 stamps.

**No. 60.—PATENT SPAN-ROOF PLANT PROTECTOR or GROUND VINERY.**



These useful frames will be found invaluable in large or small gardens for protecting plants in the open ground, or storing the same when turned out of the conservatory.
Cash Prices—Carriage paid—including Packing Cases.

| | £ s. d. | Ends per pair extra. s. d. |
|---|---|---|
| 6 feet long, 3 feet wide .. | 1 17 6 | .. 7 0 |
| 12 feet long, 3 feet wide .. | 3 8 6 | |
| 6 feet long, 4 feet wide .. | 2 9 6 | .. 8 6 |
| 12 feet long, 4 feet wide .. | 4 8 6 | |
| 12 feet long, 5 feet wide .. | 5 15 6 | .. 10 6 |
| 12 feet long, 6 feet wide .. | 7 6 6 | .. 12 0 |

Several may be placed together, and only one pair of ends required. Descriptive LISTS post-free.
Orders amounting to over 40s. Carriage paid to any Railway Station in England and Wales; also to Edinburgh, Glasgow, Dublin and Belfast.
Any damage in transit made good if advised immediately.

**PORTABLE POULTRY HOUSES,**
Movable Poultry Fencing, New Coops and Chicken Houses, Pheasantries, Aviaries, Dog Houses and Yards, Improved Kennel Railing, Portable Kennels, Travelling Boxes for Dogs, Rabbit Hutches, Portable Piggeries, &c. Manufactured by BOULTON AND PAUL, Norwich. Illustrated Catalogue sent free by post.
**BOULTON & PAUL, Norwich.**

## GREENHOUSE SASHES,

**6 feet by 3 feet,**
Best Pine,
Primed and Glazed,
**15-oz., 9s.,**
**21-ounce, 10s. 6d.**
each.

**W. RAMSEY,**
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**Glass Works,**
LONDON, E.C.

## PIPES and FITTINGS,

FOR HEATING APPARATUSES.
The largest stock in the Kingdom. 4-inch pipes, 1s. 7d. per yard.
**SILVESTER & SAINSBURY,**
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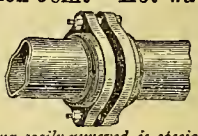
*DENNIS PARK IRONWORKS, STOURBRIDGE,*
MANUFACTURER OF
**HOT-WATER PIPES,**
IMPROVED "EXPANSION JOINT" PIPES,
**BOILERS,**
Spouting, Pumps, Tanks, Wrought-iron Tubing,
And every description of Ironwork for Horticultural and Building Purposes.

**SOCKET HOT-WATER PIPES.**

| | s. | d. | | s. | d. | | s. | d. | |
|---|---|---|---|---|---|---|---|---|---|
| Pipes (6 ft. long)—2-in., | 1 | 6 | .. 3-in., | 2 | 8 | .. 4-in., | 3 | 4 | each. |
| ,, (9 ft. long)— ,, | — | | .. ,, | 3 | 9 | .. ,, | 4 | 6 | ,, |
| Elbows (No. 12)— ,, | 1 | 1 | .. ,, | 1 | 8 | .. ,, | 2 | 0 | ,, |
| Tees (No. 33)— ,, | 1 | 5 | .. ,, | 2 | 4 | .. ,, | 3 | 3 | ,, |
| Syphons (No. 23)— ,, | 1 | 3 | .. ,, | 2 | 0 | .. ,, | 3 | 0 | ,, |

**"Expansion Joint" Hot-water Pipes.**

The "Expansion Joint."



The Best and Quickest Made.

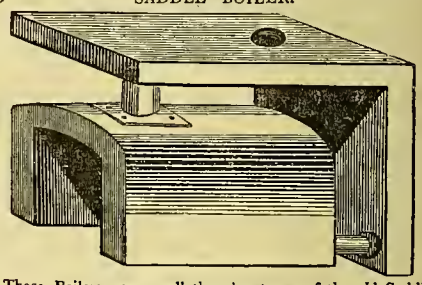
*This Joint, being easily removed, is specially adapted for Tenants.*

| | s. | d. | | s. | d. | | s. | d. | |
|---|---|---|---|---|---|---|---|---|---|
| Pipes (6 ft. long)—2-in., | 1 | 5 | .. 3-in., | 2 | 3 | .. 4-in., | 2 | 11 | each. |
| ,, (9 ft. long)— ,, | — | | .. ,, | 3 | 4 | .. ,, | 4 | 3 | ,, |
| Elbows (No. 3)— ,, | 0 | 8 | .. ,, | 0 | 10 | .. ,, | 1 | 0 | ,, |
| Tees (No. 13)— ,, | 0 | 11 | .. ,, | 1 | 2 | .. ,, | 1 | 4 | ,, |
| Syphons (No. 16)— ,, | 1 | 0 | .. ,, | 1 | 4 | .. ,, | 1 | 6 | ,, |

Joint complete, with Rubbers and Pins, 2-in., 10d. each; 3-in., 1s. 2d.; 4-in., 1s. 4d.
Delivered into Trucks or Boats. Illustrations and Price Lists free.
*Terms—Cash against Invoice less 2½ per Cent. Discount.*
Estimates for Heating given from Plans.
All Castings supplied of First Quality only.

## JONES'S PATENT "DOUBLE L"

SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. | | | To heat of 4-in. Pipe. | Price. | | |
|---|---|---|---|---|---|---|
| High. | Wide. | Long. | Feet. | £ | s. | d. |
| 20 in. | 18 in. | 18 in. | 300 | 7 | 0 | 0 |
| 20 ,, | 18 ,, | 24 ,, | 400 | 8 | 0 | 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 | 0 | 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 | 0 | 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 | 0 | 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 | 0 | 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 | 0 | 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 | 0 | 0 |

Larger sizes if required.

*From* Mr. Charles Young, *Nurseries, Balham Hill, S.W., May 29, 1873.*
"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.
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When ordering Boilers please refer to the above advertisement.

**Economical Irrigation and Domestic Water Supply.**

ROE'S PATENT SELF-ACTING HYDRAULIC RAM.—An Engine for raising Water by its own motive-power, without labour or expense.

JAMES THORNE ROE (son of Freeman Roe, late of the Strand, patentee of this most valuable invention), having the original models from which all other Rams have been copied, and having made some practical improvements by which its efficacy is much enhanced, is now manufacturing the Ram, and is ready to execute orders for the same. This Ram requires only a few feet fall of water, which will enable it to raise water continuously ten times the height of the fall.

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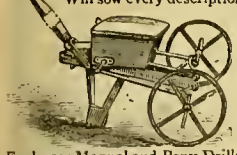
Will sow every description of Farm and Garden Seeds.



There is no spring and slide to get out of order and damage the seed, being worked by a brush. The rows can also be put in at equal distances without a line.

Price, with 2 wheels, 20s. each.
" with 1 wheel, 16s. each.
" to sow 2 rows, 34s. each.

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THIS Machine constantly employed will pay itself in two days. Dr. Hogg, in the *Journal of Horticulture*, says—"This Edge Clipper we have tried, and know not which to admire most—its simplicity or efficiency." Mr. Moore, in the *Florist*—"This new machine does its work rapidly and admirably, the grass being cut with precision, and" he further adds, "the use of it willl, we have no doubt, become general." Prices 25s. and 30s.

LAWN EDGER CO., 15, Pall Mall, London, W.

THE

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**American Lawn-Mower,**

is, without question, the best in the world, and its sale exceeds any other. The makers challenge competition on the following points: Mechanical Construction, Excellence of Material, Workmanship, Finish, Simplicity, Durability, and Lightness of Draught when Cutting Long or Short, Wet or Dry Grass. See it and try it before you buy any other. Every Machine is unconditionally warranted.

Awarded twenty-four First-class Gold, Silver, and Bronze Medals at the Principal Exhibitions and Trials in America and Europe.

**New Pony and Horse Mowers,** Carriage paid to any Station. Hand sizes—8-in., 42s.; 10-in., 63s.; 12-in. 84s; 14-in., 105s.; 16-in., 126s.; 18-in., 147s.; 22 in., 189s.

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## Toope's Asbetos Covering Company

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Manufacture an easily fitted and removable Patent Covering for Hot-water Pipes of any diameter, which effectually prevents any loss of heat in pipes passing from the boiler to the Glass-houses, no matter what the distance.

*It will be found invaluable where used.*

**Price 10d. per superficial foot.**

NUMEROUS TESTIMONIALS.

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WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

| | Inches. | Inches. | | |
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| 15-oz., | 6 × 4 to 7½ × 5½, | 9s., 10s., 11s., 12s. | | Per 100 ft. Box |
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| | 15 × 10 to 18 × 12, | 11s., 13s., 14s., 15s. | | |
| | 20 × 12 to 24 × 16, | 11s 6d, 13s 6d, 14s 6d, 15s 6d. | | |
| | 20 × 17 to 24 × 18, | 12s., 14s., 15s., 16s. | | |
| | Inches. | Inches. | | |
| 21-oz., Orchard House, | 20 × 12, | 20 × 15, | 16s., 17s. 3d., 18s. 3d., 20s. | |
| | 20 × 13, | 20 × 16, | | |
| | 20 × 14, | 20 × 17, | | |

15-oz., for Cutting up, 34s., 41s., 42s. 6d., 53s. per 300 feet case.
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LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.

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15-oz. and 21-oz., in Boxes containing 200 feet,

**Carriage Paid to any Railway Station in England.**

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Can be obtained in all sizes and qualities of

**BETHAM & SON,**

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GARDENER (SECOND).—Age 20, single; has had experience in Orchids, Glass in general, and the routine of Gardening. Total abstainer. Good character.—J. P. A., Woodlands Nursery, Maresfield, Sussex.

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Can be worked by a strong Youth.

To cut 12 inches ... ... ... 4 10 0
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To cut 14 inches ... ... ... 5 10 0
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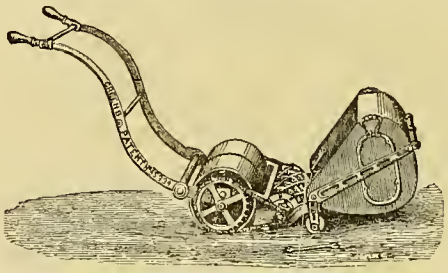

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This can be worked by One Man on an even lawn.

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By a Man and Boy.

To cut 20 inches ... ... ... 8 0 0
By a Man and Boy.

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*To cut 24 inches. By Two Men ... 9 0 0

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| | |
|---|---|
| To cut 26 inches ... ... ... ... ... | £14 0 0 |
| To cut 28 inches ... ... ... ... ... | 16 0 0 |
| To cut 30 inches ... ... ... ... ... | 18 0 0 |
| Leather Boots for Donkey ... ... ... ... | 1 0 0 |
| Leather Boots for Pony ... ... ... ... | 1 4 0 |

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| | |
|---|---|
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| To cut 36 inches ... ... ... ... ... | 26 0 0 |
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| To cut 48 inches ... ... ... ... ... | 34 0 0 |
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**For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.**

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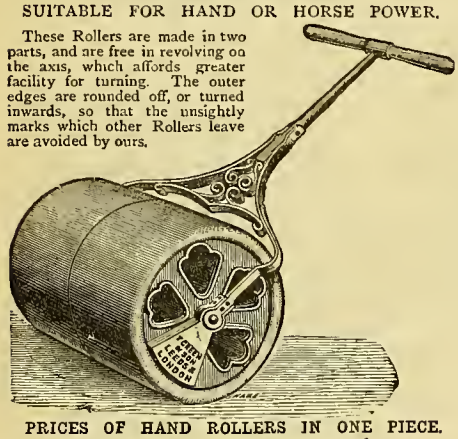
These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks which other Rollers leave are avoided by ours.



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|---|---|
| 16 in. by 17 in. .. .. .. .. | 2 15 0 |
| 20 in. by 22 in. .. .. .. .. | 3 15 0 |
| 24 in. by 26 in. .. .. .. .. | 5 0 0 |

**PRICES OF ROLLERS IN TWO PARTS.**

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| 20 in. by 22 in. .. | 4 0 0 | 30 in. by 32 in. .. | 9 0 0 |

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| Diam. Length | £ s. d. | Diam. Length | £ s. d. |
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| 30 in. by 36 in. .. | 13 0 0 | 30 in. by 60 in. .. | 19 0 0 |
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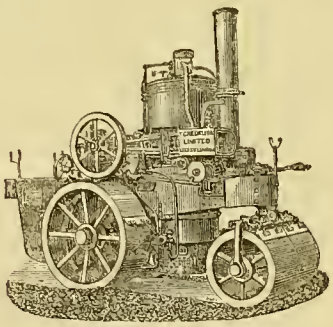

Weight Empty :—
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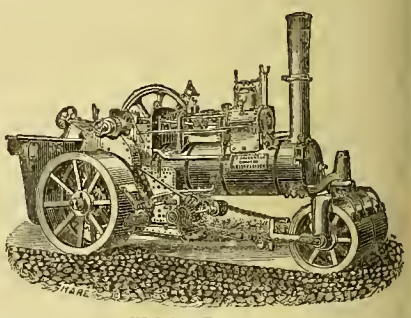
7 TONS. 8 TONS.



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Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 386.—Vol. XV. { New Series. } SATURDAY, MAY 21, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE!—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific at 1 P.M.; General Meeting for the Election of Fellows, &c., at 3 P.M., on TUESDAY next, May 24.
N.B.—An Exhibition of Choice FLOWERS, &c., will be held in connection with the Meetings of the Fruit and Floral Committees in the Conservatory.
Band of the Royal Horse Guards from 4 o'Clock P.M. Admission 1s.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
SUMMER EXHIBITIONS of PLANTS, FLOWERS, and FRUIT, WEDNESDAYS, May 25 and July 6, 2 to 7 o'Clock.
Tickets, to be obtained at the Gardens only by vouchers from Fellows of the Society, price 5s., or on the day of Exhibition, 7s. 6d. each
Schedules of Prizes, and all particulars, may be obtained by post.

CRYSTAL PALACE.—GREAT SUMMER EXHIBITION of PLANTS and FLOWERS, SATURDAY, May 28.
ENTRIES CLOSE May 21.

INTERNATIONAL POTATO EXHIBITION.
President, the Right Hon. the Lord Mayor of London.
The SEVENTH ANNUAL EXHIBITION will take place at the Crystal Palace on SEPTEMBER 20 and 21, 1881. Schedules of Prizes and all particulars may be obtained on application to J. A. McKENZIE, Secretary.
Tower Chambers, Moorgate Street, London, E.C.

ALEXANDRA PALACE, N. (Lessees—Jones and Barber.)
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SHOW of FLORAL DECORATION and EXHIBITION of POT ROSES, May 20 and 21.
EXHIBITION of FLORAL DECORATION and SHOW of PELARGONIUMS, June 10 and 11.
STRAWBERRIES and CHERRY EXHIBITION, with FLOWER MART, June 17 and 18.
ROSE FAIR and PRIZE for the BIGGEST GOOSEBERRY, July 2.
GREAT ROSE SHOW, July 8 and 9.
J. FORSYTH JOHNSON, Horticultural Director.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1881 will open on FRIDAY, June 3, at 2 o'Clock, P.M.
GREAT SHOW of AMERICAN PLANTS, by John Waterer & Sons, of Bagshot, will open the same day.
The INTERNATIONAL HORTICULTURAL EXHIBITION will open on AUGUST 24.
THREE THOUSAND POUNDS IN PRIZES.
For Schedules apply to BRUCE FINDLAY.
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Price 1s.; post-free, 1s. 4d. (Messrs. Carter were the winners of the only Gold Medal for Lawns, Paris, 1878.)
The Queen's Seedsmen, and Seedsmen by Royal Warrant to H.R.H. the Prince of Wales, 237 and 238, High Holborn, W.C.

FINEST GRASS SEEDS, specially prepared for LAWNS, BOWLING GREENS, CRICKET GROUNDS, &c., comprising the very best dwarf evergreen kinds, quality not to be surpassed, 1s. per pound, 20s. per bushel; 3 to 4 bushels required per acre.
RICHARD SMITH and CO., Seedsmen and Nurserymen, Worcester.

KEYNES AND CO.'S VERBENAS.—Thoroughly hardened, fit for immediate planting. Not to be surpassed for health and vigour. Price 10s. per 100, 95s. per 1000. List of fifty varieties free.
KEYNES AND CO., Salisbury.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

Tricolor Bedding Geraniums.
ALFRED FRYER offers a large stock of the best varieties. Priced LISTS post-free.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Pelargoniums—Pelargoniums.
JAS. HOLDER AND SON beg to offer the above, strong healthy Plants, in small 60 pots, consisting of Show, French, and Fancy kinds, in fifty or more varieties, 30s. per 100, packing included. Cash with order.
Crown Nursery, Reading.

HOLLYHOCKS. — Strong plants now ready. List of varieties and price upon application.
L. WOODTHORPE, Glazenwood Nursery, Braintree.

Rare Holly Fern.
POLYSTICHUM LONCHITIS, with Thorns.—This is the best time to plant. Price 10d. each free, or three for 2s. free.
MORLEY AND CO., Odiham, Hants.

Hardy Rhododendrons and Azaleas.
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

GLOBE ARTICHOKES.—Nice plants now ready, 6s. per dozen, 40s. per 100. Prices to Trade on application.
HOOPER AND CO., Covent Garden, London, W.C.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Palms, Eucharis, and Foliage Plants.
WANTED, large Plants of the above for Cash, or in EXCHANGE for any others. Particulars to
POUNCE AND SONS, 18, Westbourne Grove, London, W.

Alexandra Palace, London, N.
(Lessees, Jones & Barber.)
NOTICE TO EXTENSIVE ROSE GROWERS.
WANTED, 200,000 ROSE BLOOMS during the Rose season. Those able to supply by the 1000 please communicate with
J. FORSYTH JOHNSON, Horticultural Director.

WANTED, choice CUT FLOWERS for a City Shop doing a large business. Best market prices returned. State varieties and particulars to
A. M., 70, Camberwell New Road, S.E.

Cut Flowers.
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of HOT-HOUSE and OUTDOOR FLOWERS. Cash by return of post if desired. Where money is objected to ORCHIDS, &c., MAY BE HAD in EXCHANGE.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS, are requested to communicate with W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WISE AND RIDES are prepared to receive CONSIGNMENTS of CUT FLOWERS, CHOICE FRUITS, CUCUMBERS, &c., in quantity.
3, Tavistock Court, Covent Garden, W.C.

WANTED, large healthy Plants of SEAFORTHIA ELEGANS, KENTIAS, ARECA LUTESCENS, RHAPIS FLABELLIFORMIS, ASPIDISTRA LURIDA VARIEGATA, DRACÆNA TERMINALIS, and LUCULIA GRATISSIMA.
W. HOWARD, Southgate, N.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes in the Trade. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

WILLIAMS' for ORCHIDS either for the Cool-house, Mexican, or East India-house, either in Specimens or small plants. The largest Collection of Specimens suitable for Exhibition in the Trade.

WILLIAMS' for CHEAP ORCHIDS.—B. S. W. having recently purchased several Collections of Orchids in this country, in addition to the large consignments he is constantly receiving from his collectors abroad, is thus enabled to offer a large assortment of these plants, at exceptionally low prices. Price List upon application.

WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, Nurseryman and Seed Merchant; Victoria and Paradise Nurseries, Upper Holloway, London, N.

Orchids, &c.
THE NEW PLANT and BULB COMPANY'S SPECIAL LIST (No. 51) is just published. Post-free on application.
Lion Walk, Colchester.

SEEDLING HOLLIES.—Several thousands of the above, extra fine. Apply
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

Now is the Best Time to Transplant Hollies.
HOLLIES, STANDARD, GOLD and SILVER, perfect Specimens, from 10s. 6d. to 31s. 6d. each. PYRAMIDS, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

DAHLIAS and TEA ROSES. — Show, Fancy, and Bouquet DAHLIAS, very fine plants of the best varieties, at £1 per 100.
Well established, strong healthy plants, of the finest TEA ROSES, 12s. per dozen, £4 and £5 per 100. Lists on application.
J. HOUSE, Eastgate Nurseries, Peterborough.

NEW ROSES for 1881, in pots. TEA and NOISETTE ROSES, in pots. Price Lists free.
CLEMATISES, best new and old sorts. New List to be ready (D.V.) by end of May.
EWING AND CO., Eaton, Norwich.

To the Trade.—New Roses for 1881.
LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,
Gratis and post-free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

POT ROSES and CLEMATIS.—A large and very extensive Collection of the above, including the finest varieties, ready for delivery in June. Early orders solicited.
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties are now ready, 2s. 6d., 3s. 6d. and 5s. each. Full particulars and testimonials free on application to
Messrs. JONES AND NORTH, Hope Nursery, Lewisham, Kent.

Verbenas—Verbenas.
JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other varieties of good strong Spring-struck Cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included, for cash with order.
Queen's Road Nursery, Markhouse Common, Walthamstow.

MARVELLOUS ACQUISITIONS.—SUMMER-FLOWERING CHRYSANTHEMUMS.—In flower from end of June till frost stops them. Should be in every Garden. Twelve varieties, correctly named, 3s. 6d.
J. T. RICHES, Nurseryman, Tooting, London.

6000 Grape Vines.
THE LIVERPOOL HORTICULTURAL COMPANY (John Cowan), Limited, The Vineyard and Nurseries, Garston, near Liverpool, have a splendid stock of VINES grown from eyes this year, suitable for present planting. CATALOGUES free. Trade supplied.

Cabbage Plants.—Thirty Thousand
ENFIELD MARKET, 4s. per 1000.
JOHN LINDALL, Gardener, Heckington, Lincolnshire.

## SALES BY AUCTION.

**The Fourth Portion of the Celebrated Collection of ORCHIDS formed by JOHN DAY, Esq., of Tottenham.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY and TUESDAY, May 23 and 24, at half-past 12 o'Clock precisely each day, the Fourth Portion of this celebrated Collection, comprising, amongst other fine things :—

| | |
|---|---|
| Cattleya labiata, autumn var. | Phalænopsis sumatrana |
| ,, Skinneri alba | ,, tetraspes |
| Cypripedium Selligerum | ,, leucorrhoda |
| ,, vexillarium | Angræcum Chailluanum |
| ,, Stonei platytænium | ,, Ellisi |
| Aerides Schröderi | Masdevallia Dayana |
| Dendrobium Brymerianum | ,, Macrura |
| ,, superbiens | ,, Veitchiana major |
| Odontoglossum nevadense | ,, Chimæra |
| Lælia autumnalis atrorubens | Lycaste Skinneri alba |
| ,, anceps alba | Epidendrum Cooperianum |
| ,, ,, Dawsoniana | Vanda Lowii. |

May be viewed the mornings of Sale, and Catalogues had.

**Thursday Next.**
IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 26, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, St. Alban's, IMPORTED ORCHIDS, consisting of a fine lot of Odontoglossum Alexandræ, Masdevallia Tovarensis, Dendrobium heterocarpum philippinense, Cyrtopodium punctatissimum; a few very RARE ORCHIDS, consisting of Renanthera Storei, Cattleya Skinneri alba, a white Stanhopea, Cœlogyne Massangeana, and other Orchids.

May be viewed the morning of Sale, and Catalogues had.

**Notice.**

MR. J. C. STEVENS' NEXT SALE of FLOWERING ORCHIDS will take place on WEDNESDAY, June 1, and he will be glad to know of Entries as soon as possible, and not later than Wednesday, May 25. The Plants will be on View on the afternoon of the day before, in the New Auction Room, and should be sent in if possible on the Tuesday morning before 12 o'Clock.

Auction Rooms and Offices, 38, King Street, Covent Garden, London, W.C.

**Monday Next.**
ESTABLISHED and IMPORTED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY NEXT, at 12 o'Clock precisely, 300 Lots of Established ORCHIDS, many of which are in flower or in bud, including fine plants of Cypripedium nævium, all in bloom; also 200 lots of Imported ORCHIDS, comprising Sophronites grandiflora, Lælia majalis, Odontoglossum Alexandræ, and others, Cattleya Mossiæ, C. Trianæ, C. Mendelii, Oncidiums in variety, &c.; also a quantity of ORCHID BASKETS.

Catalogues may be had at the Mart, and of the Auctioneers, 8, New Broad Street, E.C.

**Important Unreserved Sale of a Choice Collection of Established ORCHIDS, STOVE and GREENHOUSE PLANTS, FERNS, BEDDING PLANTS, &c.**

MR. G. A. HUBBARD will SELL by AUCTION, at the Public Hall, Bexley Heath, S.E., on THURSDAY, May 26, the above valuable Plants, in fine condition; ODONTOGLOSSUM VEXILLARIUM, O. ROEZLII, and other rare ORCHIDS in Flower.

Full particulars in Catalogues, which may be had on application to Mr. G. A. HUBBARD, Auctioneer, &c., Bexley Heath, Kent, S.E.

**Midland Counties.—(5250.)**

FOR DISPOSAL, a valuable NURSERY BUSINESS, in a High-class Locality, doing an excellent local Trade. Two Nurseries thoroughly well-stocked, in perfect Working Order, attractive Shop, and Twelve-roomed Residence. Ill-health cause of disposal. Rent £70; small Premium. Incoming by valuation.

Particulars of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, London, E.C.

TO BE SOLD, with Immediate Possession, a First-class Old-established NURSERY and SEED BUSINESS, containing 9 Acres of good Marketable Stock, comprising 1 acre of 2-yr. transplanted Quick, a large quantity of Spanish Chestnuts, Ash, Elm, Hazel, Hollies, Cedrus Deodara, Evergreen and Deciduous Shrubs, Fruit Trees, and a General Nursery Stock. Close to the Railway Station at Bridgnorth. The Nursery Land may be had on long Lease. Has been successfully carried on for many years by Mr. John Mann. Incoming from £500 to £600. A genuine good opening for any industrious man with small capital.

Also the Old-established BLACK HORSE INN, with good Stabling, Malt-house, and 3 Acres of Pasture Land adjoining, situated in the centre of Bridgnorth. For particulars apply, Mr. JOHN MANN, Elm Villa, Danesford, Bridgnorth.

FOR DISPOSAL, on the South Coast, a NURSERY, SEED, and FLORIST BUSINESS, comprising 2 Acres of Land, Two Vineries, Cucumber, Propagating, and two Span-roofed Greenhouses, Show House, and Seed Shop, Pits, Frames, Potting Sheds, &c. Rent only £25 per annum. Goodwill, Stock, Greenhouses, and all Erections. Price and particulars on application to

FLORIST, 96, Alexandra Street, St. Leonards-on-Sea.

TO BE DISPOSED OF, the Old-established NURSERY and SEED TRADE of the late Mr. Henry Baker, Atherstone. The Nursery (about 8 Acres) is in an excellent neighbourhood, and close to a Market Town, in full working order, and every facility for doing a large trade. For particulars apply to

Mrs. BAKER, The Nurseries, Atherstone.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are 8½ Acres of deep rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business. For particulars apply to

J. WATSON, 38, Crown Street, Bury St. Edmund's.

TO BE LET, from June 1, large GARDENS, belonging to a Gentleman's residence; good Cottage, 3 miles from two stations, 16 miles from Manchester.

For particulars apply, by letter, to P. M., 1, Lancaster Gate, Hyde Park, London, W., or to Messrs. JAMES DICKSON AND SONS, Newton Nurseries, Chester.

**To Market Gardeners and Others.**

TO BE LET, on LEASE, or on YEARLY TENANCY, all or any part of about 80 acres of LAND, part of the Little Woodcote Estate in Carshalton, and a few miles from Croydon.

For particulars apply to Mr. SPRULES, Wallington; or to Messrs. PARKER, 17, Bedford Row, London, W.C.

TO BE LET, from Michaelmas Next, CASTLE HILL FARM, Addington, comprising 138 Acres of Arable and Pasture Land, with good House and Buildings, &c. The Farm being only 4½ miles from Croydon and 12 from London, is well suited for Market Gardening purposes. Would be let on moderate terms.

For further particulars apply to GEO. GRAHAM BELL, Land Agent and Valuer, 11, Pall Mall East, S.W.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.

GREAT FLOWER SHOW, FRIDAY, June 3; SATURDAY, June 4; WHIT-MONDAY, June 6; TUESDAY, June 7.

ONE THOUSAND POUNDS in PRIZES: Roses, Orchids, Azaleas, Pelargoniums, Rhododendrons, Fruit and Vegetables.

Competition for Silver Cups offered by Mr. Wm. Bull, F.L.S., for New Plants; also for Prizes offered by Messrs. Sutton & Sons, Joseph Davis & Co., and James Boyd & Sons.

Band of the Royal Horse Guards on June 3 and 4, and Full Bands all day on June 6 and 7.

ADMISSION { FRIDAY, from 1 o'Clock .. .. 5s. 0d.
SATURDAY, from 10 o'Clock .. 2s. 6d.
WHIT-MONDAY, from 10 o'Clock 1s. 0d.
TUESDAY, from 10 o'Clock .. 0s. 6d.

Or by Tickets purchased before the day by Fellows, for the first day, 3s. 6d.; second day, 2s.

Tickets at the usual Agents, and the entrances to the Gardens.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.

GREAT HORTICULTURAL IMPLEMENT EXHIBITION and General Display of GARDEN STRUCTURES, TOOLS, and APPLIANCES at the Great Flower Show, June 3, 4, 6, and 7. Various Gold, Silver, and Bronze Medals, offered as Prizes for competition, with Certificates of Merit for New Inventions or Improvements.

Full particulars as to space, &c., may be had on application to Mr. A. BARRON, Royal Horticultural Society, South Kensington. ENTRIES CLOSE Friday, May 27.

LINNEAN SOCIETY,
Burlington House, Piccadilly, W.

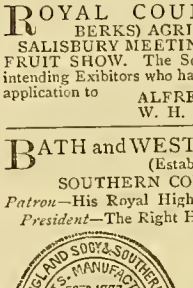
NOTICE IS HEREBY GIVEN, that the ANNIVERSARY MEETING of the Linnean Society of London will be held at the Society's Apartments, on TUESDAY, May 24, at 3 o'Clock precisely, for the election of a Council and Officers for the ensuing year. B. DAYDON JACKSON, Sec.

ROYAL COUNTIES (HANTS and BERKS) AGRICULTURAL SOCIETY.

SALISBURY MEETING, 1881. GRAND FLOWER and FRUIT SHOW. The Schedule of Prizes is now ready, and intending Exhibitors who have not received one may obtain it on application to ALFRED WATSON, Hon. Sec.; or W. H. WILLIAMS, Assistant Hon. Sec.

BATH and WEST of ENGLAND SOCIETY
(Established 1777) and
SOUTHERN COUNTIES ASSOCIATION.

*Patron*—His Royal Highness the PRINCE OF WALES, K.G.
*President*—The Right Hon. the Marquess of Abergavenny.




TUNBRIDGE WELLS MEETING,
June 6, 7, 8, 9 and 10.

GREAT EXHIBITION of HORSES, LIVE STOCK, HOPS, POULTRY, MACHINERY, IMPLEMENTS, WORKS of ART and HORTICULTURAL SPECIMENS, WORKING DAIRY, EXPOSITION of BEES, Management and Appliances; COMPETITION of SHOEING SMITHS, &c.

JOSIAH GOODWIN, Sec.

4, Terrace Walk, Bath, May, 1881.

**Drumhead Cabbage Plants.**

ROBINSON'S CHAMPION DRUMHEAD—strong Plants, 3s. per 1000.
JOHN PERKINS AND SON, 52, Market Square, Northampton

**Gardenia intermedia.**

MESSRS. JOHN STANDISH AND CO. have to offer a very extensive stock of GARDENIA INTERMEDIA of all sizes, every plant being in the most robust health, and guaranteed perfectly clean. Nice plants in 6-inch pots at 2s. 6d. each; larger, 3s. 6d. to 10s. 6d. each. Specimens, fine bushy plants, with plenty of bloom-bud on them, 1, 1½, 2 and 3 guineas each.

Royal Nurseries, Ascot, Berks.

NEW and BEAUTIFUL GERANIUMS.

VISCOUNTESS CRANBROOK, Dwarf, Silver Variegated, a Gem for Edging or Carpet Bedding, 1s. each, 10s. p. doz.
QUEEN of MAY, Silver Variegated, salmon flowers, 3s. p. doz.
ROSAMOND WRIGHT, Silver Variegated, pink flowers, 4s. per dozen.
MASTERPIECE, Golden Tricolor, 4s. per dozen.
PRINCE of WALES, Golden Tricolor, 5s. per dozen.
PETER GRIEVE, Golden Tricolor, 4s. per dozen.
MRS. LAING, Silver Tricolor, 4s. per dozen.
PROTEUS, Silver Tricolor, 5s. per dozen.

The following good and distinct ZONALS, 3s. per dozen:—CORSAIR, DAVID THOMPSON, JOHN GIBBONS, JEALOUSY, LADY SHEFFIELD, WOMAN in WHITE.

12 varieties good ZONALS, including one each of the above, post free for 3s.—Post-office Orders payable to

Mr. POTTEN, Camden Nursery, Sissingburst, Staplehurst, Kent.

**To the Trade.**

HUGH LOW AND CO. have on Sale in quantity
PELARGONIUMS and HYDRANGEAS, well grown stuff, in and coming into bloom, £5 to £7 10s. per 100.
BOUVARDIAS, good plants, just showing buds, in large quantities.

CLAPTON NURSERIES, LONDON, E.

PRIMULA NIVALIS.—For filling a corner of a grave plot few plants can equal, none can surpass in purity, this lovely pure white Auricula. Two flowering plants free by post for 1s. 6d.; twelve plants for 8s. Trade price per 100 on application.

MORRISON BROTHERS, Aberdeen.

PRIMULA ACAULIS PURITY.—This pretty free-growing single white Primrose makes a fine border plant. 2s. per dozen, 10s. per 100. Trade price on application.

MORRISON BROTHERS, Aberdeen.

**Verbenas—Verbenas.**

WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff, 6s. per 100, 50s. per 1000; strong plants from single pots, full of cuttings, 12s. per 100; 100 rooted cuttings, in twelve best show kinds, 8s. packing included. Terms cash.

Cemetery Nursery, Gravesend, S.E.

**50,000 Pelargonium Vesuvius.**

WILLIAM BADMAN is sending out VESUVIUS, from store pots, 8s. per 100, 75s. per 1000, packing included. Send cash with order.

Cemetery Nursery, Gravesend, S.E.

FOR SALE, 10,000 ECHEVERIA SECUNDA GLAUCA, also large quantity of Bedding PELARGONIUMS—Mrs. Pollock, Bijou, Manglesii, Tom Thumb, &c. Apply,

ALEX MILLER, Gardener, Rood Ashton Park, Trowbridge, Wilts.

BEDDING PLANTS.—Surplus Stock Cheap. Quantity of CALCEOLARIA (Golden Gem) GERANIUM (Bronze, Tricolor, and best kinds), &c.—Apply to

GARDENER, Holly Lodge, Main Road, Stamford Hill, N.

ILLUSTRATED CATALOGUE of PERENNIALS.—The present year's issue of this Catalogue, containing many rare and choice Hardy Perennials, also Selections of Hardy Terrestrial Orchids, Primula Sieboldii, Climbing and Trailing Plants, Aquatics and Bog Plants, Ornamental Grasses and Bamboos, Sarracenias, &c., may be had post-free upon application.

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

SPRING FLOWERS

POLYANTHUS, choice varieties, including Gold and Silver Chain, Hose-in-hose, &c.
PRIMROSES, double white, lilac, yellow, crimson, and choice single varieties.
COWSLIPS, Giant and other sorts.
AURICULAS, Alpine and double dark varieties.
HEPATICAS, red, white, and blue.
CHRISTMAS ROSES, in variety.
SWEET WILLIAMS, very choice sorts.
WALLFLOWERS, yellow and dark.
MYOSOTIS DISSITIFLORA, spring Forget-me-not.
COLEUS, in first-class varieties.

Mr. COOPER, Calcot Gardens, Reading, Berks.

**To the Trade and Market Growers.**

VIOLETS.—Large clumps, suitable for dividing to plant out. Now is the proper time to transplant

| | |
|---|---|
| Victoria Reginæ | Single Neapolitan |
| White Czar | Belle de Chatenay |

Low price per 100 or 1000 on application.

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

**Rare Opportunity.**

FOR WINTER GARDENS, &c.—A Gentleman who contemplates turning his Stove-house into a Cool Conservatory is desirous of disposing of the whole of his valuable collection of specimen plants, consisting of CROTONS of large size and perfectly grown; PALMS, DRACÆNAS, ALLAMANDAS, &c. Further particulars from

Mr. E. MARTIN, Nausladron, St. Austell.

**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—

VERBENAS—Purple, White, Scarlet, Pink, Crimson, well rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or twenty-five sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvins, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.
,, TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.
,, SILVER VARIEGATED—May Queen (Turner's Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.
,, GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
,, DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Balte, very fine white (the best), 18s. per 100.
,, BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.
,, Forcing, Show and French vars., 30s. per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.

Packing included. Terms cash.
Cemetery Nursery, Gravesend,

### Roman Hyacinths.

DOUBLE ROMAN AND PAPER-WHITE NARCISSUS. DOUBLE SWEET-SCENTED JONQUILS.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, are now ready to book orders for the above articles, to be delivered in August, or later in the autumn. A special offer, with prices, is sent on prepaid application. Early orders are solicited as especially Roman Hyacinths and Roman Narcissus are expected to become scarce at the end of the season.

---

ALTERNANTHERAS, and other CARPET BEDDING PLANTS.

ALTERNANTHERA, amœna, 8s. per 100, 70s. per 1000.
" " spectabile, 8s. per 100, 70s. per 1000.
" magnifica, 7s. per 100, 65s. per 1000.
" amabilis latifolia, 7s. per 100, 65s. per 1000.
" paronychioides major, 7s. per 100, 65s. per 1000.
" versicolor, 7s. per 100, 65s. per 1000.
" spathulata, 7s. per 100, 65s. per 1000.
MESEMBRYANTHEMUM, cordifolium var., 8s. per 100, 70s. [per 1000.
COLEUS, Verschaffeltii, 10s. per 100.
IRESINE, Lindeni, 8s. per 100, 70s. per 1000.
LEUCOPHYTON, Brownii, 10s. per 100.
HERNIARIA, glabra, 5s. per 100, 40s. per 1000.
LOBELIA, West Brighton Gem, 5s. per 100, 40s. per 1000.
MENTHA PULEGUIM GIBRALTARICUM, 5s. per 100, 40s. per 1000. All the above are well established plants.
New LIST of other kinds free on application to
WM. MILES, West Brighton Nurseries, Clifton-ville, Sussex.

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LEE'S ARGENTÆFLORA VIOLET (for full description of which see April 30)—This nearly white, very sweet, long-stemmed Violet can be recommended, for its almost perpetual flowering showy habit, as a great acquisition. Plants now ready by post at 15s per doz., 8s. 6d. per half-doz., 4s. 6d. per quarter-doz. Also Lee's VICTORIA REGINA, and Lee's ODORATISSIMA, 6s. per doz., 3s. 6d. per half-doz.—GEO. LEE, F.R.H.S., Market Gardener, Clevedon, Somerset.

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### To the Trade.—Large Plants in 48's of

GERANIUMS—viz., Vesuvius, Wonderful, Madame Thibaut, Master Christine, and Madame Vaucher, in quantities of not less than two dozen, at 4s. per dozen. These are the same size and quality as sent to Covent Garden Market. Terms cash. Packages free.
GEO. POULTON, Fountain Nursery, Angel Road, Edmonton.

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### Bothwell Bank Prolific Strawberry.

DICKSONS AND CO., Pilrig Park Nurseries, Edinburgh, have acquired the entire stock of this new Strawberry, which was awarded a First-class Certificate at the Royal Caledonian Horticultural Society's Spring Show in 1880, and which has taken First Prizes wherever exhibited as a Forcing Strawberry. A correspondent in the *Gardeners' Chronicle* of April 30 writes: "I took up a plant at random and counted no less than thirty-two berries, some of which were an ounce in weight . . . I have seen it for the last two years, and can without hesitation say that it is a great acquisition to Strawberry Growers either for forcing or general crop, particularly so to growers for the market."
Plants, established in pots, 1s. 6d. each, 12s. per dozen, 75s. per 100.

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### Cheap Bedding Plants.

H. I. HARDY, F.R.H.S., offers fine strong and healthy autumn-struck Plants of the following:—
GERANIUMS, Vesuvius and other best scarlets, from single pots, 2s per dozen; stores, 12s. per 100. Master Christine and Madame Vaucher, single pots, 2s. 6d. per dozen, 15s. per 100. New Life, Crystal Palace Gem, and May Queen, from single pots, 3s. per dozen.
CALCEOLARIA, aurea floribunda, from single pots, 1s. 6d. per dozen; 10s. per 100.
VERBENAS, 1s. 9d. per dozen from single pots, 8s. per 100 from stores.
LOBELIAS, Emperor William, proved the best dwarf blue for borders, 10s. per 100 from single pots, 6s per 100 from stores. Seedlings, 2s. 6d. per 100, 20s. per 1000.
DAHLIAS, fine named Show varieties, in single pots, 4s. 6d. per dozen.
Terms cash. Package free, and extra Plants for carriage. A reduction made for quantities. CATALOGUE free by post.
STOUR VALLEY SEED GROUNDS, BURES, SUFFOLK.

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PELARGONIUM EDWARD PERKINS.—The finest variety yet sent out. For description see large Advertisement for April 30. Price 10s. 6d. each.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

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SPECIAL OFFER of CHOICE PLANTS.

FUCHSIAS, 12 best Exhibition varieties, 1s. 6d.; 12s. per 100.
" 12 new Exhibition varieties, 2s. 6d.; 20s. per 100.
COLEUSES, 12 new varieties, 2s. 6d.; 20s. per 100.
" 18 new varieties, 3s. 6d.
AGERATUM, Dwarf, 12 for 1s. 3d.; 8s. per 100.
IRESINE, 12 for 1s. 2d.; 8s per 100.
VERBENAS, 12, in 4 varieties, 1s. 2d.; 6s. per 100.
" 12, in 8 varieties, 1s. 4d.; 8s. per 100.
CHRYSANTHEMUMS, 12, in 12 varieties, 2s.
" 100, in 50 varieties, 12s.
PELARGONIUMS, 12 Show and Fancy varieties, 2s. 6d.; 18s. per 100.
" 100 Show and Fancy, in 25 varieties, 20s.
GERANIUMS, Bronze, Beauty of Calderdale, 12 for 2s. 6d., 18s. per 100.
" " Maréchal McMahon, 12 for 2s. 6d.; 18s. per 100.
" " mixed varieties, 12 for 2s.; 15s. per 100.
" Variegated Bijou, 12 for 2s.; 12s. per 100.
" Double, 12 new varieties, 2s. 6d.; 20s. per 100.
" Zonal and Scarlet, 12 varieties, 2s. 6d.; 18s. per 100.
" " " mixed, 12 for 1s. 6d.; 10s. per 100.
CALCEOLARIAS, Golden Gem, 12 for 1s. 3d; 8s. per 100.
All well rooted and package free.
Terms—Cash with all Orders.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

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SEEMANN AND GOEPEL, Wandsbek, near Hamburgh, have to offer quantities of
PHŒNIX TENUIS, in store pots, 1-yr. seedlings, per 100, 15s.; per 1000, £6 10s.
LATANIA BORBONICA, in store pots, last year's seedlings, per 100, 8s.; per 1000, £2.
PANDANUS UTILIS, in store pots, this year's seedlings, per 100, 6s.; per 1000, £2.
ARALIA SIEBOLDII, in small pots, last year's seedlings, per 100, 12s.; per 1000, £4 10s.
CATALOGUES free by post on application.

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# SEEDLING PLANTS OF CHOICE FLORISTS' FLOWERS.

**Guaranteed from the Finest Strains only.**

*All carefully Transplanted, Strong and Healthy.*

POST OR CARRIAGE FREE AT PRICES QUOTED.

| Daniels' Prize Cineraria. | Per 100. s. | d. | | Per doz. s. | d. |
|---|---|---|---|---|---|
| *ANTIRRHINUMS, very choice mixed .. | 7 | 6 | .. | 1 | 0 |
| AURICULAS, choicest Alpine .. .. | 10 | 6 | .. | 1 | 6 |
| CARNATIONS, from named flowers .. | 10 | 6 | .. | 1 | 6 |
| " Perpetual or Tree, from named flowers | — | | .. | 2 | 6 |
| " Yellow-ground vars., choice .. .. | — | | .. | 3 | 6 |
| CALCEOLARIAS, Daniels' Prize .. .. | 10 | 6 | .. | 1 | 6 |
| CINERARIA, very fine .. .. .. | 10 | 6 | .. | 1 | 6 |
| *DIANTHUS HEDDEWIGI, flowers large, brilliant and beautiful .. .. | 7 | 6 | .. | 1 | 0 |
| *MIMULUS, Daniels' Superb .. .. | — | | .. | 1 | 6 |
| *PANSIES, Show and Fancy .. .. .. | 7 | 6 | .. | 1 | 0 |
| * " Prize Blotched, splendid .. .. | 10 | 6 | .. | 1 | 6 |
| * " New Striped, fine .. .. .. | 7 | 6 | .. | 1 | 0 |
| PRIMULAS, Choicest Red, fringed .. | 10 | 6 | .. | 1 | 6 |
| " " White, fringed .. .. .. | 10 | 6 | .. | 1 | 6 |
| " " Mixed, fringed .. .. .. | 10 | 6 | .. | 1 | 6 |
| *PENTSTEMONS, from named flowers .. | 10 | 6 | .. | 1 | 6 |
| *PETUNIA HYBRIDA GRANDIFLORA, magnificent varieties, mixed .. | — | | .. | 2 | 6 |
| PICOTEES, from Stage Flowers, fine .. | 10 | 6 | .. | 1 | 6 |
| SWEET WILLIAMS, Daniels' Superb Strain .. .. .. .. | 7 | 6 | .. | 1 | 0 |

Those marked (*) will bloom this year.

*Not less than fifty supplied at the rate per 100, or six at the rate per dozen.*

Cheques or Post-office Orders to

## DANIELS BROTHERS,
### TOWN CLOSE NURSERIES, NORWICH.

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**CHOICE SUMMER FLOWERS, 1881.** The LAWSON SEED and NURSERY CO. (Limited), Edinburgh, are booking Orders for the leading BEDDING-OUT PLANTS, viz., Verbenas, Geraniums, Calceolarias, &c., for present delivery. CATALOGUES may be had on application.

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## GEO. JACKMAN & SON,
(ESTABLISHED 1810,)

**Cultivators of**
FRUIT and FOREST TREES,
Evergreen and Flowering
TREES and SHRUBS,
ROSES, RHODODENDRONS,
*Conifers and Hardy Climbers.*

THE CLEMATIS A SPECIALITY.

*Descriptive Priced Catalogues free.*

**WOKING NURSERY, SURREY.**

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## CRANSTON'S NURSERIES.
(ESTABLISHED 1785.)

## CATALOGUE OF
*New English and French Roses*
for Spring of 1881,

**DAHLIAS, CLEMATIS, PHLOXES, and CHOICE BEDDING PLANTS,**

*Free on application to*

**CRANSTON'S NURSERY & SEED CO.** (Limited), KING'S ACRE, near HEREFORD.

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### Mangel Wurzel Seed.

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

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### To the Trade.

MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.
Seed Growing Establishment, Wisbech.

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ASPARAGUS PLUMOSUS NANUS (VEITCH'S VARIETY).

A few strong and handsome plants of this fine ornamental variety for sale. A most useful plant for exhibition, also for table decoration, or where flowers are used, answering the purpose of Cut Ferns, being more elegant, and lasting green in water 3 months. Received a First-class Certificate from Royal Horticultural Society. For price and particulars, apply to JAS. WINGFIELD, Widmore Hill Nursery, Bromley, Kent.

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FERNS from Devonshire, Cornwall, and Somerset. Instruction Book for Making Rockery, Planting Ferns, &c., with each 5s. order. 14 named varieties, 6s. per 100; small (post), 30 for 2s.; fine Asplenium fontanum, Septentrionale and Holly Ferns, 1s. each. 1000 varieties of Ferns, British and Exotic. CATALOGUE, 2d. Established 25 years.
GILL, Lodging House Keeper, Lynton, Devon.

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### Roses for 1881.

WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, beg to offer strong plants of the undermentioned first-rate English raised novelties, 7s. 6d. to 10s. 6d. each:—
PRIDE OF WALTHAM (H.P.), delicate flesh colour; Two First-class Certificates.
LADY SHEFFIELD (H.P.), brilliant rosy-cerise; First-class Certificate.
RED GAUNTLET (H.P.), bright scarlety-crimson.
English raised ROSES of 1879 and 1880.
COUNTESS OF ROSEBERY (H.P.), brilliant carmine-rose; Three First-class Certificates; price, 2s. 6d. each.
CROWN PRINCE (H.P.), bright purple-crimson, 3s. 6d. each.
DUCHESS OF BEDFORD (H.P.), dazzling scarlet-crimson; First-class Certificate, 2s. 6d. each.
LITTLE GEM (Moss), crimson, beautifully mossed, 3s. 6d. each.
MASTERPIECE (H.P.), rich rosy-crimson, 3s. 6d. each.
A large general stock of ROSES for all purposes.
ROSES, in pots, for Outdoor Planting, 10s. 6d. to 30s. per dozen.
" " Climbing, 10s. 6d. to 30s. per dozen.
" " Pot Culture, 12s. to 30s. per dozen.
Half Specimen and Specimen ROSES, in pots, 5s. to £5 5s. each.
Priced Descriptive CATALOGUES free by post on application. Paul's Nurseries, Waltham Cross, Herts.

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### Specially Cheap Offer of Bedding Plants.

VERBENAS.—50,000 now ready for Sale.

S. BIDE is now prepared to supply to his numerous customers, as in previous seasons, really good, strong, spring-struck plants of Purple, Scarlet, White, and Pink Verbenas, at 6s. per 100; 50s. per 1000. Best Exhibition Varieties, 8s. per 100.
Strong healthy Cuttings of the above at half price. Free by post.
DAHLIAS, true to name, well established, in 60-pots, 25s. per 100.
GERANIUM, Flower of Spring, strong autumn-struck plants, 12s. per 100
ALTERNANTHERA, amœna and amabilis, strong plants, 8s. per 100.
IRESINE, Lindeni, 6s. per 100.
HELIOTROPE, light and dark, 6s. per 100.
COLEUS, Verschaffeltii, 8s. per 100.
Packages free. Cash must accompany all Orders. List of varieties of all the above free by post on application to
S. BIDE, Alma Nursery, Farnham, Surrey.

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ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" " ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 eet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

## W. CLARK'S
PATENT
## COMBINATION GARDEN IMPLEMENT.

This simple Machine will cut turf and grass at the same time cleaning the lower part of the pathway which forms the gutter, throwing the rubbish on one side, making a clean cut of the Turf and leaving a smooth bottom to the pathway; acts for Weeding Gravel Walks, Hoeing, and Gathering the Refuse. It will cut out all kinds of Ornamental Flower Beds, &c., Water-courses, and Gutters. This Patent Machine has been shown in Hyde Park, where there are upwards of twenty miles of Turf-edging, and is considered to be the best implement for the purpose ever seen. It was sent to the Crystal Palace, where there are about ten miles of Garden-edging, besides all their Ornamental Flower Beds, and gave every satisfaction, a supply being sent in at once. The Machine shows at a glance Simplicity and Lightness in Construction, and, being so cheap, is at every one's command.

It can be sharpened with a stone in the ordinary way, and is sold in three sizes:—

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| 10s. | 12s. | 14s. |

## W. CLARK'S
PATENT
## GRASS and CORN CUTTER.

This useful machine is used for Lawns, Banks, Grass Edgings, Round Flower Beds and places where the Lawn Mower cannot reach; will trim Shrubs, Ivy, and Creepers; cutting Clover, Rye, and other green crops; trimming Hay and Corn, Ricks, Thatch, &c. It is not intended to supersede the Lawn Mower but to supplement its use, and from the many and varied uses to which it can be applied will be found one of the most economical inventions ever offered to the public.

It is sold in five sizes, with or without trays.

PRICES.

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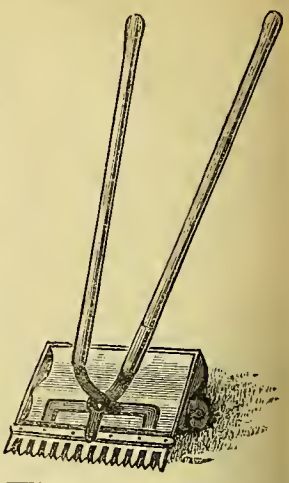
| The 8-inch Machine, complete with Roller and Tray | 21s. |
| Ditto, without Roller and Tray | 18s. |
| The 12-inch Machine, complete with Roller and Tray | 28s. |
| Ditto, without Roller and Tray | 24s. |
| The 16-inch Machine, complete with Roller and Tray | 38s. |
| Ditto, without Roller and Tray | 33s. |



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## Hybrid Perpetual and Tea Roses
IN POTS.

*Strong Healthy Plants,*

**Fit for Immediate Planting, or Flowering under Glass.**

*List of Sorts and Prices on application to*

**CRANSTON'S NURSERY & SEED CO.**
(LIMITED),
KING'S ACRE, HEREFORD.

BEANS. COVENT GARDEN NEGRO DWARF FRENCH (English saved). The best and most prolific variety grown. NEWINGTON WONDER (True), English saved. A very quick and prolific Bean, and one much grown for pickling. Also, SCARLET RUNNERS and WHITE-SEEDED RUNNERS. Special quotations on application.
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**100,000 Best Bedding and Pot**

GERANIUMS, including many new and choice varieties, by post or rail; also very large stock of LOBELIAS, DAHLIAS, CHRYSANTHEMUMS, AGERATUMS, COLEUS, CALCEOLARIAS, MESEMBRYANTHEMUMS, PETUNIAS (Single and Double), ALTERNANTHERAS, PYRETHRUMS, CENTAUREAS, CINERARIA MARITIMA, and all useful plants for bedding. See new Catalogue.
Twelve selected Double GERANIUMS, good plants, 5s.; 12 do., good varieties, 3s. 6d.
GEORGE GUMMOW, 114, Loughborough Road, Brixton, S.W.

NOTICE TO THE TRADE, AND LARGE BUYERS GENERALLY.
In consequence of the great demand this season for Autumn Struck GERANIUMS of all kinds, I shall not hold my Annual Sale by Protheroe & Morris, of 80,000 plants, but both the Trade and Public will be liberally treated with, in all purchases made at my Nursery.
JAMES PAGE, The Hornsey Nurseries, Hornsey, N.

**New Early Peach.**

WATERLOO.—This fine Peach precedes the Alexander, and is probably the earliest of the large Peaches. The Waterloo is a valuable addition to the increasing number of early Peaches. It is large, brilliant in colour, and of delicious flavour. Strong Maiden Trees in pots, now ready to send out, 15s. each.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

BEDDING PLANTS, 14 dozen, 29s., viz.:—12 each of the following ZONAL GERANIUMS—Fire King, White Yesuvius, Jennie Dodds, Master Christine, and Yesuvius, and 24 in variety (Dr. Denny's varieties, &c.); 24 CALCEOLARIA Golden Gem, 24 PETUNIAS, 24 VERBENAS, 12 HELIOTROPES. Half the quantities for 15s. Carriage and package free to any station on the G.W.R. or S.W.R., not beyond London or Birmingham.
We can do the above Collection well, having one of the largest stocks in England, numbering at present 120,000, all grown in single pots. CATALOGUE free.
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**Single Dahlias and French Marguerites.**

THOMAS S. WARE has pleasure in announcing that his new Special LIST of the above is ready, containing a fine selection of SINGLE DAHLIAS and the best of the MARGUERITES; also a number of specially choice NOVELTIES in ANTIRRHINUMS, PHLOXES, PENTSTEMONS, and CHRYSANTHEMUMS. Post-free upon application.
Hale Farm Nurseries, Tottenham, London.

KELWAY AND SON offer:—
50,000 DAHLIAS, in 400 varieties.
10,000 .. single varieties.
50,000 PYRETHRUMS, in 50 varieties.
50,000 SCOLOPENDRIUM KELWAYI.
VERBENAS, PETUNIAS, LOBELIAS Brighton Blue and Brighton White, CARNATION (Red) Souvenir de la Malmaison.
Langport, Somerset.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted Cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.
EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Verbenas.**

VERBENAS.—Extra strong and well-rooted Plants of Purple, White, Crimson, and Pink, 6s. per 100, 50s. per 1000; ten choice Exhibition varieties, beautifully clean and healthy, 8s. per 100, 70s. per 1000; Cuttings, 3s. and 4s. per 100, 25s. and 35s. per 1000. All securely packed. Terms cash.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

## Come and See.

OUR 100-ft. House filled with the choicest and finest strains of SPOTTED CALCEOLARIAS probably ever brought together. A more splendid floral display would be difficult to imagine. All specially for seeding, and we earnestly invite all to see the stock from which we obtain and offer our Seeds and Seedlings.

**Dahlia "Juarezii" (true).**

THE GREATEST NOVELTY, and the most beautiful and useful plant of the garden during autumn. Every one that has seen it express their utter surprise at its beauty. Totally different to all its family. Fine plants, 3s. each; 30s. per dozen.

Illustrated and figured and eulogised in the highest terms in every publication as the acquisition of the year; also received the highest honours from the Scientific Committee of the Royal Horticultural Society.

THE HOME FOR FLOWERS, SWANLEY, KENT.

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**CRANSTON'S KING'S ACRE SWEDE.**
A large and handsome free-growing purple-top variety, perfectly round in shape, with small neck, and single tap-root.

**CRANSTON'S YELLOW-FLESHED STUBBLE TURNIP.**
The most nutritious variety in cultivation, of quick growth, and a splendid keeper. Is distinct from any other Turnip. Seed can only be procured direct from us.

30s. per bushel, carriage free.

*Trade Price on application.*

**CRANSTON'S NURSERY and SEED CO. (Limited),**
KING'S ACRE, HEREFORD.

**PRIMULA. CINERARIA. CALCEOLARIA.**
**Wm. Cutbush & Son's**
Strain of these cannot be surpassed. They are sold in Packets, 2s. 6d., 3s. 6d. and 5s. each; but quality is the same.
HIGHGATE, LONDON, N., and BARNET, HERTS.

**Ferns a Speciality.**

EXOTIC AND BRITISH FERNS,
IN great number and variety, suitable for Stove and Greenhouse cultivation, for Outdoor Ferneries and other purposes.
*Intending Purchasers before buying elsewhere should send for our SPECIAL LIST of CHEAP FERNS, which will be forwarded free on application.*
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

EXTRA STRONG GERANIUMS, &c.—Wonderful, 12s. per 100; White Yesuvius, 15s. per 100; Madame Thibaut, 12s. per 100; Mrs. Pollock, Sunset, &c., 20s. per 100; Flower of Spring, 15s. per 100; Marshal McMahon, best Bronze, 20s. per 100; finest Show and Fancy DAHLIAS, to name, 20s. per 100; VERBENAS, Show sorts, strong, 10s. per 100; all well rooted and healthy.
W. JACKSON, Bladedown, near Kidderminster.

DOUBLE CINERARIAS, FOR WINTER BLOOMING.
R. H. VERTEGANS is now offering SEED saved from his Superb Collection, at 3s. 6d. and 5s. per packet, post-free. Also Booking Orders for 12 varieties, selected from his large choice and noted strain. Names and Descriptions will shortly be published.
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**To the Trade.**

CHRYSANTHEMUMS, best sorts, large-flowered Japanese and Pompon, in thumb-pots, 25s. per 100.
DAHLIAS, best varieties, in small thumbs, 20s. per 100.
DELPHINIUMS, best named, single and double, good plants, 5s. per dozen.
GARAWAY & Co. offer the above; their own selection.
GARAWAY & CO., Durdham Down Nurseries, Clifton, Bristol.

## GARDEN REQUISITES.
**COCOA-NUT FIBRE REFUSE,**
3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
**H. G. SMYTH,**
17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

FOR SALE, fine Yellow Fibrous LOAM, in any quantity, on London and North-Western, Midland, or Great Northern Railways. Price and Sample free on receipt of 1s., to be remitted on purchases. Apply to
GEO. P. DARBY, Hertfordshire Seed and Plant Establishment, Watford, Herts.

PEAT.—Superior Black or Brown Fibrous PEAT, for Rhododendrons, Azaleas, Orchids, &c., same as supplied to Messrs. John Waterer & Son, and other noted growers, 6 tons, loaded on trucks at Camberley Station, S.W.R. £4 4s.—Address,
Mr. W. TARRY, "Golden Farmer," Farnborough Station.

**Fibrous Peat for Orchids, &c.**

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.
Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.
Fresh SPHAGNUM, 10s. 6d. per bag.
WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1s.; 15 bags, 12s.; 30 bags, £1, bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15s.; truckload of about 250 bushels, £1 3s. (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

## GARDEN REQUISITES.
COCOA-NUT FIBRE REFUSE, fresh and pure, 4 bushels, 1s.; 120 for 20s.; truck, 25s.; BEST BROWN FIBROUS PEAT, 5s. per sack, 5 for 22s. 6d. BLACK FIBROUS PEAT, 4s. 6d. per sack, 5 for 20s., Sacks, 4d. each. COARSE SILVER SAND, 1s. 6d. per bushel. Yellow Fibrous Loam, Leaf-Mould, and Peat-Mould, 1s. per bushel. MANURES of all kinds, fresh SPHAGNUM, GARDEN STICKS and LABELS, RUSSIA MATS, &c. TOBACCO CLOTH and PAPER, as used by the leading Nurserymen, and acknowledged to be the best in the Market—Cloth, 8d. per lb.; Specialité Paper, imported solely by us, 1s. per pound, 28 lb. 26s.; 2d quality Paper, 7d. per lb. Write for Price List.—W. HERBERT AND CO., Horticultural Stores, 19, New Broad Street, London, E.C. (turning by Gow's, Fishmonger).

# PAUL & SON,

## THE OLD NURSERIES, CHESHUNT, N.,

will have ready June 1st, for distribution, the following

## NEW CHESHUNT-RAISED SEEDLING ROSES:

**H.P. GEORGE BAKER (Paul & Son).**—A pure lake shaded with cerise, a beautiful round incurved ball-like flower, full and of perfect form. Very free and with neat, compact, upright habit. Quite new in Roses. Foliage almost mildew-proof. 10*s.* 6*d.* each. Named, with his permission, after the respected President of the Reigate Rose Association.

**H.P. BRIGHTNESS OF CHESHUNT (Paul & Son).**—Peculiarly vivid bright red. A medium sized flower of open imbricated form. Very free, and fine autumnal. A promising garden Rose, and neat front-row exhibition Rose. As a march in colour, even more showy than Duke of Teck. We recommend it. Strong plants in pots, 10*s.* 6*d.* each.

**THE NEW CHESHUNT ROSES of 1880.**—DUKE OF TECK, GLORY OF CHESHUNT, EARL OF BEACONSFIELD, and Dr. HOGG. Strong plants in pots, 3*s.* 6*d.* each.

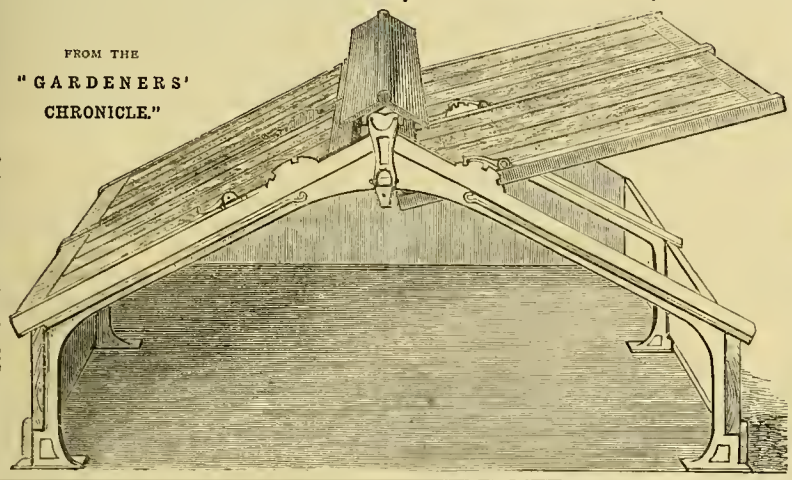
**THE NEW FRENCH ROSES of 1881.**—3*s.* each; 30*s.* per dozen.

*PRICED LISTS ON APPLICATION.*

# FOSTER & PEARSON, BEESTON, NOTTS.

NEW IMPROVED FRAME, AWARDED Silver Medal by Royal Horticultural Society. See "*Gardeners' Chronicle*," June 26.

FROM THE "GARDENERS' CHRONICLE."



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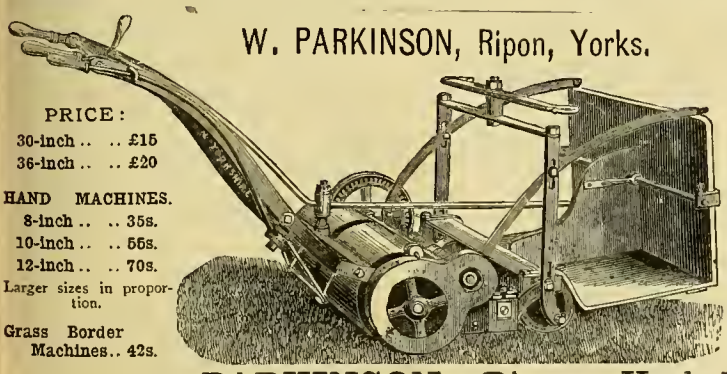
## W. PARKINSON, Ripon, Yorks.



PRICE:
30-inch .. .. £15
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HAND MACHINES.
8-inch .. .. 35s.
10-inch .. .. 55s.
12-inch .. .. 70s.
Larger sizes in proportion.

Grass Border Machines.. 42s.

*The Red House, Rotherham, Nov. 24, 1879.*

"SIR, — Your Studley Royal 36-inch Horse-Power Machine, which was used on my ground all last season, has given the very greatest satisfaction: it was worked regularly, doing one acre in the hour, which was not the case with any previous machine.

"Yours faithfully,
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COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons. Invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1*s.* each; 15 Sacks, 12*s.*; 30 Sacks, 20*s.* (all Sacks included); Van-load at Works, 4*s.*; ditto delivered within 5 miles, 10*s.*; Truck-load (equal to about 300 bushels when dry), free on rail, 25*s.* Terms cash with order.
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KEEL'S NEW AND LOW-PRICED

## BLIGHT DESTROYER.

(William Gurney Keel, Twenty-two years Head Gardener at Newton Park, Somerset, and Royal Botanic Gardens, Kew.)
NO MORE TOBACCO SMOKE. A CLEAR FLUID, WITHOUT SEDIMENT OR SCUM.
**3d. per Gallon** (Concentrated).

PAMPHLET, by post, free on application to Mr. A. HAWES, Walcot Parade, Bath.
Now used by Gardeners of the Nobility and Gentry. Lists and Testimonials enclosed with Pamphlet.
THIS PREPARATION, used at Proper Strength, and according to Method recommended, PREVENTS and CURES **THE PEACH TREE DISEASE.**

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**For the Garden, Greenhouse and Lawn.**
In Elegant Packages, 6*d.* and 1*s.*, with full directions for use.
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**FOR LAWNS.**
Price, 30*s.* per cwt.; 56 lb., 16*s.*; 28 lb., 8*s.* 6*d.*
Packages included, and delivered free to any Station.
*Wholesale Terms upon application.*

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*The most Simple Invention before the Public.*

Over 2000 Sold last Season.

Plantain, &c., removed Without Destroying the Lawn.

**Carriage Free of the Patentee, 4s. 3d. and 5s. 3d.**

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GISHURST COMPOUND.—Used by many of the leading Gardeners, since 1850, against Red-spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 oz. to the gallon of soft water, and of from 4 to 16 oz. as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. In Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*

AMERICAN BLIGHT on APPLE TREES CURED by rubbing a wet hard Painter's brush on Gishurst Compound, and working the lather into the infected part.

GISHURSTINE keeps feet dry, softens hard boots, preserves leather, takes a polish. In boxes, 6*d.* and 1*s.* each.
Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited). Retail by Seedsmen and Oilmen.

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## The Covent Garden Seed Warehouse

SUPPLY EVERY GARDEN REQUISITE
In the Highest Quality.
**Also every Good Thing Advertised.**

*CATALOGUES READY.*

HAY RICK CLOTHS.

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| To cover 20 loads | 20 feet | by | 24 feet, | £2 | 13 | 2 |
| To cover 25 ,, | 24 ,, | by | 30 ,, | 3 | 15 | 2 |
| To cover 30 ,, | 30 ,, | by | 30 ,, | 4 | 14 | 5 |
| To cover 35 ,, | 30 ,, | by | 34 ,, | 5 | 7 | 3 |

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THOMAS H. HUNKIN, St. Sampson's, Guernsey.

# Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

## GREEN'S PATENT "SILENS MESSOR" AND "MONARCH" LAWN MOWERS

Over those of all other Makers is universally acknowledged.

**They will Cut**

**Either Short or Long Grass, Bents, &c., Wet or Dry.**

These advantages no other Lawn Mowers possess.

They are the only Mowers which have been in CONSTANT use from 15 to 20 years in the Royal Gardens, Windsor,

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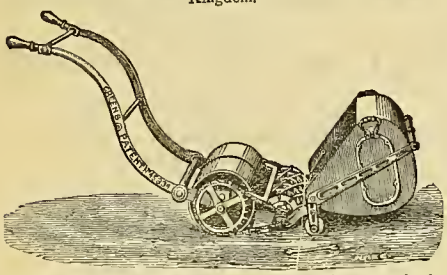
| Buckingham Palace Gardens | The Hyde Park Gardens |
| Marlborough House Gardens | Hampton Court Gardens |
| Royal Horticultural Society's Gardens, South Kensington | The Zoological Gardens, Regent's Park |
| The Royal Botanic Gardens, Regent's Park | The Dublin Botanic Gardens, |
| The Crystal Palace Company's Gardens, Sydenham | The Liverpool Botanic Gardens |
| The Winter Palace Gardens, Dublin | The Botanic Gardens, Brussels |
| | The Hull Botanic Gardens |
| | The Leeds Horticultural Gardens |

And in most of the Principal Parks and Squares in the United Kingdom.



They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant. The above machines have proved to be the best, and and have carried off Every Prize in all cases of Competition. Every Lawn Mower is guaranteed to give entire satisfaction, otherwise they may be returned AT ONCE, free of cost to the purchaser.

The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

| | | | £ | s. | d. |
|---|---|---|---|---|---|
| To cut 6 inches. | | Can be worked by a lady .. .. | 1 | 15 | 0 |
| ,, 8 | ,, | ,, .. .. | 2 | 10 | 0 |
| ,, 10 | ,, | Can be worked by one person .. | 3 | 10 | 0 |
| ,, 12 | ,, | ,, ,, .. .. | 4 | 10 | 0 |
| ,, 14 | ,, | ,, ,, .. .. | 5 | 10 | 0 |
| ,, 16 | ,, | This can be worked by one man on an even lawn .. .. | 6 | 10 | 0 |
| ,, 18 | ,, | By man and boy .. .. .. | 7 | 10 | 0 |
| ,, 20 | ,, | ,, ,, .. .. .. | 8 | 0 | 0 |
| *,, 22 | ,, | Two men .. .. .. .. | 8 | 10 | 0 |
| ,, 24 | ,, | ,, .. .. .. .. | 9 | 0 | 0 |

* If made stronger, suitable for donkeys, 30s. extra.

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

Carriage paid to all the Principal Railway Stations in the United Kingdom. Illustrated Price LISTS free on application.

N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

# GREEN'S PATENT ROLLERS

**For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.**

SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks which other Rollers leave are avoided by ours.

**Prices of Hand Rollers in One Piece.**

| Diam. | Length | £ | s. |
|---|---|---|---|
| 16 in. | by 17 in. | 2 | 15 |
| 20 in. | by 22 in. | 3 | 15 |
| 24 in. | by 26 in. | 5 | 0 |

**PRICES OF HAND ROLLERS IN TWO PARTS.**

| Diam. | Length. | £ | s. | d. | Diam. | Length. | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|
| 16 in. | by 17 in. | 2 | 15 | 0 | 24 in. | by 26 in. | 5 | 0 | 0 |
| 20 in. | by 22 in. | 4 | 0 | 0 | 30 in. | by 32 in. | 9 | 0 | 0 |

Prices of Rollers fitted with Shafts suitable for Horse and Pony, on application, and special quotations for Rollers 3 feet, 3½ feet and 4 feet diameter.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

**THOMAS GREEN AND SON (Limited),**
SMITHFIELD IRONWORKS, LEEDS:
And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.
Carriage of Rollers Paid to all the Principal Railway Stations in Great Britain.

**USED in the ROYAL GARDENS**
AND IN THE
**Principal Nurseries and Gardens throughout the United Kingdom, with the most successful results.**

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**LAWN SAND,** for destroying Daisies, Dandelions, Plantains, Ribbed Grass, Thistles, and other weeds, on Lawns, Croquet Grounds, Bowling Greens, Parks, &c.; at the same time acting as a fertiliser, and improving the growth and colour of the grass. Price in tins, 1s., 2s. 6d., and 5s.; kegs, 28 lb., 10s.; 56 lb. 19s.; 112 lb., 36s.

**GARDENER'S INSECTICIDE,** for destroying all the various Insects, Blights, and Mildews infesting plants and trees. It is easily applied either by dipping, syringing, sponging, or as a winter dressing; does not require cleansing off with water; will not stain or injure, any more than plain water, the most delicate flower, fruit, foliage, or root; gives the foliage a bright, clean, and healthy appearance, and promotes the growth of the plant. In jars, 1s. 6d., 3s., 5s. 6d., and 10s. each; and in kegs, 28 lb., 21s.; 56 lb., 42s.; 112 lb., 84s. each.

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*Sole Manufacturers:—*

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(LIMITED).
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LONDON.

**By Permission of the Hon. Board of Customs**
*DUTY FREE.*

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**TOBACCO JUICE,** for horticultural purposes. It is highly concentrated, and contains the strength of 42 oz. of best strong leaf tobacco in each gallon. In bottles, 1s., 1s. 9d., 2s. 6d., and 5s. each; and in casks, 3s. per gallon.

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**HORTICULTURAL SUNDRIES** of all kinds.

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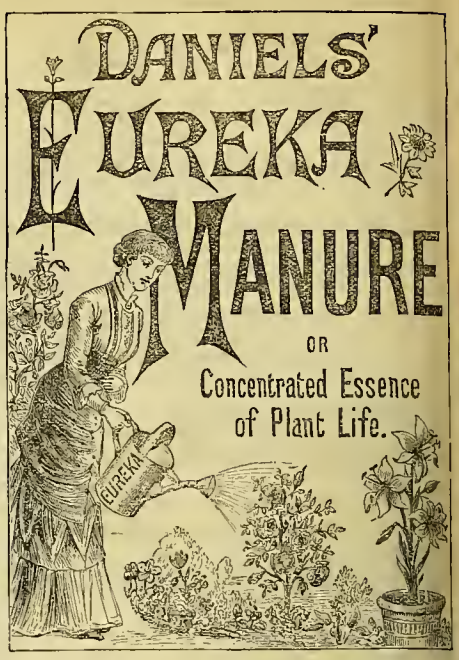


# (NEW FERTILISER.)

WE have, during past years, refrained from manufacturing any Artificial Fertiliser for Floriculture or General Gardening purposes, mainly for the reason that the successful composition of such an article requires years of experimental trial under a variety of conditions, such as temperature, climate, soil, &c.

The preparations generally offered to the gardening public are commonly made simply to act as stimulants, by which a marvellous activity of growth and bloom can be effected, but which generally is of very short duration, and often fatal in the end to the real prosperity of the plant.

Experience has convinced us that, under average conditions of floral or vegetable growth, true and lasting success is best obtained by the use of properly balanced Plant Food, by means of which soil which may have become poor and exhausted shall be so renovated as to be again generous and fruitful, so as to furnish at any time the necessary conditions of fertility and ensure the vigorous and healthy growth not only of leaves, flowers, and fruit, but of every part of the plant. These conditions we claim to have effected in our EUREKA MANURE, or ESSENCE of PLANT LIFE, a highly concentrated Manure, adapted for every kind of Flower, Fruit, or Vegetable, and useful alike to the Horticulturist and Farmer; a true friend to the Gardener; and not only a Stimulant but a Genuine Food for Plants; *perfectly efficient, odourless, and economical,* and is destined to take the place of all other Manures.

**Report of Mr. Francis Sutton, F.C.S., Chemist to the Norfolk Chamber of Agriculture, &c.**

[COPY.]

"NORFOLK COUNTY LABORATORY,
"*November* 22, 1880.

"Messrs. DANIELS BROTHERS,

"GENTLEMEN,—I have acquainted myself by experiment and analysis with the entire nature of your Eureka Manure, and I am satisfied that it is admirably adapted to the purposes for which you recommend it. I have had a long and varied experience in the examination of soils and fertilisers and their effects, and may say at once that you have carried out practically the ideas which I myself would advocate, and have produced a Concentrated Manure which is safe, odourless, and adapted to the healthy growth of every variety of plant.

(Signed) "FRANCIS SUTTON."

*SOLD BY ALL CHEMISTS AND SEEDSMEN,*
*In Packages, with Complete Directions for Use,*
**1 lb., 1s.; 2 lb., 1s. 8d.; 4 lb., 3s.; 7 lb., 4s. 6d. 14 lb., 7s. 6d.; 28 lb., 12s. 6d.**
Much cheaper by the Cwt.

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**Retail from**

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ROYAL NORFOLK SEED ESTABLISHMENT
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# WILLIAMS'

NEW and CHOICE

## FLOWER SEEDS.

*Post Free.*

| | Per packet—s. d. |
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| **Auricula**, Show, from stage flowers .. .. .. | 1 6 |
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## B. S. WILLIAMS,

Seed Merchant and Nurseryman,

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# SUTTONS'

## FLORISTS' FLOWER SEEDS

ARE the BEST. *Post Free.* ARE the BEST.

### SUTTONS' PRIZE PRIMULA.

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| Suttons' Superb Red | 5s. and 2s. 6d. per packet. Post-free. |
| Suttons' Superb White | |
| Suttons' Superb Mixed | |
| Suttons' "Special Hybrid" | 5s. per packet. |
| Alba magnifica (Hayes) .. | 5s. per packet. |

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| Perfection .. .. .. | 5s. and 2s. 6d. per pkt. Post free. |
| Little Wonder .. .. | 5s. and 2s. 6d. per pkt. |

### SUTTONS' PRIZE CINERARIA.

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| Suttons' Superb .. .. | 5s. and 2s. 6d. per pkt. Post free. |
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| James' Exhibition Prize .. | 2s. 6d. per pkt. |

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| Drooping Flowering .. | 5s. and 2s. 6d. per pkt. Post free. |
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| Mixed .. .. .. | 5s. and 2s. 6d. per pkt. |

### SUTTONS' PRIZE CYCLAMEN.

1s., 2s. 6d., and 5s. per packet, post-free.

### UNSOLICITED TESTIMONY

*To the Superiority of Suttons' Choice Strains of Florists' Flowers.*

*From the "Gardeners' Chronicle," June 5, 1880.*—"Herbaceous Calceolarias at Reading.—It is only when Calceolarias are grown on a large scale that a house full of them is presented to view; and when, in addition to the number of plants, they are well grown, with that balance between foliage and flowers that constitutes perfect plants, and the blossoms are large, finely formed, varied, and handsomely marked, one can appreciate the value of this showy subject for greenhouse decoration. Such a house of Calceolarias is to be seen at the Florists' Flower Seed Grounds of Messrs. Sutton & Sons, in the London Road. What particularly strikes the visitor is the strong, vigorous, and healthy character of the leaves, destitute of any insect life. Messrs. Sutton & Sons have attained a strain remarkable for the strength of habit the plants possess; perhaps it may be only a characteristic of good cultivation, but it is quite certain that a weakly strain will not exhibit the vigour that is found in a strong one."

*From the "Garden."*—"The Calceolarias of Messrs. Sutton & Sons' Nurseries, Reading, are just now beautifully in bloom, and should be seen by all who take an interest in this class of plant. The strain is one of the finest, being the result of years of careful selection. Many of the individual flowers measure 2½ inches across, and are perfect in shape and colour."

*From* Mr. J. COZENS, *Gr. to* S. B. Garrard, Esq., *Hacheston.*—"The seed I had from you both of Calceolaria and Cineraria have far exceeded all expectation, and are the admiration of all. I never saw such a splendid lot of Calceolarias. One of them nearly 3 inches across the pocket."

*From* Mr. J. RENSHAW, *Gr. to* C. J. Lambert, Esq., *Beaudesert.*—"The Cineraria seed I had from you last year has proved the best I have seen, both for variety of colour and size of flower. I have measured some of the flowers to-day 2½ inches across, and as many as 300 on a plant."

*From* Mr. J. B. WARD, *Lower Edmonton.*—"Gloxinias from your seed, raised last spring, just coming into flower, are perfectly marvellous. The flowers are 3 to 3½ inches in diameter, and the colour of the bloom is quite equal to your plates."

"The Primulas from your seed I have never seen equalled."—Mr. A. BIRT, *Rodborough.*

## SUTTON & SONS,

THE QUEEN'S SEEDSMEN,

And by Special Warrant to

HIS ROYAL HIGHNESS the PRINCE of WALES,

READING.



THE

# Gardeners' Chronicle.

*SATURDAY, MAY 21, 1881.*


## VEGETATION OF FERGHANA.*

FERGHANA, it may be explained, is one of the Russian Government districts of Turkestan, corresponding nearly to the Kokan of some of the older maps. It lies, in round numbers, between 70° and 74° E. long, and 40° to 42° N. lat., and is almost enclosed by mountains. To the east it is bounded by the western spurs of the Thian Schan Mountains, to the north by the Ala-Tau, and to the south by the Alai Mountains, these two last ranges approaching each other so closely in the west as to leave only a small opening in the valley of Ferghana, through which runs the great high road to Chodschent and Taschkent. The principal river is the Syr-daria, or Sir-Daria, which is fed both from the north and south by a considerable number of tributaries large and small. The country consists of hundreds of oases scattered over a vast desert. Some of the oases are of large extent, whilst others are mere dots. In the largest are situated the towns of Kokan (about 100,000 inhabitants) and Margalan (about 40,000 inhabitants); and there are others with towns of 20,000 to 30,000 inhabitants. The mean altitude above the sea level of the valley of Ferghana is about 1400 feet. There are three well-marked floras, respectively represented in the oases, the steppes, and the mountains.

### THE OASES.

Oases are rendered fertile (virtually made) by irrigation, and then planted. Among fruit trees are Apples, Pears, and Quinces, in variety, all raised from seed, and yielding tolerably good fruit. One variety of Apple is remarkable for the intense red, not alone of the rind and flesh of its large fruit, but also for the reddish colour of its leaves, young shoots, and even cambium layer. The Quince has a very sweet taste, and is a favourite fruit with the natives. Excellent Peaches and Nectarines are obtained from seedling trees; Almonds and Apricots are also grown, though on a smaller scale. Among Plums, the only one valuable for its fruit is Prunus chamæcerasus, but P. levium and P. cerasifera are represented. The remaining fruits are the Walnut, Fig, Dewberry, Pistacia, the all-excelling Grape in about twenty good varieties, and finally, the unsurpassed Pomegranate. Morus alba and nigra are extensively planted for feeding the silkworm. Poplars and Willows rank first among wild trees. It is noteworthy, however, that the beautiful Taschkent Poplar, Populus Bolleana, is not met with. P. alba, P. nigra, and P. nigra pyramidalis are all three common, and there are no intermediates between the two last. Salix alba is the prevailing Willow; S. babylonica occurs here and there, and a late-flowering species, with very small leaves, is met with on the banks of rivers. Ulmus campestris comes next in order, and exhibits here, as elsewhere, a great tendency to variation. In addition to the foregoing trees solitary specimens occur of Celtis Tournefortii, Platanus orientalis, Cratægus pin-

* Condensed from *Ferghana's Baum und Strauch Vegetation*, by B. Koopmann, Imperial Russian Garden Director Margelan; *Deutscher Garten*, i., p. 289.

natifida, Elæagnus angustifolia, Zizyphus sp., a handsome tree above 30 feet high; and a species of Sophora, the flowers of which are used for dyeing. Among shrubs Rosa centifolia, and rarely a species of Berberis. Still more rare, and only in consecrated places, is a specimen of Biota orientalis or of Juniperus kokanica.

THE STEPPES.

We leave the oasis and enter the steppe. Almost everywhere the oases, at least those of any extent, lie in a clayey steppe. This presents a dreary aspect, the eye ranging for miles over a naked, grey solitude. A few bulbous plants enliven the broad expanses in spring; but neither tree nor shrub is to be seen, except here and there small patches of the beautiful Capparis spinosa. This withstands the drought and burning sun during the whole year. Along with it, but rarer, is the charming Rosa simplicifolia, rising only 2 to 4 inches above the ground. We may ride miles, even for days, through the desert, rarely crossing a small oasis, beyond which the solitude is equally appalling. At length we encounter the stunted Tamarix, the foretoken of sand. We reach the sandy steppe and with it a different woody flora.

Where the natives have not stripped it, and thereby transformed it into a desert of moving sand, there is a vigorous vegetation in the sandy steppes, often forming a dense thicket of shrubs difficult to get through. Tamarix tetrandra is the prevailing species, appearing in large masses, interspersed and intermixed with Halimodendron argenteum, Haloxylon ammodendron, Elæagnus angustifolia, Calligonum polygonoides, C. Medusæ, Atraphaxis spinosa, Lycium ruthenicum, Apocynum sibiricum, Eurotia ceratoides, and Alhagi camelorum—the last occasionally extending into the clayey steppe. Everything is shrubby, even the Haloxylon, with its Equisetum-like foliage; and Elæagnus angustifolia were not seen higher than 9 to 12 feet, nor thicker than a foot in the stem. A tree not hitherto mentioned, but which may prove of great importance in the future cultivation of the steppes, is Populus euphratica. It is true that there is little of it to be found now, because of all the fuel furnished by the steppe this is the best. This Poplar is sought out by the natives to extermination; what is spared by the Sarts falls into the hands of the Kirghis, who prepare their spoons and drinking utensils therefrom. Only in quite concealed places were actual trees seen, from 30 to 40 feet high, with trunks from 15 to 16 inches in diameter. The foregoing plants practically exhaust the wooded vegetation of the steppes.

THE MOUNTAINS.

Intervening between the sandy steppes and the mountains is another wide stretch of clayey steppe, and the vegetation of the lower hills is similar to that of the latter. Oases are more frequent, however, in consequence of the increase in water, and the Kirghis sometimes venture down and obtain a small harvest in favourable years without irrigation. But natural vegetation is first met with at an elevation of 3000 to 4000 feet above the level of the sea. The first shrubs are commonly Hippophae rhamnoides, Berberis vulgaris, and some other species, probably B. cretica and B. aristata; then stunted Celtis, Rosa alba and R. rubiginosa, and Acer Semenowii, followed by the first Coniferæ, Juniperus kokanica, J. Sabina, and the handsome J. Pseudo-Sabina. In the Alai Mountains trees of the last were seen about 25 feet high, with trunks from 12 to 15 inches in diameter. This, however, must not be regarded as its maximum size, for the Kirghis lay the axe to every accessible tree. Ascending higher, Biota orientalis is associated with the foregoing. At an altitude of 5000 to 6000 feet the following shrubs appear:—Spiræa crenata, S. hypericifolia, Pistacia vera (rarely), Cotoneaster integerrima, Lonicera tatarica, Colutea orientalis, and Caragana Gerardiana, here and there amongst which luxuriate some species of Clematis and Rubus cæsius.

The vegetation now becomes more arboreous in character. Junipers form small, dense thickets on the steep hill-sides, and in the valleys, bordering the mountain torrents, are Fraxinus sogdiana, Cratægus pinnatifida, C. orientalis, and Acer Semenowii. Ephedra vulgaris adorns the cliffs with its yellow fruits, and among larger shrubs are Prunus cerasifera and P. Mahaleb; but the prettiest floral ornament is afforded by the species of Rosa mentioned above, associated with R. spinosissima and others. Yet higher must we ascend before reaching the forest in its highest development. In the valleys grow Birch and Mountain Ash, on the heights Firs, now solitary, now in dense masses. Abies obovata is one of the Firs—but not the commonest—which may, perhaps, be A. Smithiana. The shrubby element is also more luxuriant, and includes the additional species—Lonicera cœrulea, L. chrysantha, Ribes nigrum altaicum, the only Ribes known in Turkestan; Caragana pygmæa, C. jubata, and Potentilla fruticosa. Two species of Euonymus deserve special attention. One has broad leaves, and is possibly E. Maackii; and the other has small leaves persistent two years through the severest winters. It is only from 2½ to 3 feet high, with pendulous branches laden in autumn with showy fruit, and affording a most beautiful sight.

In conclusion, it may be added that the mountains of Turkestan, especially the trackless ones, are clothed with rich woods at an elevation of 8000 to 10,000 feet, whilst above this trees and shrubs gradually dwindle in size until they disappear altogether, and at 14,000 feet commences the zone of eternal snow.

## New Garden Plants.

MAXILLARIA FRACTIFLEXA. *Rchb. f.**

This curious Lehmannine discovery has just flowered at York with Messrs. J. Backhouse & Sons, who kindly forwarded me a good flower. Both sepals and petals are extended into very long tails, exceeding 6 inches in length, curved and twisted in a curious manner, having the tails and basilar parts purple, the disk white. The lip is trifid. The middle lacinia has many rugosities, both on the convex disk and on the borders, so that it looks as if it was paved. The lip and disk are white, the middle lacinia and anterior parts of side laciniæ red. It is not quite of the same colour as my friend F. C. Lehmann describes it, but it has too much the same shape not to be identical. It is quite a peculiar plant in its curious tail-like sepals and petals, just comparable to nothing, though it stands near Maxillaria grandiflora, and venusta and albata. *H. G. Rchb. f.*

PHALÆNOPSIS TETRASPIS, *Rchb. f.*

This rare plant is now in flower, so far as I know for the first time in Europe, at Mr. J. Day's, as a fine flower at hand shows. It has the general shape of the flower of Phalænopsis sumatrana, is quite white, shining, waxy, excepting a blotch on the middle of each of the side laciniæ of the lip. The convex ligulate lanceolate central lacinia bears a large felt-like cushion. The upright retuse side laciniæ, with a retrorse bristle, have a rather transverse position. It was obtained from Mr. W. Bull by Mr. J. Day. *H. G. Rchb. f.*

ACRIOPSIS INDICA, *R. Wight.*

The genus Acriopsis may not be known to many orchidists. It was founded by the late Dr. Reinwardt, and published the same year by Dr. Blume under the same name. Masses of short shining bulbs form great clusters, consisting of few joints, sometimes they are oviform, sometimes elongated. The leaves are generally linear lanceolate. The inflorescences form loose panicles. Flowers small, disepalous, dipetalous, with a lip adnate to the curious column. This organ has a great hood like an old-fashioned Paris lady's bonnet of 1843, forming a cavern for the small anther resting on the prolonged rostellum. There are two lateral arms on the sides of the column, as in Zygostates. The pollinia are depressed pyriform, on a slender caudicule, which bears a well-developed glandule.

The genus has very seldom appeared in Europe. Acriopsis javanica, Reinw. (picta, Lindl.), was introduced by Messrs. Papelen and Van Houtte, whence Dr. Lindley and I got specimens. Afterwards it was for some years in Consul Schiller's rich collection near Hamburgh, under M. Stange's able management. And now a kind-hearted anonymous correspondent sends from London a mass of bulbs, and an inflorescence of the very little known Acriopsis indica of Dr. Wight. It is a delicate thing. The starlike flowers are of the lightest ochre colour, with a few light brown markings on the petals. The lip is like a spoon, but undulate at its margins; the column is washed with some light brown. Though the flowers are small they give a very elegant *ensemble*, at least to my taste. The representation of Dr. Wight (*Ic.* v., 1748) is not satisfactory, but I have ascertained that it is this plant. The plant was gathered by Dr. W. Griffith and by Rev. C. T. P. Parish.

There is no doubt that Dr. Wallich's Spathoglottis trivalvis belongs to this genus, as I stated as soon as I saw the type in Dr. Lindley's collection. *H. G. Rchb. f.*

CYPRIPEDIUM VITTATUM, *Vellozo; var.* BREVE, *n. var.*

For a long time we had only the rude representation in the *Flora Fluminensis*, ix., tab. 62. What appeared to be the same plant was finally introduced by Mr. Barrington, of Pant-y-Goitre, who sent me flowers dried in Brazil, which he had obtained with the plant. Mr. H. Low, my eldest orchidic correspondent in England, also gave me Brazilian flowers, but I am not aware of his having introduced it. Then came Director J. Linden, who succeeded, after a first failure, in making a second fine importation. I see from my memoranda that the plant flowered in the finest condition in February, 1876, at Mr. Linden's. A good representation appeared in the *Illustration Horticole*, April, 1876, planche ccxxxviii. I think this was the first flowering of the plant in Europe.

The plant has fine yellow margins to the leaves, and the mauve-brown tints of the flower are very neatly contrasted from the green and olive it has. There is more colour in the flowers than in the longifolium, Hincksianum, Hartwegii, &c.

Mr. Sander has lately sent me some materials, which are rather curious. They would be quite identical were it not for the connate sepals, which nowhere exceed in size the lip, as they distinctly do on all sides in the genuine plant, as well in Vellozo's and Mr. Linden's figures, as in all my herbarium specimens and all my sketches. It is impossible to decide whether this is accidental or constant. *Qui vivra verra. H. G. Rchb. f.*

AERIDES LEEANUM, *Rchb. f.*

I am desired by various correspondents to express my opinion on this plant. It is not much I have to say, and what I say has no great value; yet I hope to give every orchidist the full opportunity of knowing what reasons guided me in this very difficult question. The plant belongs to the group of Aerides Burbidgei, Huttoni, and Thibautianum, all which stand very near one another. It is exceedingly fine in its drooping rich dense racemes of amethyst-coloured flowers, exhaling a lovely perfume. I had, by-the-bye, not well dried single flowers, then a very fine sketch prepared by Mr. Boxall (this time with good colours), and some dead inflorescences with fruits—all these things were sent at various times by my oldest English correspondent, Mr. Stuart Low, who could not give me better than he had. Once there came a glorious fresh inflorescence sent by Mr. Lee, from Leatherhead, who told me he had obtained the plant from Mr. W. Bull. These fine fresh flowers struck me by their novel peculiarity in having the side laciniæ of the lip not upright, as they were in the fresh flowers of all the just mentioned species which I have carefully observed, but bent, and thus covering one over the other, both covering at the same time the middle lacinia and the mouth of the spur. Some other peculiarities would not have much influenced me. Thus a separation appeared indicated, and I dedicated the plant to Mr. Lee. Had I, however, had only to do with this gentleman I would have told him we might wait for the publication for the following season to see whether it was Aerides Leeanum or A. Thibautianum Leeanum. Whether it prove a distinct species, as is more probable, or a distinct variety of Aerides Thibautianum, no amateur will repent of having invested his money in it. It is at all events a fine thing.

I am very sorry to state that I learn there is no more old Aerides Thibautianum alive in Europe. Nothing appears left of it but very fine herbarium specimens and my careful sketch. M. Lüddemann, since 1854 my constant, indefatigable, intelligent correspondent, kindly informs me that both plants which were alive at Paris are now dead. By-and-bye we will come to the point. *H. G. Rchb. f.*

## HEDERA HELIX MADEIRENSIS, VARIEGATED.

No finer hardy variegated plant than the subject of this note, and of the illustration (fig. 118), was last year exhibited before the Floral Committee on July 13. It was exhibited by Messrs. Osborn & Son, of Fulham, and Messrs. James Cutbush & Sons, of Highgate, and obtained a First-class Certificate. It is a very handsome, large-leaved, silvery variegated plant, perfectly hardy in constitution, and very free growing, and has, moreover, the quality often wanting in variegated Ivies, of retaining its variegation throughout the season.

* *Maxillaria fractiflexa*, Rchb. f.; Otia bot. Hamb., p. 8.—Vaginis juvenis caulis (pseudobulbi) triangulis acutis distichis (ad 0.48 m. longis, 0.55 m. latis); foliis petiolatis oblongo ligulatis acutis (ad 0.48 m. longis, 0.055 m. latis); pedunculis gracilibus elatis, vaginis acutis acuminatis (0.036 m. altis); bractea ligulata acuta, ovario pedicellato sublongiori, mento obtusangulo subacuto; sepalis triangulo linearibus acuminatis (siccis 0.11 longis), lateralibus fractiflexis; tepalis subæqualibus brevioribus tectis; labello oblongo apice trifido, laciniis lateralibus obtusangulis, lacinia mediana triangula obtusa, callo lineari-ligulato lanice abrupto obtuso a basi in discum ultra medium, basi sulcato; columna crassa elevata. *H. G. Rchb. f.*

## BRITISH GUIANA.

(*Continued from p.* 595.)

We now pass from colour to form. In describing the ordinary types of trees as akin to those of temperate lands, it was stated that among these were scattered many striking forms quite or almost peculiar to the tropics. In now describing these, the first to claim notice are the creepers, which mat together the whole forest, and pass in inextricable confusion from trunk to trunk and over the tops of the trees. Not only are these immensely more numerous, but very many of them differ, in the form of their stems, from the creepers of temperate climates; some stems are like broad ribands, either tightly stretched, or with the edges of the band wound in a most extraordinary way; others are spiral, and yet others are twisted round each other as evenly as if by human art. Many kinds of Palms occur in places, some species singly, others in thickets, and others even massed in numbers large enough to deserve the name of forest; so that while in some places none of these plants are visible, in others many individuals of one species fill the scene. Of the erect Palms, the leaves of which spring from a common centre, generally from the top of a more or less lofty and stout stem, those with fan leaves are, with the exception of one very common species (Mauritia flexuosa) rare; those with feather leaves form the bulk, and one of these, Maximiliana regia, has its leaflets so arranged almost spirally round the midrib that the whole leaf is rather plume-like than feather-like; another Manicaria saccifera, has an enormous oblong entire leaf, not split into leaflets. But beside these erect Palms, there are other climbing Palms (Desmoncus), the feather leaves of which branch off along the whole stem; and there is another plant, Carludovica Plumieri—not a Palm, but very similar in appearance, which creeps like Ivy up the trunks of trees. After the Palms, the genera that figure most largely in the ordinary fancy picture of tropical scenery are those plants with large, very bold, simply oblong leaves, the best known of which are the Bananas and Plantains, and of which certain very small forms, the Cannas, are now commonly seen in English gardens. These Banana-leaved plants do appear, in places, largely in Guiana scenery. The most striking among them is the so-called wild Plantain, Ravenala guianensis, the "Traveller's Tree," the enormous leaves of which rise from near the ground to a height of 10 to 15 feet. The bases of their leaf-stalks sheath the one over the other, and in the pocket formed by each of these sheathing parts much rain-water is retained even through the dry season, which water, having often served to quench the thirst of travellers, has gained for the plant one of its English names. Another noticeable enough feature in this plant is that the seeds within the tough thin shell of the fruit are packed in a large quantity of short fibrous substance, in colour and form like clippings of the brightest scarlet wool. Much smaller, but similar plants are the Heliconiæ; and yet smaller are various species of Maranta, the tough, dark green oval leaves of which are raised on a cane-like stem. The leaves of the latter plants serve the Indians in place of wrapping paper, for many purposes, and the stems are woven by the same people into baskets. Wild Pine-apples (Ananassa) and other similar but much larger plants, each being but a great rosette of long, pointed, saw-edged leaves, grow singly or in small groups on the more sandy parts of the forest floor. Aloe-like plants are very rare; a few occur scattered widely over the savannah, and one form, Cordyline micrantha, grows in such dense masses on one particular plateau that it constitutes the whole prospect. Among Ferns there is no need for much mention of the low-growing herb-like forms, such as are familiar in temperate lands. They are enormously abundant throughout Guiana, the chief forms being various species of Adiantum, Lindsaya, Polypodium, Acrostichum, and, above all, the lovely little filmy Ferns, Trichomanes and Hymenophyllum. But three forms, occurring in Guiana, which belong more especially to the tropics, are the Tree Ferns, the climbing, and the creeping Ferns. Tree Ferns occur abundantly in certain higher sandstone tracts in the far interior, but far more sparingly in the forest near the coast, where, however, they are sometimes seen in thickets (Cyathea aspera) sometimes singly (Hemitelia macrocarpa and others). The climbing Ferns, with delicately cut leaves, either support themselves after the manner of Hops on the low shrubs (Lygodium), or, growing in shrubless places and finding no support, allow their branches to grow into a dense self-supporting bush (Gleichenia); another so-called climbing Fern (Oleandra hirtella) has a long, upright and firm stem, so stiff as not to need support, crowned with lance-shaped leaves. Yet other Ferns (Polypodium and others) creep like Ivy up the tree trunks; and even some Filmy Ferns have this habit. Club mosses (Selaginella and Lycopodium) often carpet the ground under the forest. True mosses are scarce. The striking heart-shaped

Fig. 118.—Hedera helix madeirensis variegata. (see p. 656.)

leaves of Aroids, too, are frequently seen. One of the commonest plants of Guiana, which is indeed hardly ever absent from any shallow water, is the Moco-moco, an Aroid (Caladium arborescens) with leaves like that of the well-known Calla, borne at the top of a long stick-like stem often from 10 to 12 feet high. Here and there on the ground in the more open parts of the forest the green, bright red or white-spotted leaves of Caladiums, so well known in English hothouses, are seen; and, growing epiphytically both on standing and fallen trees, are large numbers of other Aroids, the leaves of some of them pierced with regular window-like openings. Passing from these to the masses of other epiphytes which load the trees the most striking of these are the Tillandsias, mostly like wild Pine-apples, but one curiously distinct form (T. usneoides) which hangs in large masses like long streamers of grey wool, swaying in the wind from the outer branches of the trees, produces a most weird effect; the Clusias, with larger or smaller leathery leaves, like those of the well-known India-rubber Plant (Ficus elastica), which push out from the branches roots high up in the trees, and sends these long, unbranched, rope-like roots straight down to the ground, and the Orchids. The number of the latter plants in Guiana is enormous; some few grow on the ground, but the greater number are epiphytic. One, the Vanilla plant, creeps like Ivy. The quaint but unlovely general character of the plants is too well known to need description; their flowers, though many of them are individually of exceeding beauty, are in Nature seldom sufficiently numerous to attract attention.

One class of plants which is generally conspicuous in tropical scenery is somewhat rarely noticeable in Guiana. These are the Bamboos. The large splendidly graceful clumps of Bamboos—more graceful, as it appears to me, than any other form of vegetation—only appear in Guiana near places now or once inhabited, and were therefore probably introduced. Other species—their feathery stems scattered instead of springing in definite clumps—are widely scattered, but are seldom sufficiently numerous to affect the character of the scenery.

The subject of the perfumes of plants in Guiana requires but few words. Strong sweet scent is a much more marked feature throughout the interior than is brilliant colour. Many of the trees, though carrying inconspicuous flowers, yet load the whole air with a perfume almost too powerful. The long white-flowered Posoqueria, already mentioned, is one of many plants as strongly scented as Stephanotis; and when the large yellow flowers are on the Vanilla vines, their scent may be distinguished from far off. Even the highest trees of the forest which lift their flowers so far from the ground that their beauty is invisible, and their scent for a time imperceptible, yet afterwards, when they drop their flowers, make the odour in the forest at first really sweet, and then, as decay sets in, sickly sweet. Another source of perfume lies in the numberless resins which exude from the trees. Where the Hyawa tree (Icica heptaphylla) grows the whole air for some distance round is pleasant and wholesome with the incense-like odour of the white resin that drops from its stem, and lies in masses on the ground; and a still more powerfully-scented resin, which coats the trunk of another tree, the Tauranera of the Indians, seems to imitate and surpass the odour of Vanilla.

Having in these general considerations provided the necessary materials, as a painter provides colour, brushes, and canvas, I shall now attempt to describe a few special pictures of plant life, some from the forest region, others from the savannah; and thus try to give as true a notion as may be of the appearance of the land. In so doing it will hardly be necessary to notice the coast region, for the obvious reason that the greater part of this has been much modified by the hand of man, whereas we are now regarding only Nature; and for the same reason the forest pictures will be taken, not from that part which has been described as the timber tract, most of which has at some time been deprived of its finest trees by the hand of man, but from the more remote virgin forest. It may, however, be noted that the most noticeable difference between the timber tract and the virgin forest is that the space under the forest roof is in the former place much filled with shrubs and low trees, while in the latter place it is much more open.

Let us first suppose ourselves to stand far from any opening, somewhere in the deep shade under the unbroken forest roof. The eye is first attracted by the enormous girth and various character of the tree trunks. Many of these for some distance from the ground are not columnar, but formed by many board-like natural buttresses, which radiate from a common centre, and between any two of which several men may often stand; these buttresses run so far up the trunk that if the tree is to be felled, this being impossible near the ground, a platform sometimes 20 or 30 feet high has first to be built round the tree and the ground, above the point where the buttresses unite and form a trunk of the ordinary pillar-like form; and from this platform the woodcutters ply their axes against the trunk, now at last circular and of moderate dimensions. The largest of these buttressed trees are the Moras, the commonest tree of the colony. But among the two or three of Moras which are in sight, there are other trunks of every degree of circumference—some of the familiar pillar-like form, others like the clustered shafts of a stone pillar, apparently made up of a number of small coalescent trunks; most are smooth, but on one there are curious prickles, each supported on a separate tumour on the bark, and on others clusters of star-like or pea-shaped flowers (Swartzia) and pods spring directly from the bark. Up the trunks there are a few isolated tendrils of various creeping plants, some with curiously spotted and marked leaves. There are no large Palms in sight, but on the right there is a tangled thicket of small erect Palms (Geonoma), 8 or 9 feet high, with smooth, many-jointed, light-coloured stems, so well known as walking-sticks, and with a few simple or slightly feathered leaves. Here and there there are also a few other Palms (Bactris), hardly taller, growing singly, each with a very slender and straight prickly stem supporting a crown of a few delicately feathered leaves. There are but very few shrubs visible; and, on the whole, the view at the level of the eye is little impeded by anything but the tree trunks. Looking up the tree trunks the eye travels far, past many clumps of epiphytal plants, before reaching the first branches, it perceives the enormous height of the trees; and from those first branches it passes yet higher up into the dark, impenetrable roof of leaves. From the latter hangs down a tangled mass of innumerable creepers, here leafless, for their leafy parts lie above the tops of the trees. Once more, on these hanging creeper-ropes one or two enormous masses of epiphytes are perched. Then the eye as it looks down on to the floor is struck by the scarcity of moss and other small plants, such as carpet temperate woods; here the ground in many places consists only of bare mud, or is covered only by a few dead leaves or fallen fruits and branches; in other places it is carpeted by dense masses of seedling trees a foot or two high, among which grow a few herbaceous Ferns and Club-mosses (Selaginella). On a heap of dead leaves grow one or two tiny parasitic Gentians (Voyria), the flowers of which are to be described not so much as white, but rather as colourless, are supported on short wiry stems, leafless and of the same colourless aspect. Lastly, a huge prostrate tree-trunk is half-buried under epiphytal plants, Orchids, wild Pines, and Aroids.

It is difficult to obtain a view of the forest-roof from above, but it may sometimes be seen from the top of some steep-sided hill rising above the forest. Standing on such a place as that one looks on to a level sea of tree-tops, a mass of very various foliage most closely woven together by innumerable creepers. Both of the trees and the creepers, some individuals may sometimes be seen gorgeous with flowers, but these are better seen from the level ground in some opening in the forest. It is on these tree-tops, exposed to the full blaze of the sun, that many of the finest Orchids grow; but their small size, and the distance from which it is alone possible to view them in their natural positions, prevent them forming a feature in the landscape. *Everard F. im Thurn.*

(*To be continued.*)

STAUNTONIA LATIFOLIA.—As a climber in a corridor or cool conservatory this Himalayan shrub is well worth growing, both on account of its handsome foliage and its very fragrant blossoms, which, however, do not possess much but their scent to recommend them. This species in the open at Kew, although well protected by mats, &c., has succumbed to the severity of the past winter. A figure of its leaf and fruit is given in our columns, vol. v., n.s., p. 245. Its Japanese congener, S. hexaphylla, planted against a wall, is now growing strongly, and has proved itself a valuable addition to our list of nearly hardy, if not quite hardy shrubs.

## ARTIFICIAL MANURES.

FEW persons, perhaps, outside of the manure trade and of agriculture can realise the immense benefit derived to vegetable life from artificial manures. Perhaps the designation "artificial" is not a happy one, because it leads to the erroneous assumption that, like artificial flowers, they only look real, but have no natural elements. We have from all time till within the past forty years or thereabouts, been so accustomed to regard animal excreta and vegetable products in a state of decomposition as the only recognisable forms of manure, that the admission of so-called artificial elements into the manurial pharmacopœia seems to be almost like a revolution, and one against which the minds of those unfamiliar with the nutritive value of these elements naturally rebels. The real fact is, we must all become more or less chemists ere we can fully understand the usefulness of such crude looking compounds as phosphatic stone and salts of soda. Coal itself yields us, as an impurity from which coal gas has to be freed, vast quantities of ammonia which is extensively used in agriculture and in the manufacture of the most powerful kinds of compound manures, whilst the soot, which is the product of combustion, is also a valuable manurial constituent. The common belief, and one not wholly incorrect, is, that the best manure for the soil is that which we take from it, though returned in a changed form; but modern agriculture has shown us that to depend upon such return alone for the fertilisation of the soil is to depend upon a broken reed.

From being the chief element of soil nutrition, animal and vegetable manures have now become but subsidiary aids in the work of improvement, and the chief share is more and more being taken up by what are technically termed artificial compounds. But that the term artificial is a misnomer is made evident from the fact that the action and influence of these compounds—if really what they are represented to be—is not artificial but real, and that they furnish in a large degree those very elements that cultivated plants need is abundantly evident. Perhaps if we more accurately understood the chemistry of vegetable life we should better understand how it is that these terrestrial products, looking, as exhumed from the soil, so crude and insoluble, nevertheless contain the very substances that plants must have more or less to promote growth. Plants are subtle analysts; they excel our greatest chemists in this respect—they not only analyse apparently incongruous and complex compounds, but also extract from them those which are useful and utilise them, whilst those not essential are left uncared for. Ere this can be done, however, the human chemist must prepare the compounds for the analysing plants, and it is in this simple process of preparation that is found whatsoever value the artifical compounds may possess.

A manure manufacturer's yard is anything but an attractive place, and the works and surroundings by no means present an æsthetic appearance. There are lying about huge heaps of white, grey, or bluish material, brought at great cost from Canada, Spain, Norway, the West Indies, and other distant parts of the world. These are perhaps dredged out of deep water, and contain 60 per cent. of phosphates; or from the hard rock of Estremadura, having from 60 to 70 per cent. of the same valuable elements; or perhaps, as found in deep pockets in Canada, containing 80 per cent. of these same phosphates. There are also vast quantities of home-raised phosphates, or English coprolites, small, greyish, roundish, and very hard substances, that resemble nothing so little as manure. Probably ninety-nine persons out of a hundred would imagine that the material was admirably suited to substratum garden paths, but would exhibit a look of profound incredulity if told that these coprolites were a valuable manure. But that incredulity would perhaps heighten if further informed that they were dug from the earth, where perhaps more than £100 per acre has been paid for the sole privilege to dig them, and that alone; the labour needed for excavating being very costly, because they are found at considerable depths, and only then in beds about 12 inches in thickness. But what are these coprolites? To the uninitiated they resemble dirty gravel; but the geologist, that learned enquirer into the doings of the earth and its denizens tens of thousands, nay, perhaps millions of years since, tells us that these coprolites are in some cases the excreta of antediluvian animals, perhaps semi-amphibious creatures, which may have frequented the rivers that once existed, and left their excreta in one

locality as the birds of South America have theirs upon the guano islands. This was probably in antehuman days, and when some great terrestrial convulsion or other change came these excreta deposits were fossilised, and now are found, thanks to modern scientific knowledge, valuable nutriment for the vegetable life of the present day. In most cases, however, the so-called coprolites are phosphatic concretions, probably of animal origin, but whose history has not yet been cleared up.

But perhaps of all compounds most important is that curious greenish-looking stone which in its crude form holds the phosphate solvent, or "liberator," in its tenacious grip. It is from this that sulphuric acid is extracted, heat performing for that the same kind office which that in turn performs for the phosphates. Here are the accumulated stores of Nature's chemistry bottled up in the earth for vast periods of time now being brought to the surface and into use for the good of man. This sulphur-stone is broken up and cast into huge iron furnaces; the intense heat liberates the sulphur in a gaseous form, and travelling through pipes to the enormous receiving rooms or chambers, it spreads itself all over the leaden walls, ceilings, and floors, and gradually condensing changes into sulphuric acid, or, as it is better known, vitriol. The great work of the manure-chemist, however, in elaborating manures suitable for various vegetable crops must be performed ere the crude compounds come into contact with the liquid solvents, and it is here that science shows how wide is the difference between chemical and haphazard fertilisation. The agriculturist who knows nothing of chemistry manures in his own way for all crops alike, utterly heedless of each one's special requirements. The chemist, however, studies these matters with skill and judgment, and in his laboratory constructs or mixes those compounds that shall give as nearly as possible to each plant just the amount of phosphoric acid, ammonia, phosphate, nitrogen, or whatsoever natural element it may most need, at a given time and for a given purpose. Now, before the crude phosphates and the crushed bone, the shoddy, and other constituents come into contact with the solvents, there is a process of crushing, grinding, and screening to be performed, and then the fine material is taken in respective and specially provided bulk to the scales, duly weighed, and thence by means of an endless chain-carrier sent up aloft into the huge mixer, where the sulphuric acid is poured in upon it, and when the whole is well incorparated, and yet in a sodden, almost slush-like state, is sent down slides into huge pits below, where it lies for a few days, its heated condition soon causing it to dry. From thence again it is removed to build up the giant heaps, many hundreds of tons in bulk, that lie in preparation for the exporting season.

These rough notes were gathered in a visit to the large manure works of Messrs. F. C. Hills & Co., at East Greenwich, and beside the River Thames. There are, just opposite, several others of a similar kind, and indeed the neighbourhood of Blackwall is famous for its manufactures of manurial compounds. But there is no evidence that the air is insalubrious, and it is a fact that the big men who are working all about the place are of robust health, and full of vigour. The phosphates, crude and liberated, seem to give off no unpleasant perfume, and it is not till the door of the sulphur furnace is opened that any strong odour is evident, and that is only momentary. Even in traversing the galleries that intersect the condensers there is no unpleasant odour; but if the nose is projected through a slide into a big condensing chamber, one small sniff is enough; but there it ends. All around on the marshes vegetables are grown in large quantities for the London market, whilst as consistent as can be with the bleak position, trees and garden flowers thrive; nay, surprise is natural when we find beneath the group of Lilac trees that stand on the western extremity of Woolwich Reach, dear old wild Primroses charmingly in bloom, giving even here a touch of Nature that goes straight home. Vegetation seems to suffer less from foul gases than from foul compounds. Just above and below this old garden are, in the centre of the river, moored immense derricks, beside which the coal ships lie and discharge into lighters and barges some 30,000 tons per year. It is the dust of this grimy substance carried by the wind which coats the trees and flowers, and is the most troublesome element in the garden on that unwonted spot.

From beside the manure works barges are being laden to convey the manurial compound to the diverse parts of the world for use. It is not alone in our own corn, root, or Potato fields that the mixtures are employed; they go to Spain for the enrichment of the Vine, to Egypt for the benefit of Rice, to the West Indies to help on the Sugar, and to Germany for the growth of Beet-root. These are but a few out of the many uses to which artificial manures are put, but few as they are how forcibly do they show the immense benefit which the chemist has wrought for humanity in this particular field of enterprise. Horticulturists are not extensive users of artificial manures. Gardeners are almost as conservative of old notions and methods as farmers, but they will be enlightened in time. Perhaps it has been largely their misfortune rather than their fault that too many assumed manures are but poor and thus costly things, expensive but useless, and therefore disappointing. In time perhaps we shall follow the lead of the agriculturist, and tack on to our present horticultural instruction something of chemistry as applied to vegetable life. Now a chemical analysis, given with ever so good an intent, is little better than Greek to the larger portion of professional readers; but a little study of elementary chemistry would soon rectify this.

Oh! that in our public elementary schools, instead of teaching children so much of the, to them, useless lumber of history, the stories of foul deeds, and the lives of bad men and women, our teachers could be permitted to train up children in the knowledge of common things, and of all others in that delightful chemical study found in plant life. Then would even the meanest gardener soon learn to comprehend the proper uses and effects of manures; then might each one know what this or that crop most needed for its sustenance, and, knowing that, know how and what and when to apply. There is too wide a gulf between our scientific knowledge, as shown by eminent chemists, and the general ignorance of the people. To bridge over or help fill up that gulf presents a noble work for able and enlightened legislation. *A. D.*

## COLONIAL NOTES.

Canada.—We have had a very cold and unusually protracted winter, and an inclement and dry and backward spring. On April 25 there was scarcely any appearance of grass, but a night of warm rain brought out the grass on the following day, and the Clover was in leaf on the 27th, and a nice bouquet of wild flowers was gathered in our bush on the 28th, so rapid has been the vegetation, but to-day has somewhat checked it, as the wind has been cold from the north-west. Considerable fear was entertained for the Wheat plant, but generally it has stood the winter well, and since the rain looks nicely. The seeding of the spring grains commenced in this neighbourhood about the 26th, and is proceeding favourably, as the ground is in nice condition. The severe weather has frozen the Potatos in the pits in some instances to the extent of one fourth, but the price is still reasonable, being only for the bushel of 60 lb. an average of about 1*s.* 6*d.*, English currency. In some districts last year, near Toronto, the Pea bug did considerable damage, completely emptying the skins of the Peas. We have not yet received a visit from this pest, but are in some dread of its early approach, as news of its appearance on some hills 20 miles distant from us reached us last harvest. Great preparations are now being made by all farmers for the large quantities of Tomatos, Cucumbers, and other vegetables consumed by every one, so as to have a supply ready for planting out in May. The late winter has been unprecedentedly hard on young Grape Vines, and many of the youngest have succumbed to its rigour; the 2-year-old and upwards have, however, apparently survived uninjured. We are very sorry to hear of the death of so many of your small birds through cold and want. Such an occurrence never happens here, as all our winter birds obtain a full supply of the buds of trees, and keep themselves fat however severe the temperature may be. *J. M., Minesing, Ontario, April* 29.

Oranges in South Australia.—An interesting discussion took place in December last at the Gardeners' Improvement Society of Adelaide, South Australia, with special reference to the longevity of the Orange, in the course of which it was pointed out that thorough drainage is at the foundation of successful Orange growing; that next to this, trenching to a great depth is essential; and thirdly, that manure must be applied with discretion.

## NOTES FROM SANS SOUCI.

This charming seat, the property of W. Rose Friar, Esq., lord of the manor of South Lytchett, and but a short distance from Poole, is one of those picturesque places where much that is interesting and beautiful may be seen in what may be called a comparatively circumscribed space. The name Sans Souci is of French origin, and means "free from care," although horticulturally speaking the title would admit of much qualification as far as it has any application to the relationship that exists between the gardener and the plants and trees under his charge. Not many gardeners have been "free from care" during the past winter, except those of a peculiarly phlegmatic disposition and a singularly imperturbable temperament. Approximately the house and garden stand on an elevation of 100 feet above the sea. It is no doubt owing to the favoured situation of the garden and its contiguity to the sea that the Camellia and other trees and shrubs have attained proportions which are seldom equalled in the same time in any other part of the kingdom.

At sunset the scene is beautiful from the south front. Here is Rockley Bridge, which spans Lytchett Bay; to the left is Tirling Point, and far away in the roseate landscape you can behold the rugged surface of the Purbeck Hills, which stretch away as far as the eye can reach. Coming to the horticultural features of the place, the chief attraction is of course the Camellias, for which Lytchett has been long famous. A good deal of speculation has of late years been abroad with regard to the hardiness of the Camellia. Those who doubt that they are hardy should go to Lytchett and see the specimens (bushes) planted under the shelter of a west wall, having boles 30 inches in circumference and the plants 15 feet in height. The plants have suffered a good deal from the effects of the past winter, and but for its extreme severity there would have been an unusually grand display this season. As it is the trees have borne quantities of flowers upon the branches protected by the snow, a sample of which, including Lady Hume's Blush, I sent for your inspection. Every bud was of course lost above the snow line, but with the exception of discoloured leaves the plants have not sustained any material injury; in fact, they have not suffered as much as many other trees and shrubs that could be mentioned, and that are commonly accepted as being hardier. One tree of the group—a red striped variety—is said to be fifty years old, and I was told has been a picture when in bloom on many occasions after mild winters.

The Camellias under the "covered way" are, however, the great feature at Lytchett this season. If the reader can imagine a wall draped with the rich, glossy foliage of the Camellia forming a dense carpet of green, lit up with the brilliant colours of such well known varieties as Donckelæri and the old single red, the blooms appearing as if they had been put there mechanically, and associated alternately with the old double white and Lady Hume's Blush, a tolerably fair idea of the picture may be conceived. The plant of Donckelæri has been planted over thirty years. Now in this case there is protection overhead, but the front is fully exposed to all weathers, and yet the wall was a glowing mass of flowers perfect in every respect when I saw it on Good Friday. The varieties, in addition to those mentioned, include Dunlop's americana, Hendersoni, Bruceana, imbricata alba or delicatissima, and Aurora as a standard in the open. It appears, therefore, from the above facts that the Camellia is a perfectly eligible subject for out-of-door planting in sheltered situations in the South of England, and that many an ugly wall may be rendered a handsome object by training Camellias against it.

Proceeding by the covered way, which is divided, when about half its length is traversed, by a grotto having its exterior embellished with curious stones and plants intermixed, colonies of spring flowers and other odds and ends, the conservatory is reached; and this I am bound to say is the only object on the place that offends the eye, being relatively larger than either the mansion or the garden. The structure is externally simple in design, and any attempt at elaborated art would be out of harmony with the plain outline of the building; hence Mr. Menzies, the head gardener, and an offshoot from Dalkeith, taking a correct view of the embellishment of such a structure, breaks up the space with bold groups of tall growing plants, among which the Camellia again predominates.

The plants are chiefly planted out, and the colour and vigour of their foliage, and size and substance of the flowers, attest not only that their requirements are thoroughly understood, but also that much skill and patience are bestowed upon their cultivation. Several seedlings were pointed out to me in flower, which are very showy, but which are not good enough in quality to supersede existing varieties of the same type. A plant of delicatissima—a grand white, with a tinge of pink in it—struck me as being very fine, as also samples of Brugmansia sanguinea and Sparmannia africana, grown from cuttings in a couple of seasons. These plants are well adapted for growing on quickly for large houses, and a companion plant that I must not omit to mention is Clianthus puniceus (the Australian Pea), which also succeeds well planted out, and is a suitable plant for associating with tall Camellias. Specimen Azaleas, Zonal Pelargoniums, Primulas, Spiræas, and other spring flowering plants, contributed towards making a very agreeable combination of colour, and a good show for the season.

In the pleasure-grounds are several notable specimens of Araucaria planted in 1854, averaging 24 feet in height, and feathered to the ground. One plant, an exception to the rest, and planted in the same year, has reached the height of 54 feet. The finest specimen on the place was, however, planted in 1822, is 52 feet high, and at 5 feet from the ground is 6 feet 2 inches in circumference, spread of branches 33 feet in diameter. These figures will convey a general idea of the luxuriance of the trees and the progress they have made as compared with others in different parts of the kingdom. A row of Medlars are planted on a lawn here, having handsome heads on clean stems of about 3 feet. Magnolia grandiflora flowers as a standard, and a plant of Salisburia adiantifolia not far distant occupies a position which it well deserves. The Judas tree (Cercis siliquastrum) and a fine bush of Mespilus, quite a sheet of bloom, are also pointed out as conspicuous ornaments for lawns and pleasure-grounds.

The blue African Lily (Agapanthus umbellatus) is planted in the open, having a bed all to itself; it is protected with litter on the approach of winter, and is not uncovered until the cuckoo's notes are heard in the spring. A group of Belladonna Lilies planted at the base of a wall and mixed with bulbs of Vallota purpurea (the Scarborough Lily) are said to be very effective; the latter, however, have not had a long trial out-of-doors, and it would therefore be premature to give them unqualified praise before their hardiness for such situations is thoroughly tested. The next feature of interest is a wall clothed with choice hardy creepers and a mixed herbaceous border. Nothing looked happier upon the wall than the old favourite Cydonia japonica, and I do not think there is anything to exceed it in beauty when in flower. Escallonia macrantha, Fabiana imbricata, and Chimonanthus fragrans have stood the winter well. In the herbaceous border there were many of the most useful varieties of hardy plants and bulbs, including Hellebores, Anemones, Primulas, yellow Jonquils, Triteleia uniflora—a useful collection. A group of Funkias, blue and white, planted alternately, are said to be a special attraction when in flower; they are grown in partial shade, and have not been removed for years.

The kitchen and fruit garden bears the stamp of good management, and the Vines in two houses are showing fine crops of well-formed bunches. Altogether the garden, though not large, contains many things of great interest to the horticulturist, and is replete with enjoyment to any one having the most rudimentary knowledge of gardening. *Visitor.*

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The Winter of 1879-80 in France.—M. Prillieux has published his report upon the injuries done to various agricultural plants in various districts of France by the frost of 1879-80. Pinus maritima, which was considered hardy in Northern France, perished in the central districts, but survived near the sea. Among fruit trees the most tender was the Almond, then the Apricot and the Peach. Plums and Cherries scarcely suffered at all. As to Apples and Pears, the effects of the cold were very different, according to the variety. More damage was done in the valleys than on the hills. Cereals, on the other hand, suffered more on the high than on the low ground, owing to the removal of the protecting snow by the wind. Winter Barley and Oats suffered more than Wheat. Among the latter varieties which have been grown for a long period in particular districts escaped with less damage than newly introduced varieties.

## ABIES CONCOLOR.*

We have on various occasions alluded to the opinion expressed by Dr. Engelmann, before as well as after his recent visit to California and Oregon, that the tree known in English gardens as Abies or Picea Parsonsiana (syn. Lowiana and lasiocarpa), a native of California and Oregon, is only a long-leaved form of a species named by Lindley and Gordon Abies concolor, the type of which was found in New Mexico or Colorado by Fendler (*Herb.*, n. 828), and which has since been found by Sir J. Hooker and Dr. Asa Gray in the same country. English Conifer growers not unnaturally object to this association of two forms so different in appearance and coming from such widely separated regions. We do not propose here to discuss the validity or otherwise of Dr. Engelmann's opinion, we would merely wish to point out that for garden purposes the two forms are quite distinct. Mr. Syme, who shares in the opinion expressed by Dr. Engelmann, that the plants in question are geographical varieties of one common type, drew attention (*Gard. Chron.*, July 17, 1880, p. 70) to some of the distinguishing characteristics of the true concolor, such as the flatter, less channelled, and generally more acutely pointed leaves, their much closer distribution on the stem, their varying length on the upper and lower sides of the shoot, &c. Mr. Barron, of Elvaston, also calls our attention to the "buds of the true concolor, the scales of which are," as he says, "dry, much resembling a cone in miniature, while the terminal buds of Parsonsiana are smaller [?] and entirely covered with resin." So far as the internal structure of the leaves is concerned we may say, after an examination of many specimens fresh as well as dried, that the structure is in essentials the same in all. In concolor, true, the outline of the leaf seen in cross section is oblong, flattish; the hypoderm cells are few and scattered on the upper but more numerous on the lower surface; the palisade cells are marked on the upper side, the resin canals are sub-epidermal, and the central vascular bundle is double, exactly as in the leaf of grandis as figured in *Gard. Chron.*, iv., 1875, p. 134; in fact, the same figure would represent the section of the leaf of either grandis or concolor, the difference from Parsonsiana being merely that in the two former the outline of the upper surface is flatter. The more acutely pointed leaves of the true concolor do not present an absolute distinction, for on examining a large number of specimens, some leaves of true concolor may be found blunt, and some leaves of Parsonsiana may be found acute. It has been supposed by some that concolor, as grown in England, is only an impoverished form of Parsonsiana, but in that opinion we do not concur. We have had several impoverished shoots of Parsonsiana sent to us looking very like true concolor, but on actual comparison the difference is clearly perceptible, the leaves of concolor being invariably more crowded and not so nearly two-ranked as in Parsonsiana.

To illustrate our remarks we now add a woodcut (fig. 119) of the leaves of true concolor for comparison with those of concolor var. Parsonsiana, figured May 22, 1880, p. 649. Parsonsiana or Lowiana or lasiocarpa we believe to be hardy, but concolor looks more tender. We should be glad to hear how this species has fared during the last winter. Parsonsiana is in our experience unhurt. *M. T. M.*

* For the full synonymy see our article at p. 648, May 22, 1880.

## Florists' Flowers.

The Florists' Tulip.—The season cannot be considered a late one if the flowering of the Tulip may be taken as a criterion. One bed of about 700 roots, in 100 varieties, is now (May 14) at its best, and the bed has had no protection whatever. I find we do not get the foliage so large or so perfect when no protection is afforded to the beds; but I do not care to cover them with sheets, mats, &c., as is usually done, nor to go to the expense of covering the beds with glass, which is the best method of protecting them from the inclemency of the weather.

One cannot but be amazed, and wonder at the vagaries of fashion that have almost entirely banished these late-flowering Tulips from our gardens. One cannot altogether blame the reaction from the Tulip mania of so many years ago, nor the high prices charged by Groom, of Walworth, and some others, not more than a quarter of a century ago. If such was the case one might almost be afraid of the results of £147 being paid for a variety of Cypripedium Stonei—a price far beyond the intrinsic value of the plant—because if there had been a score of plants of it in the country £20 would probably have been its price; and if 100 plants, it might have sold for a guinea a-piece.

To return to our Tulips, we claim for them that they are gorgeously beautiful, and fill a blank between the early spring flowers and the bedding plants; for our hardy flower borders are not now nearly so gay as they were a month ago. There has been much written about the richness of colouring and the great beauty of our hardy flowers; but now a word about the Tulip, which surpasses every other hardy flower in richness of colour and beauty of form. The clear and rich yellow of the Bizarres is most striking. I noted as the best of this class two splendid blooms of George Hayward, beautifully feathered with rich red maroon on gold; the flamed forms of this variety are also very beautiful. It stands at the top very clearly. Next to it the feathered form of Commander is very grand; followed by Masterpiece, superb in its feathered form, and most beautiful as a flame. Everard and Dr. Hardy vie with each other as to which will form the most chaste designs in red and gold. Colbert is of the richest clearest yellow, but the flame and feather are somewhat broken, which is a fault.

In Byblœmens the palm must be awarded to Mrs. Jackson, raised by old David Jackson, of Middleton; it passed from him into the hands of Mr. Barlow a few years ago, who gave me a couple of small roots of it, and we have now some good flowering plants. Mr. Barlow in vain offered to give David the same weight in gold that his stock of roots weighed, and ultimately gave a larger sum; this, it must be remembered, is not a hundred years ago, but they are weak in the head about Manchester! The flower is pure white, and in its best state feathered with blackest maroon; it is also beautiful as a flamed flower. I have placed Richard Headly next to it, but our stock comprises only flamed flowers. Lord Denman is also very beautiful as a flame; the flowers are large and handsome.

In roses Sarah Headly holds a commanding place. Mr. Turner told me that he gave the raiser one hundred guineas for the stock of this variety, and he sent me all his selected strain of it a few years ago, which will be carefully cherished. In my judgment it is the most splendid flamed rose we have. Lady Sefton is a very beautiful flamed scarlet; the flame is rather broken, but this does not mar its beauty very much.

Pretty Jane, sent by Mr. Barlow as a breeder, has broken this year, and is very pretty indeed. It would be a front row flower, and is a most distinct clear scarlet rose on a very white base. Annie McGregor is also a most delicately tinted scarlet. Our flowers are all lightly flamed; the white is very pure.

Then there are the breeders, or selfs. Of these we have a goodly number, although many have broken this year. Middleton Maid is of the richest purple-lake; in a year or two—or may be in twenty or thirty years—this rich colour will appear in flame or feather with a white base. David Jackson, one of the largest and blackest flowers, sent as a breeder by Mr. Barlow, is breaking this year. I write hopefully about Tulips, and think on the time when they will again eagerly be sought after, and admired as they ought to be; and the growers will have to thank those papers which have given space to articles on flowers beautiful in themselves, but not popular. *J. Douglas.*

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Tricolor and Bronze Zonal Pelargoniums.—Although the fervour that once existed so strongly in favour of these highly-coloured leaved plants has amongst gardeners pretty well died out, they seem still to enjoy considerable favour in the market when done well. When so thought of, the name of Mr. Pestridge, of Brentford, is inevitably associated with them, because Mr. Pestridge is, without doubt, both the largest and best grower of these Pelargoniums that the market trade furnishes. That some 30,000 of these plants are got from the Brentford establishment annually shows that there is a big demand somewhere; and though not a few of these go into the hands of the garden florists, the vast mass finds purchasers in the market as other stuff does. All are grown in large 60's—that is the regulation size for tricolors, and in them at this season of the year they give hues and colours that can never be seen in big

plants. There is no great secret in Mr. Pestridge's success. It is simple enough, and consists chiefly in long low lean-to houses, looking south and west, a maximum of light and air, and ample cleanliness. In the actual work of propagation, however, there is one point the which, if not understood, may easily lead to failure. It is, that plants should never be propagated whilst full of colour. There is just the rock upon which so many have split, and the avoidance of which enables this capable market grower to turn out his thousands of plants annually and rarely lose a cutting. Before cuttings are taken off the plants are placed in shade, to induce a partial greening of the beautiful coloured leaves. When that has resulted the cuttings may be taken off with greater safety, and strike as freely as any ordinary kind would. Golden tricolors largely predominate, as more robust than are the silver kinds; and with so many kinds arranged in groups an excellent opportunity is offered to any one who still regards Mrs. Pollock as the best tricolor ever raised, to have their minds disabused of an absurd fallacy. There is as much difference between Mrs. Pollock and Masterpiece or Mrs. Henry Little as there is between the old Tom Thumb and a modern scarlet Pelargonium. Beside either of these named Mrs. Pollock looks green and insignificant. As showing the effect of constant association with these plants, many of which have points and features so apparently alike, Mr. Pestridge can pick out from a mixed lot of several hundreds each particular variety, and though the single plant shows little diversity, the divergences are distinct enough when a hundred or two are grouped. Then all the beauties of each variety are most distinctly evident. Masterpiece, one of Mr. Pestridge's seedlings, has large roundish leaves with intense colour. Mrs. Henry Little, another by the same raiser, is a grand kind, and has a zone of superb hue. Golden Queen is a greatly improved Mrs. Pollock, and a fine bedder. Peter Grieve is in good form, and has a compact habit very effective in the group. Salamander has intense rich hues, and is very beautiful. Carter's Prince of Wales and Macbeth are both first-class robust kinds; so also are Osman Pasha and Marie Stuart. Other really good sorts—for only the best can be found room for—are Enchantress, Florence, Mrs. Goring, and Wm. Sandys; the latter specially recommended as a bedder. Silver Tricolors are in wonderful colour, and generally robust. Of the best are Lady Dorothy Nevill, having extremely rich hues; Mrs. Col. Wilkinson, Stanstead Bride, Lass o' Gowrie, and Empress of India; T. A. Dickson, Dolly Varden, Miss Burdett Coutts, and Miss Pond are also largely grown. Bicolors are chiefly in the form of Bronze Zonals; and these, both in houses and frames, are finely done, the foliage large, and the zones standing out with marked richness and effect. Amongst the best are Earl of Rosslyn, Black Douglas, Marshal MacMahon, The Czar, Herold, Mrs. Harrison Weir, W. E. Gumbleton, Prince Arthur, Mrs. Quilter, and Reine Victoria.

Two new market show Pelargoniums of Mr. Pestridge's raising call for notice. One, a pure white, is dwarf, and an improvement upon the Duchess of Bedford; the other a rich crimson, wonderfully floriferous, compact, and robust: it is half fancy in character. Both should in time make popular market varieties. *A. D.*

Fig. 119.—Abies concolor: true. (see p. 660.)

## Orchid Notes.

Mr. Bull's Orchids.—Mr. Bull has prepared in the King's Road, Chelsea, a very striking exhibition of Orchids and other rare plants, of which the main features are Masdevallias and Odontoglossums, of which two genera there must be some hundreds of plants, in a fine blooming condition. Entering the great show-house from the King's Road, the visitor is arrested by a noble plant of Encephalartos villosus, with a fine spike of inflorescence some 20 inches long, and of a deep apricot colour. Passing through this house, with its many noble Tree Ferns and Cycads, the span-roofed house beyond is literally crammed with Orchids in blossom, Odontoglossum vexillarium being very prominent, and other fine sorts, as O. Roezlii, Pescatorei and Alexandræ (crispum) being numerous and fine. Twenty species of this favourite genus are in blossom, many of them fine specimens or fine varieties, and about a score of species of Masdevallia, amongst which is a M. Russelliana, a form of M. Harryana, bearing 130 flowers. The exhibition is open throughout next week, and is well worth a visit by any one interested in Orchids.

It would be difficult to find a better illustration of the beneficial influence upon Orchids, resulting from their being grown in good light houses standing in a fully open position, than is to be seen in the extensive collection which Mr. Bull now has in the numerous long houses in his new grounds. Those acquainted with the management of Orchids, and who are also alive to the very great influence which suitable light houses exert on the condition of these plants, and who saw the structures in question when first built, felt no difficulty in predicting the growth that would follow the location of the plants here when combined with the skill that was sure to be brought to bear on their cultivation in other matters. Amongst thousands of Odontoglossums representing almost the whole of the numerous species and varieties, O. vexillarium must be given the first place; the blooming stock of this grand Orchid presents a mass of soft delicate colour, from the varieties with all but white flowers up to the deepest pink shades found in the species. There are many with three and four flower-spikes rising from a single growth, which is a sufficient indication of their condition. A few plants of Masdevallia Harryana and of Ada aurantiaca, with the unrivalled violet flowers of the former and the deep orange-red of the latter interspersed amongst them, make a lovely contrast. Of O. crispum there is the usual variety of forms and colours generally met with where quantities of this sterling plant are well managed. O. Pescatorei is flowering profusely in large numbers. Wherever white flowers for cutting are wanted, that are not too large to be elegant, this Orchid should be grown in quantity. O. triumphans occurs in many varieties, some of them very handsome. Quantities of O. Hallii are in great vigour, many of the spikes bearing from twelve to eighteen flowers; one bulb has two spikes, carrying twenty-six flowers, another plant has fifty flowers on it. Other Odontoglots now blooming in quantity are O. luteo-purpureum, O. Rossii, O. Rossii majus, O. maculatum, O. cordatum, O. Uro-Skinneri, O. cirrhosum; the miffy O. Phalænopsis is also doing well. O. Roezlii grows like a weed, the plants blooming beautifully, both the dark and light marked varieties. The large stock of O. citrosmum, and its rose-coloured form, is in such condition as we have not seen any considerable number of this fine old Orchid in before; the exact way of managing this species has evidently been hit upon. The big fat bulbs are pushing up quantities of long racemes, one plant of the rose-coloured variety in a 10-inch pot has six big spikes, the strongest of which carries twenty-seven flower-buds. The plants are grown in the Cattleya-house in the summer, and stood in the Masdevallia-house in winter, at a temperature of 50°, and kept without a drop of water until the young growth shows bloom; in this way the bulbs shrink much, but they soon plump up when water is given, and do not suffer from the dry treatment in the least. The new O. facetum was also in bloom; it is a very distinct looking kind, the colour yellow, heavily banded and spotted with dark brown: the general character of the flower may be said to be something between O. triumphans and O. luteo-purpureum. A lot of the beautiful Dendrobium infundibulum, blooming freely, was just beginning to open its large white flowers; it is grown continually with the cool Odontoglots, the treatment given just seems to suit it, as it does also Disa grandiflora, which is doing well. Along with these at the coolest end of the house, kept at a night temperature in winter of from 45° to 50°, are grown quantities of Oncidium macranthum, O. serratum, O. unguiculatum, with a spike of flower that has been in bloom for five months.

In another cool-house, with a winter night temperature of 45° to 50°, Cattleya citrina was in bloom, and thriving in a way it never continues to do when kept warm. In the same company are a host of Cattleyas of the marginata, pumila, and Dayana section; as well as a long stage full of Oncidium ornithorrhyncum, exhibiting unusual strength of growth. A whole bank of the pretty O. incurvum is furnished with flower-spikes that remind one of an Osier-bed, so abundant are they. The condition of the plants will be understood by the fact of some of the spikes being 6 feet in length; kept in too much heat this species is never seen in more than half the condition it is capable of being grown to. Cool as the plants are, and their powers further taxed with such quantities of flower-spikes gradually maturing, they are beginning to grow as freely as Cabbages. Those whose estimation of Orchids rests upon their being new and scarce,

will not care for old-fashioned kinds like this Oncid, but the elegant and pleasing colour of the flowers (violet and pure white), combined with their profusion, when the plants are in such health as those under notice, commend it to those who value a plant according to its merits apart from novelty. Quantities of Oncidium concolor in little pots hung close to the glass are bearing such an abundance of their brightest of canary-yellow flowers that the bloom looks as if it would outweigh the plants.

The Masdevallias, in beautiful condition, are fast beginning to open their flowers. The following were in bloom:—M. ignea, M. Veitchii; M. Harryana cœrulescens, M. amabilis, M. chimæra, M. Benedicti, M. Lindeni, M. Estradæ, and M. trochilus. What a strange admixture of singularity in form and intense brilliancy of colour the different species of these Masdevallias present, from the matchless shades of M. Harryana and M. Lindeni to the grotesque M. chimæra and M. trochilus.

In half a houseful of the charming Cymbidium eburneum, in beautiful health, the leaves almost black-green, there were still a few that had not done blooming, some of them pure white, others with the lip delicately spotted. Of plants not already mentioned there were in flower Arpophyllum giganteum, a grand specimen, 4½ feet across; A. spicatum, Phaius Woodfordii, P. Blumei, P. Wallichii, Sobralia macrantha superba, the singular Acanthophippium striatum, Dendrobium densiflorum, D. fimbriatum, D. chrysotoxum, D. nobile; the rare D. Dayanum, a Bornean species in the way of D. macrophyllum, but without the objectionable odour of that kind; Cypripedium barbatum Crossii, C. villosum, C. Boxalli, C. Lowii, Oncidium species, in the way of O. luridum guttatum, O. Marshallianum, O. Kramerianum, O. ampliatum majus, Nanodes Medusæ, Cattleya Trianæ, several beautiful forms; C. Skinneri, C. Mendelii, Trichopilia suavis, T. coccinea, Pilumna fragrans, Chysis bractescens, Aerides Fieldingii, Broughtonia sanguinea, and the seldom seen yet beautiful Epidendrum bicornutum, with many an unmanageable plant, but here unusually strong. Those who value a deliciously scented flower, irrespective of its insignificance in form and dingy colour, will find a plant just to their liking in Epidendrum ionosmum, a small-growing species, requiring little room and thriving on a small block of wood. The flower offers no attraction in appearance, olive-green and dull yellow, but the odour is perfection, and may be described as that of the sweetest of sweet Violets intensified. Amongst a host of others in the warm, cool, and intermediate divisions, the right treatment of Cattleya gigas seems to have been hit upon, many plants showing flower that have been a considerable time in the country, and have not bloomed before. *B.*

### A Valuable Cattleya.

Taking a cursory glance through the Messrs. Thomson's Orchids at Clovenfords lately, I was much struck with a Cattleya in flower, which is most beautiful and *recherché* in its colouring. The sepals and petals are white, thickly suffused with rose-purple; the lip dark rosy-purple; the stalk purple also, and the sheath that contained the flower dark red. I never remember seeing a Cattleya with this colouring, or anything approaching it, before, and the description here given conveys perhaps only a faint idea of its magnificence and novelty. I have since heard that Mr. Thomson has sold the plant to Mr. Wilson, of Lanark, for £210. Many other fine Orchids are also in flower at Clovenfords, including the Dalkeith variety of Vanda tricolor, which is the freest-flowering, and at the same time most beautiful, of this section—also V. suavis, in splendid condition; but my object here is simply to note this Cattleya, which to me seems a plant of great interest. *Henry Knight, Floors, May* 17.

### Cypripediums.

Whether the high prices that have recently been paid for some of the rarer forms of Cypripediums are an indication of a change in the taste for these singular and grotesque forms—such a change being one of favour, rather than one of neglect and dislike—I am not prepared to say, but that the Cypripediums with many have met with but scant favour during at least the last few years, is perhaps only one of the signs of the ever-changing taste that is present, and manifested even by those who are famed as growers and admirers of Orchids. Compared with many other species, they cannot claim to be the most showy nor the most gorgeous in colour, though the marking and pencilling of some of the flowers are at once very distinct and attractive, as well as very curious and interesting; whilst as to form some are as weird and singular as the most exacting could desire, and in some cases probably even more peculiar, than many would even have ventured to anticipate. The number of species now under cultivation is indeed numerous, and fresh ones are occasionally imported which are soon distributed amongst those whose taste lies in this direction, whilst as to the number of garden hybrids they may almost be said to come up in number to the specific forms that have been introduced from their native habitats. Of the hybrid forms many appear to have a constitution much more vigorous and robust than the parent plants, and are now to be met with as large and free blooming specimens, at once a triumph of patience and perseverance to the hybridist and of successful culture and skill on the part of the grower. *W. Swan.*

### Dendrobium densiflorum.

We have here a specimen of this fine Orchid, which has twenty-seven spikes of flowers, with over thirty flowers on each. The plant is about 3 feet through, and about the same in height. I am interested to know if you have ever had one with more spikes brought under your notice. The plant has never had more than six spikes at a time during the last five years, and it has had no special treatment to induce it to flower so freely. *Foreman, The Gardens, Neville Court, Tunbridge Wells.*

### Cymbidium Lowianum.

This remarkable plant is accused of being a shy flowerer. I obtained flowers at various times quite recently. It came from Messrs. Henderson & Son, Maida Vale, London, kindly forwarded by Mr. James O'Brien. Now I have at my side a glorious raceme bearing fourteen giant flowers, surpassing by one half the best flowers I had seen before. It came from Château de St. Gilles, Liège, from the garden of M. Massange de Louvrex. *H. G. Rchb. f.*

### Dendrobium Wardianum.

This beautiful Orchid is now so well known that it would be quite superfluous to write any more in its praise, but it may not be out of place to make a few remarks on its culture. A gardener who called here the other day was charmed with a beautiful display of it in our plant-stove, and enquired how we got it to flower so freely. He stated that he grew it very well, but had never flowered it. The fact is, he had erred in not giving his plants a season of rest. All deciduous Dendrobes should have a long rest after they have made their growth. We place D. Wardianum in a warm greenhouse during the winter, and keep the roots quite dry. During the growing season they must have plenty of heat and moisture. *J. Douglas.*

### Dendrobium Falconeri.

This is another most beautiful Orchid, that flowers very freely at this season when it receives the right treatment. When our plants were first obtained I was advised to grow it in a warm house during the summer, and in winter still to keep the plants in a warm house, keeping them rather dry but not without water. Our plants would not flower in that way, but we were perfectly successful after following the advice of your excellent Orchid correspondent, Mr. Swan. His advice was to rest the plants during winter in the greenhouse, and to give them no water during the three winter months; and this treatment I find to be entirely satisfactory, as it has resulted in clothing the plants annually with their beautiful flowers: the one fault is that they do not last long in beauty. *J. Douglas.*

### Cattleya Mendelii.

It may be interesting to Orchid growers to learn that the very beautiful variety of this species alluded to at p. 630 is now in flower in Messrs. Veitch's nursery at Chelsea. It was also exhibited some time ago at one of the meetings of the Royal Horticultural Society. There is yet another fine young plant, with a very strong flower-sheath, which will probably be in flower in a few weeks. *J. Douglas.*

### Odontoglossum nævium majus.

The true variety of this species is now in flower with the Messrs. Veitch at Chelsea. There are a number of plants with strong spikes differing from each other in their markings, but all of them are quite distinct from O. nævium, or the form usually grown as O. nævium majus. This firm is now sending it out under the above name on the authority of Professor Reichenbach. *J. Douglas.*

### Cattleya citrina.

This beautiful and distinct species is well known to be difficult to grow and flower well, and hitherto it has been usual to attach the plants to blocks and suspend them from the roof of the cool-house with their heads down. At present there are plants of it growing and flowering freely in Messrs. Veitch's nursery in the small pans suspended from the roof. The plants are also potted in the usual way. If this plan answers Orchid growers will be much pleased, as I do not know of any instance where this species has established itself and increased permanently in size in this country. *J. Douglas.*

### Work in the Houses.

In place of a separate compartment wherein Cypripediums can be grown, many sorts will be placed in the East India-house, though the temperature of this division when it is devoted entirely to Aerides, Vandas, Saccolabiums, and Phalænopsis, is rather too high for them. The Dendrobium-house would be a good place for many of them, but the temperature in this house must be a little drier than is at times suitable for the Cypripediums. If stood in the East India-house they must occupy the most shady side, and the material on the stages must be small coke or ashes, such as will retain the water that is poured on it, so that a moist atmosphere during the growing season may be always present about the plants. Many of the species and varieties will now be in bloom or showing their flower-spikes, and these will remain a long time in a fresh state. While the blooms or buds are upon the plants it is better that they should not be disturbed at the roots at all; but as soon as the blooms are over, if any should require repotting, then is the best time to do it. During the flowering period, and just immediately after, is the only time when growth seems to cease, or any signs of rest are apparent; as soon as this time is past, new breaks begin to grow, and continue to do so until the flower-spike makes its appearance the following spring. C. Lowii, Stonei, Parishii, lævigatum, and Haynaldianum are strong growing species, which bring spikes with from three to seven flowers, mostly on growths that are two years old; these may all safely be grown in the East India-house; but villosum, Boxalii, caudatum, and hirsutissimum, as well as the forms of barbatum, Dayanum, superbiens, Sedeni, Roezlii, Piercei, Dominianum, &c., will succeed better if grown in a division that is somewhat cooler. The very common form of insigne, and its choice variety Maulei, will succeed well in the Cattleya-house, and will flower freely if they can be placed in the end of the summer in a position where they can get a good share of light. There are now several distinct forms of this well-known favourite, and as they all remain a long time in flower, and can be stood in the conservatory whilst they are blooming, are often met with in large specimens, sometimes bringing two flowers on a spike. When any of the strong growing sorts require repotting, use pots that will allow of a good shift being given; fill the pots half full of crocks, but place the crocks in singly at first, so that the drainage may be very open. Use a mixture of peat, moss, sand and small crocks well worked together; pot them only moderately firm, that the strong fleshy roots may quickly push through the soil, and the plant speedily become established. Copious supplies of water must be given as soon as the new roots are observed pushing through the soil, and occasionally a sprinkling overhead will assist in keeping the foliage in a clean and healthy condition. The dwarfer and more compact growing sorts must not have such a liberal shift when they are potted; an excess of potting material around some of these is often rather an injury than an advantage. The night temperatures of the houses must now be raised to their maximum readings—the East India-house, 70°; Dendrobium-house, 65°; Cattleya-house, 60° to 63°; Odontoglossum-house, 55° to 60°. These figures are for 6 A.M. A few degrees higher in the two former, on very warm nights, may be permitted, but endeavour to keep the cool division down to the figures indicated. The day temperatures by solar heat in all the divisions will rise 10° to 15° above these numbers; but so regulate the atmosphere by the admission of air both on the top and bottom ventilators, also by using the blinds, and by continually damping down, that a pleasant, free, healthy growing temperature may be maintained in all the divisions. *W. Swan, Fallowfield, May* 16.

# Garden Operations.

## PLANT HOUSES.

Stoves.—Give all possible attention to forwarding the stock of winter-flowering plants. As a relief will now be experienced by getting somewhat free from the bedding-out plants, this can be better accomplished. Almost all plants grown for this work will at this season of the year thrive in a temperature lower than is maintained in the stove proper. In a more freely ventilated structure the growth will be more sturdy and robust, which ought especially to be aimed at. Poinsettias should now be looked after. As soon as they commence to grow freely the forwardest growths may be heeled-off and struck, to be then grown on for the earliest batch. Where it is desirable to have the plants as dwarf as possible this operation should be left till later on. Begonia insignis should be struck now, to make good stuff for the autumn. Eranthemum pulchellum, another most useful winter plant, should be propagated and kept often pinched, to keep them dwarf. Early struck plants of Euphorbia jacquiniæflora and Plumbago rosea should be potted before they become drawn. Thyrsacanthus rutilans will make more effective plants if grown up on a single stem sufficiently high to display their drooping racemes to advantage. Gloxinias in flower, and those advancing towards that stage, will last much longer in beauty if removed to a rather cooler and drier atmosphere; a Peach-house shelf or stage will suit them admirably. The best plants I have grown have been started and flowered in such a house. In the stove proper a night temperature of about 70° should now be kept, with a corresponding rise during the day, closing early and syringing freely. It is also advisable, in order to keep insects at bay, to syringe again about 6 o'clock P.M., and once again later still if any red-spider is about; but with a good bag of soot in the water-tank there is not much danger of this enemy. Where it does attack the more tender sorts of Palms sponging the leaves should be resorted to at once. Tuberoses are also liable to be attacked with spider, but should be checked without delay, or the evils arising therefrom will be seen in a weaker spike of flowers.

Greenhouse.—During bright sunshine Ericas, Azaleas and other hard-wooded plants should be shaded in order to prolong their bloom. Brittain's netting, or any such-like material, will be ample for this purpose. Plants that are blooming profusely should be relieved of their flowers as soon as their beauty is past, and a fresh growth encouraged. Kalosanthes in variety will now be advancing; give them all the sunlight possible. K. coccinea will display the brightest flowers if exposed to the full blaze of the sun in the open air; occasional doses of manure-water will be beneficial a little later on. Statices in flower should have a dry position, where no syringe can wet the flower-spikes; weak guano-water will help them, when showing flower freely. Begonias of the tuberous section should be potted on into a size larger pot, when they have filled that already occupied with roots; regulate and tie out the growths if good shaped specimens are desired. In potting use a good, open, porous soil with plenty of sand. Spring-struck Fuchsias must be grown on freely, potting and pinching often to make effective plants for the autumn.

Pits and Frames.—The stock of Balsams, Celosias, Globe Amaranthus, double Petunias, and such-like plants, should be looked after now to get good stuff for late summer and autumn use in the conservatory; more room will soon be available as the bedding plants are dispensed with. Celosia pyramidalis makes good specimen plants if grown on in a pit with bottom-heat, and is most useful in a large conservatory. Sow a pinch of seed again now if it is desired only to have small plants. Seeds of Cineraria and Primula should be sown now for a main stock; keep the seed pans shaded till the plants are well up.

Conservatory.—Where this structure joins the mansion it often happens that the somewhat disagreeable operation of fumigation cannot at all times be performed when most required. It is well, therefore, to seize every opportunity that offers for this work; repeating the doses a few nights, and using the syringe liberally afterwards, will stop greenfly and thrips, which would otherwise soon disfigure the foliage of permanent plants, as Camellias, and the climbers, where now in free growth. This house should have a thorough cleansing as soon as the main blaze of Azaleas and other showy plants is over. Plants that have done service in the conservatory, such as Deutzias and pot Roses, may be now plunged in a bed of coal ashes in the open; Solanums and Dielytras may be planted out in well prepared soil, the former to be potted up again in the autumn, the latter to remain a season or two to regain strength. Spiræas will also do best if planted out in rich light soil; Callas may be divided and treated likewise; plants of hardy Rhododendrons and Azaleas can be made to render good service in the shrubberies in stopping gaps after they have been forced for the conservatory. *James Hudson, Gunnersbury House Gardens, Acton, W.*

## HARDY FRUIT GARDEN.

Much attention to fruit walls will now be necessary, and the various operations of disbudding, pinching and thinning fruits, and nailing in the most forward of the shoots, will be both numerous and urgent. If the alleys by the side of the walls have not yet been covered with a good coating of long litter, it will be well to give them this mulching at once. The surface should be moved and left open, in order that any water that may be subsequently given on the litter will at once sink into the soil where applied instead of running off for some distance, as it may do when the surface of the pathway is hard. Apply a heavy dressing, so that it may not wear thin by the traffic upon it before the summer is past, and if it is well shaken out and beaten down it becomes as convenient to walk upon as it is beneficial to the roots of the trees. Continue to keep the garden engine going upon wall trees, especially upon Peaches and Cherries, using only tepid water until the season is further advanced, and apply with sufficient force to move every leaf, but be careful to avoid tearing the yet tender foliage. Where the Peach walls are sheltered from the sweep of the wind, or have had a slight protection afforded them up to this time, there is not likely to be any blistered leaves; but should such appear they should be removed at once to prevent other parts from becoming affected, and syringe with sulphur-water or Ewing's mildew composition. This application will also be necessary should there be any appearance of mildew on the trees. Complete the thinning of Apricots before they become crowded, for the longer the operation is delayed the more difficult of execution it will become, besides increasing the danger of injuring the fruits to be retained. Regulate the crop according to the vigour of the individual tree rather than by any given standard of distance; as what may only be a fair crop for one tree under certain circumstances, may be excessive for another under different conditions. In determining the quantity of shoots to be left for nailing-in for furnishing Apricot trees, it will be well to consider the desirability of depending almost as much upon young growths as upon spurs for the following year's crop: at the same time studiously avoid crowding any part of the trees. The disbudding of young trees of Peaches, Plums, and Cherries ought now to be completed, in no case leaving more growths than are required. Continue the removal of superfluous shoots on Peaches and Nectarines. Pinch the leader of all bearing shoots that are not required to be extended, also shoots growing by the side of the fruit. Consider what growths will be required to replace the present bearing ones, and retain no others in fully-furnished parts of the trees. Any shoots on which no fruits are set may thus have all growths pulled off excepting the one best placed at the base; this will be found to be better than cutting such shoots out at this time, as they will be found useful for fixing the twigs used in laying-in later on. Peaches have set thicker than I ever remember to have seen them, and will require to be very freely thinned. The most promising and best placed fruits may be left at regular intervals on the shoots in the first place, to be hereafter more fully thinned. It is to be hoped that the weather will now be favourable, as the protecting materials and temporary coping boards must be removed. Proceed with forming permanent plantations on prepared ground with the forced Strawberries as they leave the houses. Plant each batch at once, water freely, and finish off with a good mulching. Search for the first evidences of the caterpillar on Gooseberry bushes, for in their earlier stages scores may be crushed between the finger and thumb on a single leaf; but if suffered to spread over the bush hand-picking becomes too tedious a process, and other means to effect a clearance must be resorted to. *R. Crossling, St. Fagan's, Cardiff.*

## FRUIT HOUSES.

Pines.—The Smooth Cayennes and Charlotte Rothschilds that showed fruit last October and November are now changing colour, and some are quite ripe. These plants may be lifted out and put in a cool shady place, where the temperature stands at about 66°. The vacancies made may be filled up with succession plants requiring more room. This is one of the many advantages of the system of growing Pines in pots over planting out. Owing to the very severe weather experienced this spring the first lot of Queens are not so far advanced, but when ripe these may be treated in the same way. A dry fruit-room answers the purpose very well, if the temperature can be kept at near 66°. Queens so treated will keep in good condition for a month after the fruit is ripe; Charlotte Rothschilds keep about three weeks, and the Smooth Cayennes from a fortnight to three weeks. Black Jamaicas are also good keepers, but the other varieties, such as Enville, Black Prince, Prickly Cayennes (a very capricious keeper), Hurst House Seedling, and Providence, will not keep so long in good condition, neither will the quality of these sorts bear comparison with that of the first three. Fruiting plants in all stages should have every inducement given them for making good progress. Keep the night temperatures from 72° to 75°, standing at the last figure at 10 P.M. Attend to early closing in the afternoons, and the injunctions previously given should be strictly carried out. Damp each compartment thoroughly as soon as it is closed, and see that the glass is well steamed by causing the moisture to ascend up the roof: this prevents the plants from burning. It is also a safe plan to keep down the shading until the sun's rays have receded from the roof. Keep the day temperatures at from 80° to 90° for fruiting plants, and after closing, should it rise for a short time to 100° the plants will be quite safe. If any of the plants are inclined to draw, keep them near the glass and ventilate freely, and keep a little top-air on until 10 P.M. It will be found that any plants that are looking yellow, or which have a sickly appearance, have been receiving too much moisture at the roots, or have been subjected to imperfect ventilation. *D. Wilson, Castle Hill, Devon.*

### Vines.

Early Grapes which are ripe can now be kept cooler and drier; leave a little air on back and front night and day, and also allow the laterals to ramble about within reasonable limits to keep the roots at work and healthy. Houses containing Grapes which are colouring keep as advised in last Calendar. It is a good plan to partly expose Foster's Seedling when colouring, taking care not to do it too soon, or the berries will scald, but if done carefully at the proper time it will improve the colour and flavour. Berries of Madresfield Court that are colouring will be better kept with a little drier atmosphere to prevent their cracking, but the roots must be kept fairly moist; a good watering when on the point of colouring will generally carry them until ripe. Succession-houses in which the Grapes are swelling should be kept at a good brisk heat, closing early to make the most of sunshine, and keeping the evaporating pans filled with weak manure-water. Occasionally damp the house down with the latter, as the ammonia given off is very beneficial and a good thing to keep down red-spider, which cannot make headway if the atmosphere is healthy and growing. Take care when watering to always use water a few degrees warmer than the house. Muscats that are swelling must have a temperature of 70° at night, rising to 80° early in the day on all bright days, but if the weather is dull and cold a few degrees lower will be better. If any red-spider appears over the hot-water pipes sponge with clear water or Gishurst Compound at 4 oz. to the gallon of water, but be careful not to sulphur the pipes before the skin of the berries gets sufficiently hard to stand it. Examine the borders, and if dry thoroughly soak them with weak manure or guano-water. Late varieties, such as Alicante, Lady Downe's, and Gros Colmar, that are ready for thinning must be done carefully, taking out all the inside or cross berries, and leaving only those that point directly outwards. They also require more severe thinning than other varieties, for if at all crowded in the bunches they will not keep so well through the winter, being more liable to damp off in the centre of the bunch. The latest house of Black Hamburghs can now be assisted with a little fire-heat when necessary, but if the weather keeps hot and the nights mild it will not require any. When watering use tepid water, for the water outside is still very cold, and if used in that state to the roots it gives them a great check, and has a tendency to breed mildew. Having water-pipes laid on here some years ago I used from May onwards to use it fresh from the pond, which I found to be a mistake, for during the two years in which I used it I had plenty of mildew, but since using tepid water not a vestige has been seen. Our pond is a running stream, and hence somewhat colder than ordinary. To early planted Vines growing freely give liberal supplies of clear tepid water, with plenty of air on bright days, closing early, and allowing them to ramble over the trellis without stopping. Vines growing in pots must have a liberal supply of manure-water as soon as the pots are well filled with roots, giving air early in the morning and closing early in the afternoon. *Joshua Atkins, Lockinge Gardens, Wantage.*

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Sium Helenianum.—The "Angelica of St. Helena" possesses considerable botanical interest, and merits mention on this score as well as by reason of its economic value. It is a member of a most interesting flora, being only found in St. Helena in ravines which traverse the sides of Diana's Peak, growing in company with Cabbage-trees and Ferns. The stems are eaten raw by the native population, being brought to market much like bits of bamboo, and sold under the name of Jelico. It is now in flower in the Economic-house at Kew.

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | May 23 | Sale of Established and Imported Orchids, at the Auction Mart, by Protheroe & Morris. |
| Tuesday, | May 24 | Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Anniversary meeting of the Linnean Society, at 3 P.M. |
| Wednesday, | May 25 | Royal Botanic Society's Summer Show. |
| Thursday, | May 26 | Sale of Imported Orchids, at Stevens' Rooms. |
| Saturday, | May 28 | Crystal Palace Flower Show. |

THE OVERHEAD SYRINGING OF GRAPE VINES is so universal and withal so successful a practice, that it may seem a boldness approaching to temerity, to challenge its wisdom or to inquire whether it is not carried to great excess. Syringing is an attempt to imitate Nature in some of her most important and powerful aids to growth: it is intended to combine the gentle refreshment of the dew with the copious nourishment of the rain. The practice was established at a time when even vegetable physiologists believed in the direct absorption of water by the leaves more fully than they did afterwards — a theory, however, which the experiments of later years have shown to be, under certain circumstances, quite correct. There can be little doubt, in any case, that overhead syringing prevents a waste of fluid, and a great many practical men have come to the conclusion that the conservation of fluids in the leaves or tissues of Vines or other plants is as important and may be as strengthening as the supply of new matter. This is possibly just the very reverse of the truth. Water may be defined as the first step to growth and the enlargement of strength and vigour alike in the vegetable as the animal kingdom. Vines tied up closely to an iron rod, rafter, or wire, and kept wet all night and immovable all day, are in somewhat analogous circumstances to a man in a wet blanket. With abundance of food both may get fat and apparently strong; but the strength is often short-lived, and the stoutness is of an unsound and bloated character, often ending in failure, disease and sudden death. And providing such catastrophes do not overtake either pampered man or Grape Vines the overhead syringing of the latter, when carried to excess, prevents the loss of old matter and the formation of new. The health and strength of all plants depends on the activity and proper balance of these two correlative forces.

Overhead syringing may hinder the activity of these forces in many ways, as by lowering the temperature, checking evaporation, and restraining root-action. The practice of sprinkling or saturating (for syringing covers the entire distance between the two) at night very seriously lowers the temperature of the leaves and young wood. Evaporation takes place during the whole night, and thus during the time when the heat of the sun is withdrawn the leaves, by drying, are all the while rapidly parting with their heat. The advocates of copious night syringing are always appealing to Nature for their justification; but Nature's mode of sprinkling is just the opposite of ours. Our leaves are drying all night long; Nature's leaves are being made more and yet more moist from dark to dawn. Dew covering in the open probably becomes a means after a time of conserving the heat of plants. It is certain that the drying of leaves under glass at night lowers their temperature. Nature varies her practice considerably. Some nights heavy dews abound or rain falls; these are followed by dry days and dewless nights. But the perpetual syringer keeps his leaves always wet. The moisture checks the loss of aqueous fluid, and consequently arrests the consolidation, transformation, and building up of vegetable tissue and products. In a word, water excessive in amount, applied at the wrong time, and in the wrong place, fetters growth and renders it less perfect.

This is so far recognised in regard to finished fruits, such as Grapes, Peaches, Pines, &c., that when these reach maturity the overhead sprinklings are given up. It is found that the physical and chemical changes that transform acids into luscious and aromatic sweetness are hindered by overhead syringings—though, singularly enough, Nature reserves her heaviest dews to the autumn, and Peaches are never so altogether luscious as when gathered in the early morning laden with dew and eaten for or with an early breakfast. Again, the cultivator really seldom follows, but rather rudely flouts Nature in the matter of syringing. He deluges the under-side of the leaves, and he bedews or sprinkles the upper. The difference of place is vital. The structure and functions of the two sides of the leaves are widely different, and yet the indiscriminate syringer treats the matter of the place syringed as of little moment. What would be thought of the nurse who put a cool lotion prescribed for the patient's head on to his feet? Almost equally consistent are those who quote Nature's practice in occasionally sprinkling the upper surface of leaves as their justification for keeping their under-surface always wet. The subject of where, when, and to what extent to syringe Vines and other plants to advantage is one of those that demand careful reconsideration. Practical men are hardly to blame for syringing the under-sides of the leaves in direct opposition to the example of Nature. As Vines and other plants are so often arranged, it is physically impossible to sprinkle the upper-surface of the leaves. The practice originated in the dark days of semiopaque glass, and continued till now for want of thought — of cramming all leaves right up to the glass as if light was confined to within a few inches of its surface—renders the overhead syringing of Vines impossible. It would be a comparatively easy matter to let the Vines down far enough to admit of syringing the upper-surface of the leaves. The Vines would be otherwise benefited by the change. Their present position is the hottest as well as the coldest in the house. The leaves are in constant danger from these two extremes of fire and frost; that is, they are scalded by the sun by day, and chilled, if not more, by the cold at night.

By moving them further from the glass, space would be given for the formation of natural dew between the roof and the canopy of foliage. An artificial syringing might at least be applied in the right place. We are very far from condemning this altogether. The power of making rain at demand by Indian impostors is a virtual possession of many cultivators possessed of syringe or garden engine. Wisely used, these are potential preservatives against dirt, disease, and insect pests, and useful stimulants to growth. But the abuse of syringing is hardly more injurious than it is common. We have lately seen some fine Vines just coming into bloom which have had no syringe upon them. Neither has the house been once damped down, though it has been filled with Pelargoniums which have been kept rather dry than otherwise. It is not intended to give these Vines any water overhead. We also learn that such dry practice is often applied to late Vines in cool houses. This strikes us as singular. One might have supposed that if any Vines wanted overhead washing to force them to break regularly or grow kindly at any season of the year, it would be those breaking and making their early growth from April to June. But no—many late Vines, we are assured, have no overhead syringing at all.

Very many Grape growers, too, are compelled from the impurity of their water, and others elect from choice, to syringe no more after the Vines show flower; and no doubt the safer way is to allow no fluid water but only aqueous vapours to come in contact with Grape Vines after that stage. The vapour is pure as distilled water, whatever mineral or other foreign substances may have been in the water. By the surface sprinkling of beds and borders, shelves, stages, walls, pipes, &c., in vineries, sufficient moisture may be provided to supply all the needs of the Vines without having recourse to much or any overhead syringing. This vapour goes everywhere—through the membranous coat of the cells into every pore, however minute, and is far more efficient than the ponderous drops of water issuing forth from syringe or garden engine. The water may also often be foul or cold; the vapour is always clean as distilled water, and is as warm as the atmosphere of the house; provided, too, that the leaves and stems are kept sufficiently far from the glass, and sufficient moisture be present, natural dews will often be formed under glass, and the leaves be refreshed, without our once, twice, or three times a day, as the manner of some is, indulging in overhead duckings and drenchings. So far we have written chiefly of nightly or afternoon syringings. Those given in the morning are still worse. The loss of heat is so great and rapid by rapid evaporation from the surface of wet leaves under bright sunshine that it lowers vital force, and causes chills that kill the leaves at times. What are popularly known as scalds might be more properly termed frost-bites, and these are aggravated alike in number and energy by morning syringings.

But we would not be understood as in any way dogmatising on this most important practical subject, and shall therefore be pleased to open our columns to a temperate discussion of the merits and demerits of the overhead syringing of Grape Vines or other fruit trees and plants.

—— A BOUQUET OF NARCISSUS.—One of the prettiest and most effective bouquets we have seen, was exhibited lately by Mr. ALDOUS at one of the meetings of the Royal Horticultural Society. It consisted entirely of Daffodils of various sorts, with their different tints of green, yellow, and white, their long and short trumpets, &c. The flowers were lightly arranged so that each could be well seen; there was no confusion of detail, and the outline of the whole, though not formal, was yet distinct. The illustration we give at fig. 120 represents a similar group, arranged for Mr. BARR. The varieties made use of, odorus, incomparabilis, &c., do not lend themselves quite so well to the *bouquetiste* as the larger-flowered long-cupped species did, but we do not doubt that the example now set will find imitators, and that groups of these beautiful flowers will in future find a place on our exhibition tables in addition to isolated specimens.

—— THE LINDLEY LIBRARY. — We notice in Mr. DAYDON JACKSON'S *Useful Guide to the Literature of Botany* that this library contains the only copy known to the author of MARTIUS' *Hortus Regius Monacensis Seminifer*. The publication is not one of great importance, but we allude to it with the view of impressing the idea that the library in question should be made the most complete horticultural library in existence, which it is far indeed from being at present.

—— PLANT LABELS.—We learn from the Society of Arts *Journal* that in response to the offer of a Medal and prize of £5 for the best label for plants, labels have been received from 120 competitors.

—— REMOVAL OF PURPLE BEECH.—Mr. BARRON, of Borrowash, sends us a photograph of a noble purple Beech, removed last October when in full leaf at Maresfield Park, Sussex, the seat of Lady SHELLEY. The tree, which weighed over 50 tons, was carried over a sunk fence from the garden in front of the mansion into the Park, a distance of about 200 yards. The height of the tree is over 50 feet, circumference of trunk 9 feet 8 inches, diameter of branches from north to south 52 feet 6 inches, and from east to west 46 feet. The square mass of soil and roots removed was 16 by 16 feet and 3—4 feet deep. The tree has withstood the winter gales with impunity, and the young growth, samples of which were enclosed, are quite satisfactory.

— Gooseberry Caterpillars. — Doubtless bred by the long and unusual spell of dry weather the Gooseberry caterpillar is making an early appearance this season, and has already done much mischief. Many growers have set women to work hand-picking the insects, and this is, without doubt, one of the most effective methods of dealing with the pest. Dressings of soot and hellebore powder may be useful later on, but one does not like to think that the fruit which is to be eaten has been subjected to such drastic and possibly unsafe applications. Dressings of fine grit have been sagely suggested, to be applied when the foliage is damp, but the great difficulty of late has been the finding the needful moisture, whilst the grit would only very slightly adhere to the upper side of the leaf. No doubt a really heavy rainfall would be of great service, washing the bushes and giving a strong impetus to growth. The birds' breeding season is at hand also, and the little ones will consume myriads of these caterpillars ere they can themselves take wing.

Fig. 120.—A bouquet of narcissus.

— Ranunculus aconitifolius flore-pleno.—This is one of the oldest but prettiest of white hardy flowers, and well merits the attention of all who may want small pure white flowers to cut at this season of the year. It is a very accommodating plant, doing well in a dry soil, though more robust where it is cool and holding. A few strong plants in pots would be very acceptable in a greenhouse; and indeed, could it be propagated at anything like the go-ahead pace which usually characterises soft-wooded plants, it might make a capital market plant. This is not one of the satirist's "hardy weeds"—we have enough of them growing about us without cultivation; it is a first-class border plant, and worthy of universal attention.

—— BAUHINIA CORYMBOSA.—More than forty years ago this lovely climber was figured in the *Botanical Register*, but for a long time afterwards it seems to have almost if not quite disappeared from English gardens. Probably this is due to the fact that it was too generally kept in pots, and so, as the plants did not flower, they were thrown away. In the letterpress accompanying the figure above quoted it is stated that in Chinese drawings, especially those belonging to the Horticultural Society, this is represented loaded with flowers, and in such a condition that it must be one of the handsomest objects in Nature. A fine specimen is now one of the principal ornaments in that wonderful garden for rare and interesting plants, Sir GEORGE MACLEAY'S, at Pendell Court. Mr. GREEN did not get the species to succeed at all until he had it planted out in the Orchid-house, and now to see it alone is worth a journey to Pendell Court. It is of light, airy, graceful habit, and its corymbs of handsome pale rose blossoms are produced in great profusion. The habit is such that although the plant covers a good portion of the roof of the house Mr. Green is of opinion that his Orchids do not in the least suffer. A figure is being prepared for the *Botanical Magazine*.

—— EARTHWORMS. — Worms do not present a very promising theme, and yet there can be little doubt that to the intelligent observer of Nature they have many features of interest, and especially so to the gardener, who too often comes to regard these soft-fleshed creatures as nuisances. When infesting a carefully kept grass lawn, and night after night ejecting their earthy excreta upon the surface, they become to the gardener an abomination, and he yearns to be rid of them. These worm-casts without doubt play a useful part in the economy of Nature, and specially so in ordinary pastures, but on a well-shaven lawn they become matter in the wrong place, and thus classed as dirt; yet few stop to inquire what useful purpose is really served. Few amongst gardeners especially ask whether these casts are not Nature's manure for the herbage, and whether the tiny holes found in the soil do not equally serve uselul purposes in aërating the earth and rendering it more fertile. Upon what substances do worms feed? Certainly largely upon vegetable mould; that seems self-evident, but also largely upon decaying vegetation itself. See how they attract or draw into their subterranean recesses decayed leaves, grass, straw, or whatever can be found within reach. All this vegetable matter is by the worms digested, and then, its nutriment extracted, it is disgorged upon the earth's surface. Even here the creatures set humanity an example—they are too cleanly to foul their own habitations. Worms do not appear sensible to light in any considerable degree; it is possible they have no organs or sense of a visual kind. If any one will test this, let him go quietly at night with a lighted candle and note the worms, especially the big ones, projected halfway from out of their caves seeking for food. Of the sudden access of light they take no notice, but touch them ever so lightly and they recede as though electrified. They are also very sensible to sound; the rapidity with which they flee from the approach of a mole tells that. If desirable to get rid of them, night is the time to apply soot, hot lime, or other destructives. The action of worms on soil, has for many years attracted the attention of Mr. DARWIN, who has alluded to the subject in these columns, and from whose pen a work on this matter is now announced.

—— FRITILLARIA OXYPETALA.—This somewhat rare Indian Fritillary is now flowering at Kew, and the blossoms are altogether different in form from those produced by nearly all the other species. It grows about a foot high, has narrow leaves and lilac-purple segments, sprinkled with purple dots. It is a native of Kumaon, where it is found at elevations of about 12,500 feet above sea-level.

—— DRIMYS WINTERI.—Not the least handsome and conspicuous of the shrubs now in bloom in the winter garden at Kew is a good bush of the Winter's Bark. This once famous medicinal plant was first brought to notice by Captain WINTER, who accompanied Sir FRANCIS DRAKE in 1578 to the Straits of Magellan, and it has been mentioned by most writers who have visited those inhospitable shores from that period to the present (Mrs. BRASSEY, *Voyage of the "Sunbeam"*). Although it was first discovered in the extreme south of South America, it is found all along the Pacific side of that vast continent, and even spreads as far north as Mexico. In the open at Kew plants of it have been badly cut during the past winter, and even against a wall have suffered considerably.

—— NEW AZALEAS AT THE LEE BRIDGE ROAD NURSERIES.—Admirers of these most attractive and manageable of flowering plants cannot fail to have noticed the many beautiful varieties that within the last few years have been introduced from the Continent, which in form especially are so much in advaoce of the older kinds; but it is in the newest and as yet comparatively little known of these that the greatest success of the seedling raisers have been achieved. Azaleas have always been great favourites with Mr. FRASER, and their cultivation with him has been marked by the unusual abundance of the flowers and general excellent condition of the plants. On visiting this nursery recently we had an opportunity of seeing and comparing most of the leading kinds, old and new, in bloom together; amongst the latter are several of such exceptional merit as to make it difficult to imagine what further improvement can be effected. Foremost of these is La Pucelle de Gand, a grand flower, equal in size to Apollo, of the purest white, perfectly circular in the outline and smooth on the edge, but frilled in the way of the old crispiflora. Jules Verne is a medium-sized flat flower, the white ground colour unusually pure, with bright crimson markings on the base of the upper petals; sometimes it produces a few salmon-coloured blooms, margined with white. Madame Jean N. Verschaffelt is another pure white ground coloured flower, so smooth on the surface as to give it a peculiar silky gloss, circular and even on the edge of the petals, which are most elegantly frilled, the upper ones spotted towards the base with yellow. Jean Vervaene alba, a white kind, striped with pale pink, the upper petals distinctly freckled with miniature red spots: a remarkably attractive variety. Versicolor, an unusually large kind, with smooth circular flowers, ground colour white, spotted and flaked with bright red. Louise Pynaert, a very distinct variety, with large white flowers with pale violet stripes, centre semi-double. These half-dozen varieties seem to have all the properties requisite to make them deserving of cultivation, in the profusion, substance, and distinct appearance of their flowers; and there is little doubt but they will supplant many of the older kinds. The frilling, or plaiting, on the outer edge of the petals, has a marked effect in the elegant appearance which it gives to these flowers, at once removing the formality by many objected to in perfectly flat flowers, especially when the breadth of the petals is such—as existent in these varieties of Azaleas—as to make the individual blooms almost as circular as those of an exhibition Pansy.

—— NAPOLEONA IMPERIALIS.—In the House No. 1, at Kew, this singular west-tropical African shrub is now flowering freely. Its peculiar blossoms are not devoid of beauty, orange-yellow, purple-brown and cream colour, forming a somewhat novel combination. The genus was founded by DE BEAUVOIS, in honour of the first NAPOLEON.

—— A PINE CONE EMBEDDED IN THE TRUNK OF A PINE TREE.—The *Deutscher Gärten* records the fact of a sound cone of Pinus sylvestris having been found in the heart of the trunk of a tree of the same species lately felled. The cone was in a cavity nearly filled with resio, and was completely walled in—not a fissure, not a rent was to be seen. It is estimated that it must have lain there from sixty to seventy years. How the cone came there is not so easily explained, but it is assumed that it could not have been stored in a cleft or fork by a provident woodpecker or squirrel, as it must have been placed there when the tree was quite young, and the trunk little stouter than a reed.

—— HARD-WOODED FLOWERING PLANTS AT THE LEE BRIDGE ROAD NURSERIES.—From the days when the collections of flowering plants from this establishment used to hold the leading place at old Chiswick, the Park, and other London shows, this nursery has never ceased to maintain its celebrity for the extent and excellent condition of the stock of this description of plants. Although they are not now generally present in a large full-grown specimen size, as in times past, yet the whole in their various stages of growth, from ordinary trade size up to quarter or half specimens, are alike remarkable for their free thriving condition and the profusion of bloom which they annually make—at once showing the effects of judicious treatment, and, above all, a thorough ripening of the growth each autumn. To those accustomed to see greenhouses and conservatories filled with the little variety now often met with beyond the ever-present sombre-looking foliage plants, intermixed with a superabundance of the representatives of a few families of soft-wooded flowering subjects, a sight of the show house at this nursery, especially during the spring months, would do something to show what is lost in beauty and variety of form and colour and varied habit of growth by the often all but total absence of hard-wooded plants from our plant structures. The stock, as here seen, is densely furnished with healthy shoots and foliage down to the pots, possessing their natural bush-like habit of growth with the least possible amount of sticks and ties, which for ordinary decoration are not wanted. Amongst the different plants in flower at the beginning of May were Tremandra ericoides, T. verticillata, Pimelea spectabilis, P. Neippergiana, several kinds of Eriostemon, Dracophyllum gracile, Aphelexis, dark and light-coloured sorts; Correas, Genistas, Acacias, many varieties of Epacris, Boronias, most of the early-flowering Heaths, and a fine lot of Azaleas; these were associated with Cinerarias, Pelargoniums, Primulas, Hoteias and other soft-wooded spring bloomers, the whole relieved with medium-sized examples of fine-leaved plants, which collectively produced an effect as far superior as it well could be to that possible where the arrangement is composed of large numbers of a few families of plants that, however beautiful in themselves, present too much sameness.

—— CALLIXENE POLYPHYLLA.—This is an elegant little shrub of easy culture. Planted out on rockwork in the cool conservatory, where it is allowed to creep over stones, blocks of wood, or Tree Fern stems, &c., without being disturbed, its pretty sprays of small Box-like leaves, dark green above and glaucous below, and gracefully drooping rather large pure white flowers, combine to make a charming effect. It is a native of South Chili, and is now in bloom in the winter garden at Kew.

—— VIBURNUM PLICATUM.—Either for greenhouse work or for the mixed shrubbery border this is one of the best flowering shrubs in cultivation. It has handsome dark green leaves and large heads of snowy-white blossoms. Nice bushes have been in flower for some time in the winter garden at Kew. A full-page illustration was given in the *Gardeners' Chronicle*, vol. vi., n.s., p. 141. It is a native of Japan, and is quite hardy in this country. At Redleaf we saw it a day or two since just coming into flower.

—— PLEASE GIVE ME A FLOWER!—If any gentle reader wishes to gather experience of one of the brightest features of low life in London or any large town let him or her carry somewhat negligently and without marked ostentation through some of those back streets where the poor most do congregate a handful of flowers. These become at once the signal for great excitement, the children playing in the streets evince a deep and anxious longing, and with one voice they cry in accents that must excite the pity of the most hardened, "Please give me a flower!" In that singularly touching ballad of London child life, "Billy's Rose," the author, "Dagonet," has pourtrayed an incident, fictional doubtless, but based upon this deep and all-pervading love for flowers that exists amongst the very poorest. The poor dying boy had been the previous summer taken in some ragged school excursion into the country, and passing along a beautiful lane had seen such lovely Roses growing in a garden. To have one of these flowers was his last dying wish, and his sister, a mere child also, even though it be winter and the roads deep in snow, sets out on the long journey in the vain hope that she may find a Rose to bring back to the poor little boy she loves so well. Why do these poor children call for flowers? Is it to use them for a moment and then cast them aside with contemptuous indifference? Who thinks that?—surely no one. Shut out by poverty and

he needs incidental to a town life from seeing and evelling in those delights which country children ave in such abundance, they pant with eager hearts nd deep intense longing for any small evidence of he great and beautiful world of Nature that lies eyond their streets, and to which they may seldom r never go. If we could fancy these children realis- ng in their little minds a conception of Paradise, urely it would be one of green fields, of beautiful lowers, of overhanging trees, a place for enjoyment, resh air, and eternal revelling. If some have too nany flowers let them soon take a basketful into our oorer streets, and thus realise the profound pleasure xperienced in satisfying the children's longing for ust one of these welcome gifts.

—— Populus euphratica.—From the *Deutscher Gärten* we learn that young plants of this Poplar are ow growing in the gardens of the Royal Educational nstitute for Gardeners at Berlin. The plants were ent from Turkestan by Mr. Koopmann, whose sketch f the woody vegetation of Ferghana we give in a ondensed form in another place (p. 655). It is also ecorded that Mr. Lavallée has specimens of it rowing, procured from Algeria. Considering that his Poplar inhabits Asia from Mandchuria and the Punjab to Persia, Arabia, and Syria, and reappears n North Africa, the only cause for surprise is that it as not introduced before. Possibly it may have een introduced into this country, and speedily suc- umbed to the humid climate; for in certain parts of Northwestern India it is the only common tree. Moreover, it is so remarkable a tree that it attracts he attention of the least observant. The leaves are xceedingly diverse in form, often even on the same hoot, the lower ones being broad and entire or lobed nd the upper long and narrow, resembling those of me of the long-leaved Willows. Populus euphratica perhaps the most useful tree indigenous on the inge of the great desert region of North Africa and Western and Central Asia; and it is extensively cul- vated in the neighbouring dry countries. A dry imate seems essential to it, but with this condition will bear great extremes of temperature. In North- est India it is common and wild in the Southern unjab down to Multan, only a few hundred feet ove the level of the sea; and it also occurs in undance in the mountains to the north at an alti- de of upwards of 10,000 feet. This tree is also of terest on account of its mention in Holy Writ—at ast Dr. Bolle seeks to demonstrate that such is the se, that it, and not a Willow, is the Garab of the criptures. Populus pruinosa and P. diversifolia are nonyms of the same species.

—— Bongardia Rauwolfii.—In the herba- ous department at Kew this pretty little plant is ow nicely in flower. It is the only species of a enus of the Berberry family, but has rather a wide eographical distribution, being found from the lands of the Greek Archipelago, through Asia Minor, Syria, and Persia, to Affghanistan and eloochistan. Several times it has been introduced nto this country, but seems in each case to have on disappeared from cultivation. The extremely et, undecided character of an average English inter is probably the true cause of this, as the Kew ecimens, which—although in the open border—have lways had a handlight over them to ward off exces- ve damp, seem quite contented with their quarters, nd have, in fact, materially increased in size and rength since their arrival some years ago. The lant is a stemless one, with a tuberous rootstock out the size of a small Potato; it produces but few innatisect leaves, and these are long-stalked, the innules being grey-green above and reddish near the chis. The golden-yellow flowers are borne in yramidal branched panicles, and are about the size those of the common Rock-rose. In Persia the aves are used as an acid pot-herb, and the tubers, o, after being boiled or roasted, also form an ticle of food.

—— The Long Shoot Method of Vine- rowing.—This system of Vine treatment is adopted Mr. Hunter now in nearly all the vineries at ambton, and consists in reducing the spurs on each d to a third or a fourth of the number usually tained, and letting the shoots run without stopping many cases almost across the houses, which exten- on with the limited number of shoots is necessary, order to secure enough foliage to keep up the requisite increase and extension of roots. The coming season's growth is the third which the principal Vines have made under the system, the object being to restore the strength, which was much reduced by attacks of mildew, and no doubt further decreased by the great weight of fruit borne in previous years. The effect of this few and long shoot treatment was unmistakeably apparent last summer in the vigour of the Vines and the larger bunches, with large berries. Last autumn many of these long shoots were of a thickness such as is usually only seen in the canes of strong young Vines, or the young rods brought up from headed-down old ones. This season they are still much thicker and stronger, showing bigger bunches. The thorough ripening of last summer's wood is proved by the number of bunches that each shoot shows, and the big shoulders which in many cases are nearly as large as the bunches themselves. Muscats, Hamburghs, Black Alicante, Gros Guillaume, Trebbiano, and many other kinds are alike promising. With a view to illustrate what it is possible to accomplish with the Vine, Mr. Hunter fruits a number in pots, consisting of strong shoots taken off at pruning time, put singly in 7-inch pots, and induced to make roots before the buds start; the shoots are in about 6 feet lengths, and are potted at the end of January, the pots plunged in warm manure in an open shed, so that the tops are quite cool and dormant, whilst the bottoms are induced to form roots, and upon which success depends. When we saw them early in April they had pushed roots to the sides of the pots, and were just removed to a newly-started vinery, where a little warm plunging material was provided for them: the buds were commencing to swell. They are then moved into 12-inch pots, and will bear six or seven bunches each, averaging about 1 lb. apiece. The cut- ring-like shoots used are very strong, from half to three-fourths of an inch in diameter; some consist of portions of the tops of young Vines, and others are pieces of the long side-shoots produced by the old Vines; the kinds so managed are Muscat of Alex- dria and Black Hamburgh.

—— Sauromatum guttatum.—About a dozen plants of this Aroid were flowering recently in the Cambridge Botanic Garden, and presented a most curious appearance. The inflorescence varied in size according to the strength of the tuber. The spathe of the largest measured 2 feet 4 inches long, and its ac- companying spadix 21 inches. These tubers were planted out last summer for sub-tropical effect, and the leaves were considerably ornamental. Though hardy in the West of England it is not hardy here, a tuber having perished that was allowed to remain in a favourable position for ex- periment. The purple maculation of the spathe is at first conspicuous and striking, but in a short time it becomes unfolded, and the exterior surface is of continuous purplish-green. Being so long as to lie for some distance on the ground, it offers more than a sufficient means for the access of creeping insects to the flowers.

—— Arnebia echioides.—On the rockwork at Kew this beautiful Boragewort is now nicely in bloom, and its heads of primrose-yellow flowers, with a deep purple spot on each of the five divisions of the corolla, are very handsome. The spots, however, gradually disappear after the flowers have been open a few days. The species, although perfectly hardy, is far from common, and this is no doubt due to the fact that the plant does not allow itself to be divided, and seeds— in this country at any rate—are rarely produced. It is worth while to note, however, that it can be pro- pagated with ease from cuttings. A figure was given in the *Gardeners' Chronicle*, new series, vol. ii., p. 689.

—— Hose-in-Hose Polyanthus.—Mr. Can- nell sends us flowers of a very interesting and varied series of hose-in-hose Polyanthuses, which he has now in blossom. The colours are as varied, and the variations almost as numerous, as in the best strains of hardy border Primroses. They have, of course, the peculiar development of a coloured calyx, to which the term hose-in-hose refers. We notice amongst them two or three very distinct types. There is, first of all, the ordinary form, that in which the calyx is irregular, with bluntish, spreading segments, often very different in colour from those of the corolla, the latter moderately extended; there is then a set in which the calyx is funnel-shaped with acute, erect, coloured lobes, and a much extended corolla; and there is, thirdly, a set in which the segments of the calyx are flat and spreading, as large as, and in no material degree differing from the corolla itself, which is set down close upon it, as if the flowers were laid closely one on the other. This last form is a very pretty one, and we have not before observed it.

—— The Revised Testament.—The passages in the revised version relating to trees and flowers have, we see, not escaped the changes which are exciting so much comment in the public press. In some instances the change is merely verbal, and un- necessary to the full meaning of the text; in other cases it is of questionable advantage. For instance, in Rev. vi. 13, the "untimely" fruit of the Fig is spoken of in the authorised version, while in the revised edition it stands as the "unripe" fruit of the Fig. We do not think a gardener would have made a change which, to our thinking, is a less accurate and forcible rendering of the text.

—— Rhododendron calophyllum.—In the Winter Garden at Kew this fine Himalayan Rhodo- dendron is now in flower. It has rigid leathery dark glossy green leaves, glaucous beneath when young, but ferrugineous in the adult state. The handsome bell-shaped blossoms are pure white. It is a native of the mountains of Bhotan.

—— Quercus salicina.—Although this Oak is not likely to succeed in the open air in the British Isles except under exceptionally favourable conditions, the striking contrast between the light green of the perfectly smooth Willow-like adult leaves and the dense glossy blackish-purple silky pubescence of the young leaves and shoots renders a species the desirable one for cool conservatory decoration. In a well- sheltered spot in the nursery in the Royal Gardens at Kew a set of nice bushy plants have been killed by the cold of the past winter. It is, however, being grown in the Temperate-house. A native of Hong- Kong, where, in the Happy Valley Wood, the only spot in the island where it has been seen, it attains a height of 40 feet.

—— Publications Received.—*Life of Georg Stephenson*, by Samuel Smiles, LL.D.: Centenar edition (Murray).

—— The Weather.—General remarks on the weather during the week ending May 16, issued by the Meteorological Office, London:—The weather was very fine and bright during the first few days, but subsequently became dull, unsettled, and showery in nearly all places. Temperature was equal to the mean in "Scotland E.," but still a little below it in all other districts. The maxima for the week occurred on the 12th or 13th, when the thermometer rose to 75° at Nottingham and Hereford, and to between 70° and 74° at most of our southern, central, and eastern stations, as well as at Aberdeen and Londonderry. The minima occurred on the 11th, when a sharp frost was experienced, temperature falling to 27° or 28° over central, southern, and eastern England, and to 32° or below in all except the extreme south-western parts of the country. The rainfall was rather more than the mean in Ireland and Scotland, but less elsewhere. Bright sunshine shows a decrease in all districts except "England, S.W.," but the percentages were nowhere small, ranging from about 43 in the "Wheat-producing" districts to 69 in the south-west of England. Depressions observed:—Until the 12th the wind continued anticyclonic, blowing lightly from the eastward in England and the south of Ireland, and from the westward in Scotland. By the 13th, however, conditions had changed consider- ably, and the westerly wind had extended to all our stations. On the 15th a deep depression travelled from west to east across the northern parts of England and Ireland, causing strong south-westerly to north-westerly winds or fresh gales in very many parts of the country.

—— Gardening Appointments.—Mr. B. G. Stone has been appointed to succeed Mr. Powell as Gardener to Major Smyth, at Elkington Hall, Louth, Lincolnshire.—Mr. D. Judd, late of Warwick Castle, has been appointed to succeed the late Mr. Gray as Gardener to C. Seely, Esq., M.P., Brooke, Isle of Wight.

# Home Correspondence.

**Reduction in Gardens.** — Your editorial paragraph (p. 634) respecting the very unwise policy of proprietors for the sake of economy discharging their head gardeners and filling up the vacancies thus created with less competent men at a lower salary, is both timely and sensible, and ought to prove instructive to those gentlemen who, through force of circumstances over which they have no control, feel compelled to reduce their establishments. That it is false economy to employ unskilled labour in gardening merely for the sake of tiding over these bad times I will endeavour to show, and without further comment I give the following case, and commend it to the serious consideration of those who contemplate a reduction. Not a hundred miles from here there is an establishment which some time ago it was found necessary to reduce; one of the first steps taken was to discharge the head gardener and engage another man for less wages. Under this new arrangement things went on for a time as best they could, but in less than a year this new man's goings on and mismanagement made themselves visible to such a degree as to induce his master to speak to the employer of the writer, asking if he would allow his gardener to meet him at his own place to give his opinion about the Vines. This was done, and I feel bound to say that a more neglected state of affairs it would be impossible to imagine. The Grapes were taking their second swelling, scarcely any thinning had been done, not a single bunch apparently had been cut off, and there they were as thick as they could be, with laterals growing wild, and, to crown all, a grand crop of Beet on the borders outside. A tour was then made round the kitchen garden; here the same state of things presented itself — fruit trees going to wreck and ruin as fast as they could. Peaches and Nectarines on the walls were a pitiable sight, a complete thicket of young wood—for nothing in the way of disbudding or nailing in had been done, although it was then the middle of summer. What the fruit would come to, or what the crop would be the following year under such conditions, I will leave the reader to imagine. Well, this man was discharged, his notice to leave he had received before the writer was called in to give an opinion. The next step taken was out of the frying-pan into the fire. One of the labourers was promoted to the post of head man. This worthy aspirant to honours beat his immediate predecessor hollow, *i.e.*, as far as regards mismanagement. In course of time the above mentioned Grapes got nearly ripe, and wasps became numerous and troublesome. Master Labourer hardly knew what to do for a time; at last a happy thought struck him by which, as he thought, he would place all the wasps in the houses at one single stroke *hors de combat*. This he did, and to perfection, too; the ventilators were closed, and his enemies treated to a good dose of burning sulphur; of course, he settled the wasps, and the Vines, too, almost, for the following morning not a green leaf was to be seen. In due time winter and sharp frosty nights came, and also the end of his career as head gardener. During the severe weather, and in the attempt to keep out the frost from the houses, the heating apparatus broke down, owing, no doubt, to the boiler being allowed to go short of water: the consequence was that the plants in the houses were killed, and further expense incurred in repairing the apparatus. The above case is not an imaginary one, but is one of actual fact. I would just add, that I honestly believe that for every shilling saved in wages there were ten lost through mismanagement. *Multum in Parvo.*

**Scolopendrium Kelwayi.** — The so-called S. Kelwayi (which took a Certificate at the South Kensington exhibition) is, in my opinion, nothing more than S. Morgani. I know this to be the case, for I gave 15*s.* last year for a plant of the S. Kelwayi, and I find there is absolutely no difference between it and S. Morgani, for which I gave 1*s.* 6*d.* *John S. Cousens, Coleman Street.*

**A Rose Shade.**—I forward you herewith a Rose shade, one of many of the same kind which I used last year and which I found to be very efficient. They possess the advantage of gently shading the bloom from the sun, and at the same time of protecting it from rain, yet not in any way interfering with the free current of air (which is so health-giving to the Rose) from playing round it. Besides this their cost is almost *nil*, and half-a-dozen or so can be made in an hour. I turn a plate down on a piece of calico, rule a line round it with a pencil as a guide to the scissors. Allow half an inch for the hem, turn down to mark, and sew all round. Cut a little notch in the hem to slip one end of a piece of wire round the hem. The wire is best bent round in a circle the size of the plate previous to inserting it. As the end of the wire, after going round the hem, comes out at the notch at which it entered, push it right through 7 or 8 inches to allow for twisting round a stick. Hold with pincers both ends of the wire where they cross at the hole in the hem, and bend both ends back, so as to pass them together through a hole in the stick, and twist both ends of wire round the stick, one each way. Shape it a bit and the canvas will become as tight as a drum, and the job is done and will last for years. *W. T. B., Oxford.*

**Primula scotica.** — This gem of the Orkney and Caithness pastures is now in bloom here, and is much admired, even although contrasted with far larger and more highly coloured kinds. If not naturally an annual, it is by far the better plan to treat it as one in cultivation. Last spring (1880) some kind Northern friend sent us a plant nearly in bloom, and when its seeds were ripe they were gathered carefully and sown at once in peaty soil. Placed in a cold frame, in a rather shady position, the seedlings soon appeared by dozens, and by autumn we had a nice healthy stock of it in thumb-pots—a size quite large enough for this plant if they be plunged in a bed of ashes or cocoa-nut fibre, so as to keep the pot constantly moist. Although generally considered to be a Northern or alpine form of P. farinosa, the cultivated plants differ much. Both are farinose, but P. scotica has broader leaves; in fact, a more sturdy robust appearance altogether, although dwarfer than

Fig 121.—PRIMULA SCOTICA.

its congener in stature. I am sorry to say I never had the pleasure of seeing P. scotica in its native pastures, but I shall not forget the boyish delight with which I gathered P. farinosa on a little bog beside an upland trout-stream near Thirsk, in Yorkshire. As P. scotica is quite deciduous during the winter, it is possible that some lose their plants at that season, throwing them away under the impression that they are dead. P. rosea, P. sikkimenis, and others, have the same habit of hybernating underground, and the last-named especially tries one's patience ere it suddenly pushes up its crown of leaves about May. With Primulas of all sorts the plan of gathering and sowing their seeds as soon as they are ripe is a good one, but with the little gem P. scotica it is the only plan by which one may make sure of keeping a stock of plants in good condition, and the plant is one that well repays any little trouble taken with it in that way. *F. W. B., College Garden, Dublin.*

**Lupinus nootkaensis.** — This is a great improvement on the somewhat unwieldly L. polyphyllus. It is not more than one-third of its height; produces abundance of thick close spikes of flowers, blue mixed with rose, fully open in this backward climate by the middle of May, and is a very hardy perennial. *C. Wolley Dod.*

**Myosotis rupicola.**—Your correspondent, Mr. Wolley Dod, speaks of "an evident tendency to degenerate in the direction of M. sylvatica," in "seedlings" raised from our M. rupicola. We will not undertake to say that these will not hybridise, though in the tens of thousands we have grown we never saw an instance of a cross between the two. It may, perhaps, be well here to state, to nullify what we fear is a widespread misapprehension, that though we originally obtained this plant from Teesdale, it has not, so far as we know, been ever taken from that region, for purposes of sale, for the past twelve or fifteen years. We systematically raise it from seed in quantity, and have never found it to deviate at all from the wild type, either in size or colour. It alone, among the British species of Myosotis, is a true perennial. So far as we have seen, the Continental M. alpestris is nothing but an alpine form of the biennial M. sylvatica. People seek our plant in Teesdale, where in places it occurs in such abundance as quite to form a turf, but failing (happily!) to find it, accuse us of eradicating it. May it long utter its beautiful protest in our favour in its mountain solitudes. *Jas. Backhouse & Son, York.*

**Gardeners' Royal Benevolent Institution.**—I have had numerous inquiries as to the manner in which our "Simultaneous Collection" on July 30 next is to be carried out. May I be allowed to state that a collecting card will be sent on or about July 22 to every gardener whose address I can find; but, as there must be a great many gardeners whose names do not appear in the horticultural directories, I shall be greatly obliged to any of them who may be willing to assist the cause if they will communicate with me, and I will take care that a card is sent to them. *Edw. R. Cutler, Secretary, 14, Tavistock Row, Covent Garden, W.C.*

**Phlox divaricata.**—This was the earliest Phlox to flower here this year, fully a week before P. verna. Some of my gardening friends find it difficult to keep, but I have four or five plants now in flower fit to exhibit anywhere. One has upwards of fifty fine flower-stalks, each bearing several open flowers. It is a plant which requires attention. My specimens, with many others given to friends, were all raised from a plant bought in a thumb-pot from Mr. Ware thirteen months ago. By striking cuttings, or rather layers, as soon as the plant has flowered, and pegging down every available shoot as fast as made, large handsome plants are ready for next spring. None of mine have ever been under glass or in pots. Slugs like them. *C. Wolley Dod.*

**Ranunculus speciosus.**—A plant bought under this name last year has proved the finest double Ranunculus I ever saw. It has leaves like R. acris, but bears flowers fully as large as Caltha palustris, which the plant resembles in habit. I have never seen its single form. *C. Wolley Dod, Edge Hall, Malpas, May 16.*

**Potato Disease.**—The Epping Forest Club and the Geologists' Association went to the neighbourhood of Gray's Thurrock last Saturday to look at the chalk pits, the Thanet sand, and the high Palæolithic gravels. One of the party, a "fungus-man," pointed out to a small cohort of excursionists a huge perennial dung-heap, for many years familiar to the "fungus-man." Just now it is in prime condition, rich and juicy, "inter-bedded," as the geologists say, with strata of last year's diseased and rotten Potatos; many of these "lumps of delight" were observed to be still alive and sprouting: the Potato disease had been well nursed by the farmer during the past winter [And yet the fungus-men are twitted for not finding a remedy!]. *W. G. S.*

**A Few More Hardy Flowers for House Decoration.**—We are now having the benefit of last year's Tulip beds for cutting, the bulbs having been treated in the same way as the forced Hyacinths were—planted out in good soil, and well sheltered. They are as beautiful now as they were on the show-beds, and much more useful. Those that came best are Thomas Moore, Proserpine, Globe de Rigaud, Couleur Cardinal. The white sorts are not so kind the second season. The peat beds now give us the pretty Kalmia glauca. The white flowers of Galax aphylla are just opening; this lovely plant is not so common in gardens as it merits. The American Dog's-tooth Violet remains long in bloom, its straw-coloured bells delighting in the shade, and is well named grandiflora. The Andromedas are also *en evidence*. The neat pink clusters of A. rosmarinifolia and angustifolia are attractive, and last well. The Ledums are charming. L. thymifolium is too beautiful to cut or injure in any way. Dotted all over the neatest foliage its minute coral clusters appear, to expand in white; it is made to be admired, and the fatal shears of Atropos herself would have paused before cutting a twig of its perfect symmetry. The Epimediums in variety—E. nivalis is a graceful plant, and even the common alpine Barrenwort affords elegant green leaves for the vases, so light and pretty. Orobus vernus, O. Gmelini and O. flaccidus are all good. Then there are the American Cowslips, Dodecatheon elegans, followed by D. Jeffreyanum. Adonis vernalis is just over, and the white Triteleias are succeeded by the lilac variety. Wood Lilies (Trillium grandiflorum)—we cannot get the purple to bloom under the same conditions, viz., shade

and good soil. There are the silky Pasque-flowers; Ranunculus amplexicaulis, a pretty Crowfoot; the double Cardamine with its French-white blooms: seems made for putting in water. The old-fashioned Ribbon-grass is now in its silvery freshness for garnishing the bouquets, and the new variety, Phalaris arundinaria elegans, leaves nothing to be wished for, as it is perfectly hardy, early, and most effective. These are a few of "the Children of the Hours," as Shelley so beautifully named the flowers that ought to have graced the glasses in April. *H. M. E., May* 8.

**Unheated Vineries.**—It is impossible to depend upon these structures either for Vines, Peaches or Nectarines, &c., unless a plan be pursued different to the one usually adopted. Several years ago I built an unheated structure for these trees 130 feet in length, 9 feet wide at the floor and 4 feet at the top, the rafters extending from the ground, and were 9 or 10 feet in length. The trees were trained on each side 1 foot from the glass. For the first few years very large crops of fine fruit were produced, then there came a bitter May frost, and everything was black and dismal. We immediately placed a 4-inch iron pipe round the house, and nothing has ever since exceeded the fruitfulness of the trees. This house, in consequence of the fall of the garden, was built east and west. North and south is the proper aspect, and especially for unheated vineries, as I will explain. As this form of the above structure was merely experimental when I first introduced it, I built two unheated ones on a small scale, 25 feet in length, north and south; one I used for a vinery, the other for Peaches. For several years the Vine in the north-east corner always suffered from frost, when I laid it on the ground until the frosts disappeared. I planted a creeper at the corner, which has had the same effect as placing the Vine on the floor. Another plan is most necessary, *i.e.*, to prevent the Vines and Peaches, &c., developing their buds as long as possible. This is effected by letting in as much air as possible day and night; this mode, instead of retarding, accelerates growth, hardening is produced, and drawbacks, in the shape of congealing sap, are avoided. I anoint the bark and twigs with a preparation of slaked lime, paste as used for papering, and a small quantity of petroleum. This not only penetrates every crevice, and hermetically seals up the nests of the eggs of insects, but acts as a protecting greatcoat in severe weather. Need I again mention my plan of ripening Grapes in unheated structures? Perhaps some may have forgotten it. I open the houses from 8 A.M. until 1 P.M. I then shut up every outlet, and obtain in sunny weather a temperature of 100°. In consequence of the acute angle of the glass not a leaf is ever burnt; the rays of the sun have no power excepting to heat the house and ripen the crop, which I never could ripen in any other way, though I tried for years. I presume every one is acquainted with the "short-rod system" instead of the spur. I introduced this several years since, from a conversation I had with the late Dr. Lindley. We never fail in producing a larger crop and larger bunches than before. I use the main root merely as a store of nutriment. *Philodendron.*

**The Cuckoo and the Gooseberry Caterpillar.**—For the past two or three seasons I have observed the movements of this rather shy bird, and have come to the conclusion that we have in him a friend whose closer acquaintanceship gardeners might advantageously cultivate and turn to the useful purpose of helping to rid us of some of the numerous Gooseberry caterpillars. The fact of seeing the birds so frequently leaving the Gooseberry quarters was the first indication of the presence of caterpillars. I would shoot one of the cuckoos with the view of corroborating my surmises, were it not for the fear of destroying a very valuable friend; but instead of so doing, I shall give them every encouragement. *W. Crump, Blenheim, May* 16.

**Bougainvillea speciosa not Flowering.**—It is at all times much more pleasing and agreeable to have to record a success than a failure. Still, if by doing the latter one can elicit such facts as will lead to success, I for one have not the least objection, as the interest and information afforded to the general reader will, I think, be more than sufficient to counterbalance that which he would receive from a recorded instance of success alone, for he will, so to speak, have both sides of the question, and may draw his own inferences therefrom. We have a grand old pot specimen of the above, which for the past few seasons, I candidly confess, has failed to produce a single flower, although it has been subjected to almost every kind of treatment but the right one; but formerly (so I am told) it used to flower every year, so there is evidently a "wrinkle," to be learned somewhere, and to get at it must be my excuse for troubling you with this note on the subject. Some few weeks ago I ventured to ask through your columns the following question:—"Will any of your correspondents who annually succeed in flowering the above in pots kindly give a detailed statement of the course of treatment they adopt?" Notwithstanding that there has been no reply, I must say that I can hardly bring myself to believe that there are none of your correspondents who do succeed in flowering it in pots annually, but I am inclined to think that the question must have escaped their notice; however, be that as it may, perhaps it would be as well to slightly alter it; and to see if we can "draw" the required information we will leave annually out of the query altogether, and ask for particulars as to treatment from those who have on any single occasion succeeded in flowering it in pots. On the Continent it is said to flower very freely, but to see it in flower in this country is rather the exception than the rule, so that any information which may be forthcoming will, I doubt not, be very acceptable to many of your readers, as well as to *J. Horsefield, Heytesbury.*

**Saxifraga Burseriana.**—I seem to have omitted the name of this Saxifrage in my remarks on Messrs. Backhouse's Nursery, York. They had a large quantity of plants in flower at the time of my visit, and the large pure white flowers, freely produced, were very beautiful indeed. It is the earliest to flower, as well as the best of the white Saxifrages. *J. D.*

**Begonia Davisii var. superba fl.-pl.**—This fine variety, which was exhibited at South Kensington last week, and obtained a First-class Certificate, marks the greatest advance that has yet been made with the double-flowered forms of the tuberous-rooted Begonia. The annexed illustration (fig. 122) well

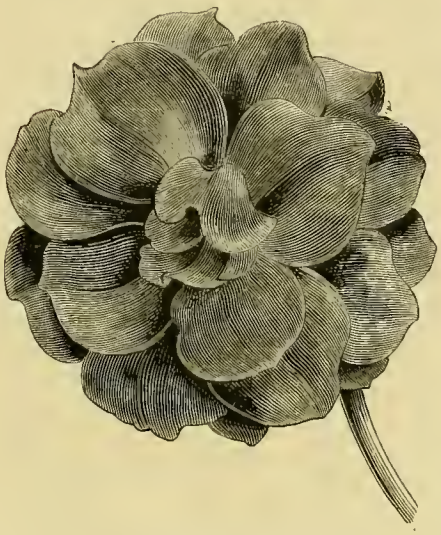

Fig 122.—Begonia Davisii var. superba fl.-pl.

pourtrays the style of the flower, which measured 2½ inches in diameter, while its bright crimson-red colour was very attractive. The plant, which in habit is the counterpart of B. Davisii, was, we believe, raised by Mr. V. Lemoine, of Nancy, from whom the stock was obtained by Messrs. John Laing & Co., of Stanstead Park, Forest Hill.

**Primula luteola.**—Will any correspondent tell us whether P. luteola, after being out all winter, has flowered well this spring? I enclose some crowns from mine, which broke well early in March, but have made no progress since. They seem to have been killed by frost. Some of my plants of P. japonica and Meconopsis Wallichii behaved in the same way, the latter after retaining leaves uninjured through the winter. These plants, from Eastern Asia, cannot understand caution in starting into growth, and I am afraid they will never become reconciled to the so-called spring in England. *C. Wolley Dod, Edge Hall, May* 13.

**Magnolias.**—Whether regarded for the size and magnificence of its highly-scented flowers, or the beauty of its large bright glossy leaves, Magnolia grandiflora is quite unrivalled among shrubs; but unfortunately, except in favoured situations, it is not hardy enough to stand our climate unless it has the protection of a wall—a position it is highly worthy of, as it forms a grand object, and is a great aid in adorning any house or building, where, if possible, it should have a panel or recess afforded it on the sunny side, as then it is more secure from cold cutting winds, and has a good chance to ripen its growth. This ripening or hardening of the shoots does more to secure its safety than anything else, and therefore when planting it is a very important matter to see that the soil is well drained, which may be done by a load or so of brickbats put in a yard deep under the plant; and to give this a good start the space above should then be filled with turfy loam fresh cut from the roadside or any old pasture. By turning out plants at once they will be able to form a quantity of roots and get well established before winter, when it will be advisable to afford some protection and to continue it at the same season for a few years till the growth is less free. The Exmouth variety of Magnolia grandiflora is the hardiest of the two, and is therefore to be preferred on that account. This kind is known by the leaves having a brownish coating on the under-side whereas those of the other are clear. In exceptionally sheltered positions either will succeed planted as shrubs, and in the warmer parts of England may be seen on lawns, as at King's Weston, near Bristol, where, thirty years ago, I remember seeing some remarkably fine specimens which, when in bloom, quite filled the air with their all-pervading perfume, and were a sight worth going some way to behold. Although not so noble looking, there are several other sorts of Magnolia that are very desirable, and form exceedingly attractive objects in any garden, chief among which is M. Lenné, that produces flowers about the size of a large single Tulip, of a rosy-purple colour, but which, unfortunately, are unaccompanied by foliage, as the plant is deciduous, and the leaves do not appear till after the blossoms. The most floriferous of all the Magnolias I am acquainted with, and one of the most useful for cutting, is M. purpurea, which blooms in April, or even earlier than that if grown against a south wall, as we have it here; and it is also fine as a shrub, but like the others it should be planted where it can get plenty of sun to ripen the wood. Another fine species is M. conspicua, which has white flowers, and these taken in the bud state just before they expand are of great use for church decoration and other purposes of that kind. As this species flowers early it should have the protection of a wall, or be planted in a very sheltered situation, or the large blooms get injured by frost and wind, which detracts much from their beauty. *J. S.*

**Tacsonias.**—The roof of our conservatory is, and has been for the last fifteen months, resplendent with the foliage and flowers of Tacsonia exoniensis and T. Van Volxemii; the former has been flowering continuously and profusely during that period, and the latter since the beginning of July last, though somewhat sparingly when compared with the free-blooming habit of T. exoniensis. *H. W. W.*

**Forget-me-nots.**—At p. 638 Mr. Wolley Dod says Messrs. Backhouse's plants of Myosotis rupicola are identical with M. alpestris of Sowerby. Sir J. Hooker recognises the M. rupicola of Syme as M. alpestris. Any one, however, who has had plants of M. rupicola from Messrs. Frœbel & Co., of Zurich, will not for one moment doubt the distinctness between the two. We have seedlings from plants sent us from Zurich which do not vary from the parent the least trifle, although there are upwards of a thousand. M. alpestris, from seed from another source, we considered not worth keeping, and have got rid of it as well as we could, although it is such a weed, and continues to appear year after year. *T. D. Hatfield, The Gardens, Southwood, Bickley.*

**Amaryllis vittata.**—I do not think there is any genus of plants in cultivation more strikingly beautiful or more worthy of the highest admiration than the genus Amaryllis when fairly well cultivated. The variety above mentioned is one of the brightest gems that we have in a moderate-sized collection. The colour is intense scarlet, of that peculiar shade which almost dazzles the eye, and beside which many other shades look but dull and unattractive. Plants of this and other varieties bearing from two to three spikes, with from three to five flowers on a spike, are so well adapted for mixing with Deutzias and other spring flowers on the front stages of conservatories and show houses that their value and importance for such purposes cannot be too strongly or too frequently urged upon all who desire to produce a floral display of the first order. *Cultivator.*

**Rampions.**—Where high-class salads are appreciated—and there are few places where they are not—the Rampion ought certainly to be grown, and in fact it richly deserves, in my opinion, to be made a speciality, its degree of crispness and fine nutty flavour being such as even the most delicate palate would hardly resent. Although their culture and preparation for table—and this last point is quite as important as the first—when rightly understood may be said to be tolerably easy, they are, on the other hand, eminently suited to cause vexation and disappointment to any one who does not quite understand—what shall I say?—well, trimming up and stripping the roots of their jackets or outer skin, without which they are not fit to be eaten. Any soil of a rich, open,

and porous nature will suit them admirably, and if they can be grown in a somewhat shady situation so much the better. To have a supply from the beginning of November to the end of March, two sowings should be made, the first from the middle to the end of the present month, and the other about a fortnight or three weeks later; if sown too early they are very apt to run to flower, and whenever such is the case they are unfit for use. The soil should be raked very fine, and the seed sown in drills 1 foot apart; a thin covering of soil will suffice. Afterwards the whole should be lightly smoothed over with the back of the spade and be well watered, and in the event of the weather at the time of sowing being very dry, a covering of ordinary garden mats until the seed germinates would be advisable. When large enough the young plants should be thinned out to 6 inches apart, and under no circumstances whatever must they be allowed to suffer for want of water. *J. H., Heytesbury.*

**The Frost and the Fruit.**—Several of our Pear and Apple blossoms, as also those of Strawberries, that were fully open on the night of the 10th, have been killed by the frost (6° here), and many of the Gooseberries have since dropped off the trees in consequence. However, in the event of our not having any more frost during the remainder of this month, that which we have had in the early part of it is not, I hope, likely to materially interfere with the prospect of a good year of fruit all round, though Green Gages have suffered severely. *H. W. W.*

**Solanums in Leaf-mould.**—At this busy season, when so much that is urgent demands attention in every garden, any hint that can be given which is calculated to alleviate the gardener's already over heavy burden is sure to meet with favourable consideration. The cultivation of the Solanum is no doubt commonplace, and is generally well understood; but it may not be so well known that it succeeds admirably planted out in a compost of leaf-mould only. Last season I had about 9 inches in depth of leaf-mould scattered over the bottom of a Vine border, from which every particle of the Vine soil had been removed, for the purpose of pricking out early batches of the Brassica tribe. As time wore on and work increased our stock of Solanums followed the Cauliflowers and Brussels Sprouts without further preparation. Great results were not expected, but to my surprise the plants flourished as well as could be desired, and even when in flower and setting their berries I did not think the latter would swell to their full size, so religiously does one cling to the practice of years. An agreeable disappointment was, however, in store for me, as they were the very best batch of Solanums I ever had, and I could name more than one noted grower (nurserymen) who, like myself, were surprised when told the simple way in which they were grown. The plants were never pinched from the time of planting-out, and were profusely adorned with some of the finest berries I have ever seen upon the Solanum. There is nothing very wonderful in what I have related, yet it may be useful to many to know that these popular decorative plants can be grown so well with less labour than is required to produce a good Cauliflower or a decent Cabbage. *W. Hinds.*

**Mimulus.**—Considering the great beauty of these, the wonder is that they are not more cultivated, especially as they are so easily grown and so valuable for decorative purposes in embellishing greenhouses or conservatories during the summer, where, if they can get slight shade and plenty of moisture at the root, they stand well and flower for months in succession. As window plants, too, they are among the very best, and there need be no fear of killing or injuring them by over-watering, as, being half aquatic in their nature, they will stand almost any amount. Not only are they fine for pots, but they make splendid ornaments suspended in light wire baskets or trailing over the sides of a stand, for which their drooping habit fits them, and in which way they may be seen to the greatest advantage. The flowers of the best strains are very large, measuring quite 2 inches across, while in colour and marking they are quite equal to any of the herbaceous Calceolarias, so deservedly admired for their richness and beauty. There are several named varieties, but Mimulus come so good from seed that they are hardly worth troubling about, and the best way to have them is to sow at once now, and out of the many plants that may be had from a packet select those that show the most merit. These can then be potted and grown on, and the others discarded or planted out at the margins of Rhododendron beds or the shady sides of rockwork or other similar positions, where if kept watered they will be very attractive. Besides the large single kinds there are some that have blooms hose-in-hose fashion, after the manner of Polyanthus, which besides being curious are desirable on account of the display they make and the pleasing effect they produce. The Musk, Mimulus moschatus, is so well known and appreciated that it is unnecessary to mention it here, but that raised from it and sent out under the name of Harrisoni is a greatly enlarged variety, having much the same fragrance, though less intense, and with big yellow blossoms, which it continues to put forth the whole summer through. In cool moist soils this forms an excellent bedder, and is capital for pots as a window ornament, where it fills any room it may be in with delicious perfume. The way to increase Harrison's Musk Mimulus is by cuttings or division any time in the early spring, when it soon strikes and grows and spreads at a rapid rate. This and the others like good rich light soil, in which they can root freely, and to grow them well a cold damp frame is the best situation after they are up and fairly established, till which time they require the aid of a little artificial heat to nurse them on out of the seedling state. *J. S.*

**The Bouvardia.**—This plant in its several varieties is now found to be a very valuable decorative, as well as a useful and much-appreciated market plant, for the autumn and early winter. Its numerous varieties appear to have been raised in this country from the comparatively few Mexican species originally introduced, some of which, although very pretty, were found to be of a weakly habit of growth, or what gardeners term "miffy." But these have now been mostly discarded, and the sorts generally grown are tolerably robust in habit, and exceedingly useful as late-flowering plants for the conservatory or warm greenhouse. To secure plants of considerable dimensions, cuttings should be inserted in January, or early in February, and such cuttings will strike root freely in a compost formed of equal parts of finely-sifted leaf-soil and silver-sand in well-drained pots, some 5 or 6 inches in diameter, plunged in a slight bottom-heat in a close atmosphere, and in a temperature not under 65°. When well rooted the young plants should be potted singly into small pots, and kept for a time in the same temperature, and afterwards gradually inured to that of an ordinary greenhouse or a cold pit. When the small pots are well filled with roots they should be shifted into pots of larger dimensions or, what is possibly better, planted out in a pit or frame in suitably prepared soil, which may consist of two parts turfy loam and one part leaf-mould or well rotted dung, with the addition of a portion of sand; or they may even be planted in a sheltered situation in the open air, but this should not be done at an earlier period than the first or second week in June, when they will only require to have proper attention as regards watering, and possibly the assistance of a few stakes as they advance in growth. Early in October they must be carefully taken up with good balls of soil, and potted in pots of suitable sizes in soil such as has already been described. Most of the plants will by this time be about to flower, if not already in bloom, and they should be kept for a short time somewhat close, when they will soon become established in their pots, and may then be placed in a warm and suitable situation in the greenhouse, where they will have an exceedingly attractive appearance and continue to bloom throughout the winter, and furnish, if required, abundance of flowers for cutting. A portion of the plants must necessarily be preserved for the purpose of furnishing cuttings for the following season, and if large specimens are desired the plants may be retained for two or more years. But in either case such plants as soon as they have ceased to bloom should for a time be allowed to rest, or even to some extent be induced to do so, by gradually withholding water. The plants destined to furnish cuttings must necessarily be cut-in and started into growth early in the season, while those intended to be grown on as specimens or large plants for the succeeding winter may be allowed to rest for a longer period, or until they show signs of growth in the temperature of an ordinary greenhouse. Although the Bouvardia is classed as a greenhouse plant, it is sufficiently hardy to bloom in the open air during the early autumn months, and will continue to flower more or less in the greenhouse throughout the winter, but to insure a profusion of its beautiful flowers in good condition during the winter months it is advisable to grow the plants in a temperature under that of the plant-stove, but considerably in excess of that of the ordinary greenhouse. The following six sorts will be found well worth growing, viz., Humboldtii corymbiflora, a fine large white-flowered variety, comes earlier into bloom than most other kinds: it is of robust habit, and forms a fine specimen plant; Vreelandii is also a fine white-flowered variety; Hogarth is possibly the best scarlet sort, together with Reine des Roses, Maiden's Blush and jasminoides. *P. Grieve.*

**Peel Park, Manchester.**—It is pleasant after the dreary winter and spring weather we have had to enter this park now that spring, having fairly set in, has started into existence the early spring flowers and covered the trees with leaves notwithstanding the extent to which they have suffered from the winter and also from the recent east winds. This park has been no exception to the general rule, and indeed has suffered more severely than the other parks of this district owing to its exposed situation. The cutting winds of March and April have told a tale in the case of many of the shrubs, and many will not get over it. The winds have also affected to a considerable extent the spring Tulips. On entering the principal entrance of the park and turning to the left we come upon a splendid hexagonal bed filled with three varieties of Tulips; Potter, violet, in the centre; Yellow Prince and Scarlet Van Thol in sections: the colours are beautifully blended, and the whole effect of the bed is not surpassed by any I have seen for years. Proceeding further, there are two smaller beds on the left filled with Duchesse de Parma, bronze-crimson, shaded with orange; and Dussart, whose vermilion-scarlet hue has a fine effect in sunshine. Around the statues of the Queen and Prince Albert, which stands in front of the museum, are planted Tulips of the varieties Prince of Austria and Potter, which have a fine effect, although the east winds have slightly injured them. Opposite the entrance to the building, between the statues of Peel and Cobden, is another large bed, oblong in shape, containing Verboom, brilliant scarlet; Potter and Yellow Prince, which afford a fine display. Beds round the Peel, Cobden and Brotherton statues are filled with Gloria solis, crimson, striped with golden-yellow. On the terrace on each side of the walk are small beds which, though much exposed to the winds, are wonderfully good. Going down to the houses I there found a splendid lot of 60,000 bedding plants in all stages of growth, among them the beautiful dwarf Fuchsia, Lord Sandon, which formed a prominent feature of last year's bedding. In the course of three weeks or so these plants will find a place congenial to their tastes, and will enhance the pleasure of visitors through the summer and autumn. Mr. Moore, the superintendent, has had great difficulties to contend with, in part owing to the climate, which is not the most favourable to plant life, and in part to the floods to which the lower portion of the park is subject. Three times this winter has it been flooded, and the consequent injury to vegetation, &c., has been immense. On the whole, however, and taking into consideration the trying conditions under which the superintendent has laboured, he deserves great credit for what he has achieved. Seeing that spring is at last with us, it may be hoped that soon all traces of the severe winter and its accompanying floods will have disappeared. *T.*

**Myosotis dissitiflora.**—The large-flowered Myosotis dissitiflora growing on the rockwork at Kew has on the label the name of Allen, from which I infer that it is a seedling or sport product obtained by Allen of Shepton Mallet. It is undoubtedly a large-flowered robust kind, but is nearly approached by many plants here, where more than ordinarily robust, especially growing in shade and where the soil is good. The term "miffy" may be applied fitly enough to plants of Myosotis dissitiflora raised from cuttings, but seedling plants are as a rule so good that failures seem incomprehensible. In its own peculiar way it makes the most telling mass of light blue of any early spring flower, in which it finds good support in the yellow Alyssum, the white Arabis and the purple Aubrietia, the best of massing spring flowers we have. With reference to sports from the Myosotis I may mention that I have just marked a single branch from a plant that carries flowers of great size and breadth of petal, so that the flowers are almost a perfect circle, but the colour is a pale pink. Nothing like it is to be found on thousands of other plants, so I hope seed may give a new form. Mr. Fish, in his note on the Omphalodes verna, asks whether the new Omphalodes Krameri, having larger flowers, is likely to be an advantage. The plant shown at South Kensington by the Messrs. Veitch was but a tiny one, having but two sprays of bloom certainly not then so rich in colour as is verna, but larger and more erect. The plant, however, struck me as having a closer resemblance to a Myosotis than an Omphalodes, but I suppose the botanists have decided its classification correctly. We must wait for a good patch of it in the open ground to see how far it is an improvement. *A. D.*

**Pyrus japonica.**—If this were a tender plant and could only be grown with difficulty under stove treatment how much would be thought of it, but as it is perfectly hardy and adapts itself to any kind of soil or situation it is very little grown, and yet more brilliant or beautiful flowers than it produces are not to be met with. The most striking effect I have seen produced by any plant was by one of these Pyruses growing against the wall of a dwelling built with white brick, up the front of which it was thinly and loosely trained, and with the light backing its bright crimson blossoms showed up to the greatest advantage. Besides being suitable for covering the face of walls, Pyrus japonica does well as a shrub, as by a little pruning it may be kept in the bush form and to any size required. On rockeries, too, plants of it are just at home, as there they can grow naturally, and the habit being somewhat pendent branches droop over the sides and clothe ugly objects with the richest of drapery. Being deciduous, the best time to plant the Pyrus japonica is in

the autumn, but by obtaining them in pots they may be turned out at any season, and if an increase is desired that may easily be effected by layering, as shoots buried soon root, or cuttings from the half ripe wood may be made, and these strike freely put in under the protection of a handglass on any north border, or where a little shade is afforded. There are several varieties of Pyrus japonica having flowers of different colours, besides a white, all of which are worth growing, and if grouped together the effect they produce is of the most pleasing description. *J. S.*

**Pugilistic Toads.**—I always keep a number of toads in my Orchid-houses, for the purpose of destroying vermin. The other morning, while watching two males, I was highly amused to see them have a regular set-to fight. They went at each other in a regular scientific manner, sparring and boxing with their fore-paws and butting with their heads. After a while they seemed to get tired, coolly sat down, and viewed each other with great complacency. From my earliest days I have been in the habit of watching the ways of the toad, and never having seen them fight before would like to know if any of your numerous readers ever witnessed such a scene. *Alex. Paterson, M.D.*

## Reports of Societies.

**Edinburgh Botanical:** *May* 12.—The Society met this evening for the first time in the new class-room, Royal Botanic Garden, Professor I. B. Balfour in the chair. The deaths of Dr. Innes, of Forres, and Dr. Randle Wilbraham Falconer, of Bath, were noted. The following communications were read:—

I. "The Structure and Division of the Vegetable Cell," Part 2. By Mr. J. M. Macfarlane. The paper dealt wholly with the cells of Spirogyra nitida. The author pointed out that a distinct nuclear membrane was present, which, as in the animal cells described by Klein, consisted of two layers; he also held that surrounding the nucleolus there was a well-marked double contoured nucleolar membrane, while the nucleolo-nucleus was lodged in the substance of the nucleolus. He next showed that in division the first stage observable was a warty irregularity assumed by the nucleolus; next, that the nucleoplasm was forced through the nuclear membrane, and aggregated itself on two sides of it, being still connected with the nucleolus by fibres which passed through the nuclear membrane. The nucleolus then divided, each daughter nucleolus advancing along the nuclear disc, which was formed by an elongation of the fibres already mentioned, and the gradual disappearance of the nuclear membrane. The daughter nucleoli then buried themselves in the masses of nucleoplasm at the extremities of the nuclear disc. At this period the nuclear plate began to appear, followed by the formation of the cell plate. The author, therefore, concludes that in this plant, as in Scilla, division of the nucleus is preceded by that of the nucleolus, while from various observations the latter is probably preceded by that of the nucleolo-nucleus.

II. "On the Growth of Crocus sativus, the Source of Hay Saffron, in Kashmir." By Dr. Downes, medical missionary there. This communication was sent to the Society by Mr. Isaac Anderson-Henry, who at the request of Mr. George Maw had obtained the information through his niece, Mrs. Elliot, formerly of Kashmir.

According to the late Dr. Elmslie the native names are Kóng-pósh (Crocus sativus), n.m. Saffron-flower, and Kóngs, n.m. saffron (Crocus sativus), Cake saffron is largely an adulteration of the stigmata of Wallflower and other plants. The Crocus sativus is the only plant grown in Kashmir, the stigmata of which compose hay saffron. The famous saffron fields are situated in the vicinity of Pampur, on a plain fully 50 feet above the valley. The bulbs grow on soil said to have been specially imported for the purpose. In dry seasons the produce averages nearly a ton, though the crop was in 1871 only half that quantity. Some 1500 lb. of saffron are exported yearly from Kashmir to Laddahk. From 9*d.* to 1*s.* sterling is given for 180 grains. The bulbs are planted out in June, and the stigmata are collected in October. It is principally used as a condiment, its power on the system, whether in health or disease, being trivial. The mark on the forehead of a Hindu Pundit is partially derived from it. The Mussulmans of the valley are generally unable to buy it. According to O'Shaugnessy the odour is fragrant, and the taste bitter but agreeable. It tinges the saliva yellow. Pereira makes one grain of good saffron to contain the stigmata and styles of nine flowers, so that the formation of an ounce would require 4320 flowers. Bulbs received by Dr. Royle in 1826 from Kashmir, when in charge of the Saharunpore Botanical Gardens, which flowered, and were afterwards figured, turned out to be varieties of Crocus sativus. This author has little doubt of the Asiatic derivation of this species.

The four stations for saffron cultivation, called "Warewas," are flat treeless tablelands, on the borders of the hills, 50 to 150 feet higher than the Kashmir Valley, which is 5200 feet above the sea-level. They are little, if at all, irrigated. The soil is a stiff clay. Dr. Downes has been informed that saffron has been successfully cultivated in the gardens of the city of Kashmir; indeed, he believes that the oppression and greed of Government officials is the sole cause preventing its general growth. He does not think a special soil needed for the cultivation of Crocus sativus. In a hopeful experiment of this kind at Alwar, near Delhi, Mr. Landseer started bulb-growing on earth brought in barrels from Kashmir. But in the second year the five beds of bulbs had increased to nine, and as there was no further import of Kashmir earth native soil had to be partly used, and with success. In Kashmir the C. sativus is cultivated on raised parterres, well drained and carefully weeded; though Dr. Downes believes not irrigated. As the half of the price of the produce, which is the due of the cultivator, very seldom comes his way—owing to the plundering of intermediate Government officials—the plant is left very much to its own care. During the last two famine years no saffron has been gathered, though this year a small crop is expected. According to one native tradition the Crocus sativus miraculously appeared in Pampur, after the prayer of a holy man some 300 years ago; while others assert its introduction from the direction of Kabul by a ruler named Bar-sháh.

III. Mr. Taylor read a letter from Colonel Campbell, South Hall, Colintraive, Argyllshire, describing a fine Eucalyptus globulus growing in his garden. "The plant was grown from seed sent from Australia by one of my tenants residing about two miles from South Hall nine years ago. It was then in a flower-pot, about 3 feet high and three years old. Little attention was paid to the plant. It was left out in winter without any protection, and the frost has never affected it. The present height (December 15, 1880) is 45 feet 9 inches, the girth 6 inches from the ground is 33 inches; girth 5 feet from the ground 28½ inches. It forms itself into two branches of equal size, 6 feet from the ground. It is rather bare of small branches for 15 feet, some of which have died off; but the upper part is very vigorous and healthy. Some flowers appeared upon it in 1879, but none during last summer. I have never succeeded here in growing the plant except from the seed."

Mr. Johnstone (Inverleith Nurseries) sent some of the stalks to Mr. Smith, of Kew Gardens, with what appeared to be seed adhering to them. I send you his reply. Mr. Smith writes, March 22, 1880, "All the Eucalyptus globulus (unprotected) in the neighbourhood of London had been killed; that he does not know any such specimen in England as that at Colintraive, and that the bodies called by Mr. Johnstone embryo flower-buds are the flower-stalks of last year's flowers." Col. Campbell had raised some plants of the Eucalyptus from seed got from Edinburgh last summer. They were planted out in the autumn, but the frost of October appears to have killed them all, though the old tree has not suffered.

The garden at South Hall has a good exposure to the south, is well sheltered, and stands about 25 feet above the sea level. Two large Camellias and a Kalmia have grown in the open without any protection, and have flowered regularly for upwards of twenty years. They stand close to the Eucalyptus.

IV. Mr. Sadler stated, that from February 14 to May 10, 155 species and varieties have come into flower in the rock garden at the Royal Botanic Gardens, as compared with 254 at the corresponding date last year. He also submitted extracts from reports of correspondents in different parts of the country as to effects of the past winter on vegetation. These included letters from Mr. Angus Macdonald, Balmaccan, Glenurquhart; from Mr. David Murray, Culzean Gardens, Maybole, Ayrshire; and from Mr. James Whitton, Thirlstane Castle Gardens, Lauder. There the thermometric readings of January showed a mean of something less than 1° above zero, and on the 17th of that month they were 3° below any previous register. Much damage had been done to such plants as Wellingtonias, Yews, Clematis, Rhododendron ponticum, and Roses, &c., in open borders. Garden vegetables, except Leeks and Parsley, have been killed. On the other hand, at Spottiswoode, a few miles off on the southern slope of the Lammermoors, and 788 feet above the sea, scarcely any damage has been done to Laurels, Araucarias, or Rhododendron Nobleanum, though garden vegetables, excepting Leeks, are also killed. Mr. Wm. S. Bisset, Moncrieffe Gardens, Perth, writes that the lowest temperatures experienced there were on the mornings of January 14, 16, and 17, when 28°, 29°, and 30° of frost were registered respectively. During fifteen nights, from the 13th to the 28th of that month, the average was 22° of frost. The past winter has been the most lengthened, and, with the exception of a few nights, the most severe during the last forty years. Laurustinus, Sweet Bays, Euonymus variegatus, only partially injured during 1879-80, were, during this winter, killed to the ground. But Roses did not suffer so much as in the first mentioned season. Some plants, such as Cupressus Lambertiana and hybrid Rhododendrons, have only been partially destroyed. Broccoli, Brussels Sprouts, and all the Brassica tribe were killed.

V. Miscellaneous communications:—

1. Dr. Gunning, of Brazil, asked to lay before the Society a proposal that the magnificent *Iconographia das Orchidos*, by Dr. Joa Rodriguez, one of their foreign members, be published in Edinburgh. A project to print this magnificent work at the expense of the Brazilian Government fell through because it was supposed it had been forestalled by the previous book on the subject published in Germany by Henrique Reichenbach, and the subsidy of £5000 anticipated from the Brazilian Parliament was withdrawn. But the German monograph was executed at a distance, from deteriorated specimens, and is only adorned with a few black engravings. Rodriguez has minutely described and coloured each species from specimens collected by him ere they lost the glory of their native forests. The figures are painted by himself, and considered very fine. Sir Joseph Hooker has pronounced the *Iconographia* eminently worthy of publication. So charmed was Reichenbach himself with the MS. volume that in 1877 he offered to publish it; but this was declined. Meanwhile Barbosa Rodriguez has succeeded his friendly competitor as a contributor to the *Flora* edited by Dr. G. Eichler.

2. Dr. Cleghorn exhibited a stem of the common Broom 12 feet long, and 8 inches in diameter at 1 foot from the ground, which had been planted in poor soil at Stravithie, near St. Andrews, in 1870, and cut down just before the meeting. By Hooker and Bentham the usual height of the Broom in this country is given as from 3 to 6 feet' or even 12 feet, according to soil and situation, though in the woods of Galicia it attains the height of 20 or 30 feet or upwards. According to Loudon the Broom in Spain and the South of France attains a timber-like size, and the wood, from being finely veined, is much sought for veneering; the best Vine stakes are also made from its branches.

3. Mr. John Campbell, Ledaig, Argyllshire, sent seventeen species of plants from his garden, mostly in bloom. They included Kerria japonica, Dielytra spectabilis, Narcissus poeticus, Orchis mascula, as well as the Lilac, Apple, Pear, and Strawberry. A fresh specimen of Aster argophyllus showed it to have withstood the winter.

4. Mr. John Sim, Associate, Perth, sent a paper on the Transmutation of Species, in which he controverted the more advanced views recently promulgated on this subject, dwelling specially on the difficulties of thus accounting for the origin from the wild state of our cereals and culinary vegetables.

A collection of alpine and other plants in flower, grown in pots, were exhibited from the Royal Botanic Gardens, including Sarracenia flava, S. purpurea; Darlingtonia californica, Arnebia echioides, Arabis blepharophylla superba, Aubrietia Hendersoni, A. Bougainvillea, dark seedling vars.; Thlaspi rotundifolia, Gentiana acaulis alba, G. verna; Saxifraga calyciflora, Corydalis bracteata, Lychnis alpina, Pinguicula grandiflora, Androsace gigantea, Primula sikkimensis, P. Stuartii, P. Palinuri, P. mollis, P. scotica, P. auriculata, P. Sieboldii, vars., P. ciliata, hybrid vars.; and a fine specimen of the Cistus Rape (Cytinus Hypocistis), sent from Cannes by Mrs. Flockhart, Gunney House, Trinity.

Mr. C. Jenner's gardener, Mr. Chapman, had also been very successful in growing Gentiana acaulis alba.

**Scottish Horticultural Association.**—The ordinary monthly meeting of this Association was held in 5, St. Andrew Square, Edinburgh, on Tuesday, May 3, the President, Mr. John Downie, in the chair. Mr. George Robertson, Mordington Gardens, Berwick-on-Tweed, sent a paper to the meeting on "The Management of the Kitchen Garden." He stated that his remarks were chiefly for the benefit of the junior members of the Association. Some of them may consider this subject a secondary or unimportant part of their profession, but he would remind them that, however successful they may become in the production of ornamental displays in other departments they cannot justly expect to secure and retain the approbation of their employers by these means alone, because the primary use of a garden is to grow what is useful, and the province of the gardener is to direct its resources to that end. He did not wish to be understood to exclude everything ornamental from the kitchen garden, but rather that it should be subservient to usefulness. Success or failure may depend in some cases on aptitude, but a methodical arrangement will do much to remove difficulties when they occur, if it will not prevent their occurrence. It is highly important that the aspirant should begin his studies with method, otherwise confusion and subsequent disappointment will arise; therefore, his first suggestion was to have method in all their arrangements, and then they would be able to appreciate the salt of the old maxim, "A place for everything, and everything in its place." Having thus solicited attention to methodical arrangement generally, as a means to simplify duties, he proceeded to point out the advantage to be derived from its adoption in the several divisions of labour, rotation, and cropping. As no two gardens are naturally alike in soil, situation, and aspect, no hard-and-fast rules can be given suitable to each. Still there are certain crops which every garden is required to produce, whether its conditions are conducive to their growth or not. Hence the necessity of assisting Nature by draining, manuring, trenching, and digging. Periodical trenching is absolutely necessary in old-established gardens, where the same kind of crops have been growing for years without due attention being paid to a proper rotation. Mr. Robertson then dwelt with some minuteness on the proper preparation of the soil for the various crops, and treated of the culture of the Pea, Cauliflower, and Broccoli. An interesting discussion followed the reading of the paper.

In the unavoidable absence of Dr. Paterson, Bridge of Allan, who was to have read a paper on Orchids, Mr. Jas. Grieve, Pilrig Park Nursery, read a paper on Cottage Gardening. At the outset he referred to the many aspects of the subject which were of great interest to all who cultivated their own plot of ground. There was still room for improvement in this department of horticulture, as by better application and attention the cottager could increase his stock of flowers, as well as produce a greater quantity of vegetables for the requirements of his family. After speaking of land which, for the most part, was comparatively unproductive, he threw out several suggestions as to the better utilising of railway and canal banks. Honey-producing flowers and vegetables could be grown more largely on these slopes than they are at present. It was a study of much interest to all to be acquainted with the trees, flowers, and plants of the earth, and this knowledge ought not to be lost sight of by the cottager. The old-fashioned hardy plants of childhood's days were often a source of much pleasure to the humble cottar.

A paper on the Horticulture at and round about Balmoral Castle (the summer residence of the Queen), by

Mr. John Downie, was read to the meeting. He made particular mention of the surrounding grand mountain scenery, which was full of interest to the horticulturist. The Weeping Birches of great size which here studded the landscape were objects of great beauty. The Ericas, Epacris, Statices, Tree Carnations and Roses cultivated in the gardens were described in the paper, also a great many of the plants which luxuriated in the borders were fully and carefully referred to. The large Scots Fir trees of Balbowie Forest came in for their proper share of attention, and the many millions of this tree which were planted annually in the locality received due notice.

Mr. M. McIntyre, gr. to Charles Tennant, Esq., M.P., of The Glen, received a Certificate for a new Cucumber, named Charles Tennant's Favourite. It was a cross between Telegraph and Pearson's Long Gun. Mr. George McClure, Trinity Grove Gardens, exhibited two Auriculas, named Endymion and Victoria, the former of which was awarded a Certificate of Merit. Dr. Paterson, Bridge of Allan, exhibited a fine collection of Orchid spikes of an unusually large size, and containing a great many varieties of Vandas. Mr. M. Chapman, Easter Duddingstone Lodge, exhibited trusses of a variety of Rhododendron Nobleanum, also several hardy spring flowers. Mr. Robertson Munro, Abercorn Nursery, exhibited a collection of hardy Primulas and Polyanthus, the most noticeable specimen being Primula Lindsayi, which received a Certificate from the Association last spring. Mr. Begg, Wardie Lodge, exhibited flowers of Anemone and Saxifraga. Mr. Hugh Mackenzie, Blackford Brae House, exhibited Polyanthus.

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**Dundee Horticultural Association** : *May* 6.—The ordinary monthly meeting of this Association was held in the Templar Hall, Dundee, the President, Mr. D. Doig, in the chair. Mr. J. D. Ker, Douglasfield, read an able and exhaustive paper on "The Culture of the Stage Auricula." After expressing his own enthusiasm in the culture of this plant Mr. Ker went on to say the Auricula stood pre-eminently a working man's flower. It required but little room to grow an extensive collection. As many as from 200 or 300 could be cultivated with success in a garden of some few square yards, the only requirements necessary being a good dry frame, and a little careful attention on the part of the cultivator. Unlike many other flowers the Auricula, provided it got a fair amount of light and air, would thrive and bloom in almost any atmosphere, not only in the fresh air of a rural district, but with almost equal beauty and vigour in the murky smoky air of a manufacturing town or mining district.

Mr. John Stewart, Arbroath, then read an interesting and instructive paper, illustrated by drawings, on "The Relations of Bees to Flowers." In the course of his remarks he said :—Orchard and garden fruit growers are almost entirely dependent on bees to fertilise the blossoms, so as to "set" the fruit. The stigmas of Strawberries, Blackberries, Apples, Pears, &c., come to maturity long before their anthers, hence bees are necessary to convey the pollen from the old to the young bloom. In Gooseberries the anthers are ripe long before the stigmas, so that self-fertilisation is impossible, and unless there are bees to transfer the pollen from the young to the old blooms the ovary always withers and drops off. The showy colours and sweet scent of the flowers attract the bees, and it is also worthy of note, that just at the time when the visits of the insect are to benefit the flower, the honey flows most freely. Thus bees get their supply of food, and in return for this treat they fertilise the flower.

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# Notices of Books.

**Henderson's Handbook of Plants.** By Peter Henderson. New York : Peter Henderson & Co., 35, Cortland Street.

This is a useful dictionary of plants, which we should be glad to see reproduced in a corrected form in this country. It contains the "Botanical name, derivation, and the Linnean and natural orders [the former quite unnecessary], of all the leading genera of ornamental or useful plants up to the present time, together with all important species and varieties, with brief instructions for propagation and culture." A glossary and index are also given. The value of such a work to gardeners needs no insistance. In its compilation some standard books, such as Gray's *Manual*, have been consulted, but most of the others are themselves mere compilations by persons having but little special knowledge, hence errors are perpetuated which might have been avoided by reference to original sources of information. So far as we see, the standard book on the genera of plants—that of Bentham and Hooker—has not been consulted; at any rate, it is not mentioned. Had it been referred to, the compiler would not have fallen into the error at p. 126 of stating the Magnolia to be confined to the United States, China, and Japan. Again, the account of Napoleona would probably not have appeared in its present state had more authentic and more recent authorities been consulted. Of the history of the Roman Hyacinth, of which we are told as many as 500,000 bulbs are used in New York alone, not a word is said, though it would have been more in place in a handbook of plants of this kind, than the mythical history of the ordinary Hyacinth, which occupies a dozen lines rather needlessly. Tacsonia Buchanani is by no means the same plant as Passiflora racemosa, as we are here told; and the last-named species is not, we believe, a native of Martinique. P. princeps, which is mentioned separately, is the same as P. racemosa. Picea is omitted, as are Libocedrus and the beautiful Cupressus macrocarpa.

We allude to these matters as they occur to us in turning over the pages, because the book is so serviceable to the class for whom it is intended that it is not unlikely that a reprint may be demanded, in which case it would be most desirable to submit the work to a thorough revision by some botanist conversant with the history of garden plants as detailed in the European horticultural Press, and familiar with modern botanical literature. Were such an overhauling practised so as to bring these portions of the volume upon an equality with the cultural details, a book would be produced which would be of first-rate value to gardeners. Of course the work is primarily intended for American gardeners; it will surprise their British compeers to hear that Myrsiphyllum asparagoides, "the well-known Smilax of the florists . . . is of greater importance than any flower if we except the Rose." In this country the plant is by no means held in such high esteem.

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**Tree Pruning** : *a Treatise on Pruning Forest and Ornamental Trees.* By A. Des Cars. Translated from the seventh French edition, by Chas. S. Sargent. Boston, U.S.A. : Williams & Co.

The system of Des Cars is "based on the fact that as wood is alone formed by descending elaborated sap, a wound made on a tree can only be re-covered with healthy new wood when its entire circumference is brought into direct communication with the leaves by means of the layer of young and growing cells formed between the wood and the bark. To make this connection it is necessary to prune in such a manner that no portion of an amputated or dead branch shall be left on the trunk. The cut should always be made close to and perfectly even with the outline of the trunk, without regard to the size of the wound thus made. This is the essential rule in all pruning, and on its observance the success of the operation depends." Without assenting to the first part of the above paragraph relating to the formation of wood, which is not quite in accordance with what is now known on this particular subject, we may commend as generally sound the practice here advocated. The object is to get the wound to heal over as rapidly as possible, and this is best effected by the process above detailed. The form of the head of the tree should, says our author, up to about the fortieth year, be lanceolate, the breadth increasing till in a very old tree it is nearly circular in outline. To effect this well-balanced condition the lower branches of the young tree should be shortened so as to allow of the growth of the leader. These recommendations are based on the assumption that it is required to grow the greatest number of full-grown trees, and to make them attain their greatest value in the shortest time without injury to the young trees beneath them. So treated, the trees do not interfere with the circulation of air and light necessary to the development of the undergrowth, and many serious accidents, caused by wind, snow, &c., may be avoided by keeping their heads symmetrical and upright. The necessity for commencing the operation of pruning at the top of the tree and of working downwards is commented on. The book indeed is full of valuable practical hints; how much injury to the trunk of the tree from the falling branch, tearing away with it the bark, might be avoided if, in removing a large arm, the operation were commenced by cutting a notch half through the branch on its lower side, and then making a similar cut on the upper side, but further from the trunk of the tree.

The great thing in pruning forest trees is to consider whether such an operation be needed at all; and if it be so, then to realise clearly the reason for the proposed operation, to estimate its probable effects, and to devise the best method of carrying it out. All this should be done before a knife is allowed to touch the tree, just as no surgeon, unless prevented by urgency, will commence an important operation without having previously thought out the necessity for it, anticipated its probable results, and planned the best method of accomplishing it.

No doubt long practice often begets a sort of intuition in these matters, but the intuition is merely the more rapid and almost unconscious performance of the same mental operations as regulate the course of the more deliberate experimenters. On the other hand, no amount of practice makes an unintelligent man with a billhook or a saw trustworthy as a tree pruner.

We have only to look at the numerous mismanaged woods and hedgerow scarecrows called trees to see the truth of this. Much of the pruning which becomes necessary in trees of large size would be obviated by more careful treatment of the young trees. The more closely the principles acted on in fruit tree nurseries are imitated with regard to forest trees the better, regard, of course, being paid to the difference of object in the two cases. It is, of course, absolutely impossible in a large plantation to give the care and attention a nurseryman would do in training a fruit tree or growing a specimen tree; still, the more nearly the forester can approach the procedures of the gardener the better, and the trouble and loss of time in the beginning would be amply compensated for in years to come, by the greater growth and sounder quality and enhanced value of the timber. Pruning in the case of a forest tree is at best a more or less necessary evil, that evil may be minimised by care and attention to the young trees. Still there will always be cases where judicious pruning is requisite, and, short of long experience and the tuition of an intelligent forester, we know of no better guide than the present, which we confidently recommend to the notice of our readers.

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**The Fields of Great Britain** : *a Text-Book of Agriculture, &c.* By Hugh Clements. Crosby Lockwood & Co.

This is a little text-book adapted for students of the agricultural classes connnected with the Science and Art Department, and professes to deal with those elementary principles which lie at the foundation of all cultivation. We think the author would have accomplished his professed end better by treating on the principles at greater length and by omitting practical details. As it is, both departments are treated meagrely.

One sentence will explain what we mean. "There are numerous insects attacking every species of plant. Coal tar is used to destroy the wireworm, ammoniacal liquor and tobacco vapour for the aphis or louse, sulphur vapour for red-spider." We cannot admit that this is a sufficiently detailed statement, either as to the nature of insect ravages or the manner of combating them. It may be objected that this is an isolated passage detached from its context, and so indeed it is, but not only is the whole section on the diseases of crops treated in a similarly meagre manner, but the whole book is, so far as we have seen, open to the same criticism.

In the introduction, supplied by Mr. Kains Jackson, the enforced discontinuance of Wheat culture over large districts is alluded to, and the substitutes discussed. Among these latter are the cultivation of Oats, roots, grass, fruit and timber, but all these require for their successful cultivation quite as much knowledge of elementary principles as Wheat-growing does, besides (which is not mentioned in this volume) a knowledge of how best to bear the burdens of rent, taxes, fiscal regulations, transport of goods to market, when a market is found, and so forth. Fruit culture, for instance, is as much at the mercy of the season as Wheat culture, and equally exposed to foreign competition, while the marketing the produce is, in the majority of cases, a less satisfatory affair than in the case of corn. The same may be said of vegetables. The growth of timber may pay the landlord moderately well who has a stock to start with, but not many tenant-farmers could afford to wait while the timber or even the coppice grows. So far as we see at present the great hopes of the farmer lie in the direction of sciences which may teach him how to cultivate his land to the best advantage, how to utilise waste products, and how to develope new ones. Rule of thumb culture is excellent under favourable conditions, but when circumstances change then there is need for operations based upon a knowledge of general principles, so ingrained that their possessor may know how to apply them to his needs. The present book has the merit of drawing attention to these points.

## Variorum.

Fruit Orchards in Canada. — A correspondent in *The Colonies and India* gives an idea of a Canadian orchard, from which we abstract the following. The king of Canadian fruits, we are reminded, is the Apple; it may, in fact, be called the national fruit. There are several hundred varieties extensively cultivated in Canada, for which the climate and soil of Ontario seem specially adapted. The Northern Spy, Spitzbergen, Golden Russet, Greenings, Honey Sweet, Snow Apple, Newtown Pippin, Red Astrakan, and a host of other favourite varieties, superb in size and quality, are cultivated by the farmer in great abundance. The trees often continue bearing for five or six consecutive years without any perceptible exhaustion of quality or quantity. A good deal of attention has been given of late years to the cultivation of the better varieties of Apples. Owing to the rapidly developing export trade with England new orchards are being planted in all directions, and it is common to see two orchards, one of the old fruit, as it is called, small and inferior in flavour, and the other a young orchard rapidly growing up. The old fruit is not, however, to be despised, being useful as dried Apples, or for making cider and apple-butter. Of the surpassing excellence of Canadian Apples the English public have had every opportunity of judging during the last few years, and so advantageous is their cultivation that it is said there is no known variety of Apple that cannot be brought to the highest pitch of perfection in any part of Ontario. Pears have not in past years received so much attention as Apples, though they have of late begun to be extensively cultivated, and some magnificent specimens have been exhibited at the colonial shows. The soil and climate of Ontario are apparently equally well suited for Pears, and the province will no doubt soon become a large Pear producer, although the perishable nature of this fruit will in all probability prevent it from becoming an article of foreign export. The Peach ranks next in importance to the Pear. It is not largely cultivated beyond what may be called the Lake Shore region—namely, in the countries skirting the western part of Lakes Ontario and Erie, and in the Niagara district. In the midland and northern counties late frosts are often fatal to the tender blossom, although of late years Peach tree planting has been entered into very extensively with encouraging results even in these districts. Peach trees in Canada are grown as standards, instead of being trained against a wall as in England, and if the same care was bestowed on them as in this country there is hardly a district in Ontario where they could not be cultivated with excellent results. A very large number of varieties of the Peach are grown in Canada, from the large luscious Yellow Orange down to the small sweet juicy common Peach, some ripening as early as the middle of August, and other varieties coming in all through September, and partly through October, till the frost comes. Cherries are the earliest fruits to ripen, coming into season in May. The commonest variety is a sharp, bitter-sweet, nearly black Cherry, which is an excellent preserving fruit. Immense quantities of these are grown, the trees generally bearing every year till forty or fifty years old. The large red and white English variety is also largely grown, and does well. This fruit can be cultivated with profit in any part of the Dominion.

A New Vegetable Pest in Australia.—The *Colonies and India* states that farmers have cause for grumbling in Australia as well as in England. In England the main causes are successive wet seasons, and the fact that other countries can place their produce on the English market at a lower figure than the English producer can accept and yet have a profit. In Australia farmers complain that droughts are too common, and the means of conveyance are not sufficient to take their produce to market. In addition to these drawbacks they are plagued with locusts, marsupials, and rabbits, and with Bathurst Burr, Thistle, Prickly Pear, and Sweet Brier. To this list the Lantana appears likely to have to be added. The Lantana is a shrub resembling a gigantic Raspberry bush, bearing seeds which are much relished by birds, which scatter them far and wide, and already the neighbourhood of Sydney possesses a considerable growth of the unwelcome stranger. It appears to have been imported from France as a garden flower, and, if it could be confined to the garden, it would be an ornament instead of a nuisance. But in New Caledonia it has already covered valleys and mountain slopes with a luxuriant growth of almost impenetrable scrub, rendering a large extent of country utterly valueless until it has been rooted up and burnt. So many runs have been seriously prejudiced in value by neglect in coping with Burr and Thistle, and latterly with Prickly Pear, that it is to be hoped that this new vegetable pest will not be allowed to make headway.

## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, May 18, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| May | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 12 | 30.17 | + 0.44 | 68.0 | 38.5 | 29.5 | 50.8 | − 0.6 | 42.4 | 74 | N.E. | 0.00 |
| 13 | 29.97 | + 0.25 | 71.3 | 43.0 | 28.3 | 55.9 | + 4.8 | 42.7 | 62 | S.W. | 0.00 |
| 14 | 29.81 | + 0.06 | 66.7 | 44.1 | 22.6 | 54.9 | + 3.6 | 46.1 | 72 | S.W. | 0.00 |
| 15 | 29.29 | − 0.45 | 62.5 | 48.5 | 14.0 | 53.7 | + 2.0 | 43.0 | 67 | N.S.W. | 0.00 |
| 16 | 29.53 | − 0.21 | 56.5 | 46.0 | 10.5 | 49.6 | − 2.7 | 38.0 | 64 | W.S.W. | 0.00 |
| 17 | 29.68 | − 0.05 | 59.0 | 40.0 | 19.0 | 49.7 | − 3.1 | 44.1 | 83 | W.S.W. | 0.07 |
| 18 | 29.39 | − 0.35 | 64.1 | 49.5 | 14.6 | 53.7 | + 0.5 | 50.0 | 86 | S.W. | 0.24 |
| Mean | 29.69 | − 0.04 | 64.0 | 44.2 | 19.8 | 52.6 | + 0.6 | 43.8 | 73 | S.W. | 0.31 |

May 12.—A fine day, frequently overcast. Fine clear night.
— 13.—A very fine day and night.
— 14.—A fine but dull day; occasionally gleams of sunshine.
— 15.—The sun's place was at times visible; strong wind. A gale at night.
— 16.—A few drops of rain in the morning; a wild, windy day.
— 17.—A showery, cold, and uncomfortable day.
— 18.—A dull day; showery. Dark clouds at night.

London: *Atmospheric Pressure.*—During the week ending Saturday, May 14, the readings of the barometer at the level of the sea in the neighbourhood of London increased from 30.62 inches at the beginning of the week to 30.65 inches (the highest in the week) by midnight on the 8th; decreased to 30.56 inches by the afternoon of the 9th; increased to 30.67 inches by midnight on the 10th; and at the end of the week was 29.96 inches (the lowest in the week). The mean reading at the level of the sea was 30.40 inches, being 0.33 inch higher than that of last week, and 0.48 inch above the average of the week.

*Temperature.*—The highest temperatures were 71°.3 on the 13th, 68° on the 8th and 12th, and 66°.7 on the 14th. The lowest of the seven high day temperatures was 54°, on the 10th. The mean of the seven high day temperatures was 64°. The lowest temperatures were 35° on the 11th, 38°.5 on the 12th, and 39° on the 10th. The highest of the seven low night temperatures was 46°, on the 8th. The mean of the seven low night temperatures was 40°.9. The greatest range in one day was 29°.5, on the 12th; the next in order being 28°.3 on the 13th, and 24°.6 on the 11th. The least ranges were 15° on the 10th, and 19°.8 on the 9th. The mean of the seven daily ranges was 23°.1.

The mean daily temperatures were 54°.7 on the 8th, 49° on the 9th, 44°.8 on the 10th, 45°.9 on the 11th 50°.8 on the 12th, 55°.9 on the 13th, and 54°.9 on the 14th; on the 8th, 13th, and 14th they were respectively 3°.1, 4°.8, and 3°.6 above their averages; on the 9th, 10th, 11th, and 12th they were respectively 2°.5, 7°.5, 5°.3, and 0°.6 below their averages.

The mean temperature for the week was 50°.9, being 0°.9 higher than that of last week, and 0°.6 below the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the full rays of the sun, were 144°.6 on the 8th, 136° on the 12th, and 131° on the 9th. The lowest reading was 81°, on the 10th. The mean of the seven daily readings was 121°.3.

The lowest readings of a thermometer placed on grass, with its bulb exposed to the sky, were 30° on the 11th and 35°.5 on the 12th. The highest reading was 40°, on the 8th. The mean of the seven readings was 35°.

*Rain.*—No rain fell during the week.

England: *Temperature.*—During the week ending Saturday, May 14, the highest temperatures were—Sunderland, 81°; Nottingham, 79.°9; and Cambridge, 75°.4. The lowest of the high temperatures were—Brighton, 61°.7; and Liverpool, 61°.8. The mean from all stations was 70°.9.

The lowest temperatures were—Nottingham, 27°.1; Cambridge, 27°.6; Hull, 29°; and Wrottesley, 29°.5. The highest of the low temperatures was Truro, 42°. The mean from all stations was 33°.3.

The range of temperature in the week was greatest at Nottingham, 52°.8, the next in order being Cambridge, 47°.8, and Sunderland, 45°. The least ranges were — Liverpool, 23°.6; Truro, 25°; Brighton, 26°.9; and Plymouth, 27°.3. The mean from all stations was 37°.6.

The mean of the seven high day temperatures was highest at Nottingham, 67°.5, the next in order being Sunderland, 66°.8, Cambridge, 66°.4, and Truro, 65°; the means were least at Liverpool, 56°.9, and Brighton, 57°. The mean from all stations was 62°.7.

The mean of the seven low night temperatures was lowest at Nottingham, 37°.1, the next in order being Wrottesley, 37°.4, Cambridge, 37°.5, and Hull, 38°.9; the means were highest at Liverpool, 44°.2, and Sunderland, 44°. The mean from all stations was 40°.4.

The mean daily range was greatest at Nottingham, 30°.4, the next in order being Cambridge, 28°.9, and Wrottesley, 26°.3. The least daily ranges were—Liverpool, 12°.7; Plymouth, 17°; and Brighton, 17°.4. The mean from all stations was 22°.3.

The mean temperature for the week was highest at Sunderland, 53°.7, the next in order being Leeds, 51°.2, and Truro and Blackheath, 50°.9. The mean was least at Brighton, 46°.6. The mean from all stations was 49°.8.

*Rain.*—Some rain fell at a few stations, the greatest quantities being Liverpool, 0.30 inch; and Hull, 0.24 inch. The mean from all stations was 0.05 inch.

Scotland: *Temperature.*—The highest temperatures were—Aberdeen, 70°.7; and Dundee, 69°. The lowest of the high temperatures was Greenock, 63°. The general mean was 66°.2. The lowest temperatures were — Aberdeen, 31°.6; Dundee, 33°. The highest of the low temperatures was Leith, 37°.8. The general mean was 34°.9.

The mean temperature for the week was highest at Edinburgh, 51°, the next in order being Glasgow and Paisley, 50°.9. The mean temperature was least at Aberdeen, 50°.2. The general mean was 50°.6.

*Rain.*—The largest falls were Greenock, 0.36 inch; and Edinburgh, 0.15 inch. At Glasgow, Dundee, and Aberdeen no rain fell. The general mean was 0.10 inch.

JAMES GLAISHER, F.R.S.

## Answers to Correspondents.

Amaryllis: *G. W.* The seedling between reticulata and Defiance is a fine thing amongst the delicately-tinted varieties, of fine form and large size, partaking much of the character of reticulata.

Anthurium Scherzerianum: *D. Walker.* Your seedling is a fine one, quite equal to A. Scherzerianum Wardii sent out by Messrs. Veitch. The spathe measures 5⅝ inches in length, and 3½ inches broad, and is of a fine vermilion-crimson colour.

Calceolaria: *J. B.* The flowers were collapsed. They appear to be a very good strain, but not superior to others in cultivation.

Cherries: *G.* We cannot discover any cause for what you call the blight on your young Cherries; unless it be that the trees are suffering from drought or from overcropping.

Dendrometer: *R. J. H.* So far as we know they have not yet been introduced into this country.

Erratum.—At p. 638, in the note on Wallflowers, for "aviculturists," read "apiculturists."

Gumming in Peaches: *E. F. C.* The fruit which is gumming has the rind damaged and disorganised: how, we cannot say. Could it have been by bruising in any way, or by scalding? We should trust to the trees becoming established in health, as they are now going on satisfactorily. Take care the wood is well ripened for another year.

Insects: *T. H.* Otiorhynchus sulcatus. Spread a sheet under the trees at night when the weevils are feeding, give the Vines or other plants a smart tap or two, and you will capture them easily, as when disturbed they drop and sham death.—*E. H. B.* Trap the weevils attacking your Roses in the manner noted above.

Names of Plants: *C. M. S.* The Narcissus lobularis grandiplenus of Barr & Sugden's Catalogue.—*R. W. P.* Saxifraga (Megasea) cordifolia. — *Connon & Reid.* Narcissus poeticus.—*A. B. P.* 1, Cystopteris bulbifera, hardy; 2, Onoclea sensibilis; 3, one of the forms of Athyrium Filix-fœmina, too young for determination; 4, Asplenium Trichomanes subæquale.—*A. C. W.* Both are forms of Adiantum concinnum—No. 1 diminutive, No. 2 robust. The latter is probably the one called A. concinnum latum. — *T. Smith.* The name Deutzia parviflora is quite correct. —*Lymington.* 1, Piptanthus nepalensis; 2, Euphorbia epithymoides; 3, Staphylea pinnata.—*A. P.* Callis-

temon rigidus. — *J. L.* Arum Dracunculus. — *Dr. P. H. S.* Lilium Martagon.—*R. S. Spencer.* Brunfelsia americana (latifolia), Petræa volubilis.—*J. Sutton.* The Fern is Asplenium bulbiferum (the Cratægus), species not recognised; Stapelia bufonia.—*H. X. C.* 1, Lastrea dilatata; 2, Ægopodium Podagraria; 3, Habenaria chloraothe; 4, Luzula campestris; 5, Asplenium Ruta-muraria; 6, Carex glauca. *R. M.* 1, Dendrobium Devonianum; 2, Dendrobium Moschatum; 3, too imperfect; 4, Epidendrum cochleatum. — *Young Gardener.* 1, Lithospermum fruticosum; 2, Phlox nivalis. — *K. S.* 1, Nephrolepis, very young, probably N. tuberosa; 2, Cheilanthes argentea; 3, Scolopendrium vulgare ramosum; 4, Athyrium Filix-fœmina crispum; 5, Selaginella Martensii; 6, S. apus.—*R. S.* 1, Gymnogramma chrysophylla; 2, G. Calomelanos; 3, Selaginella Kraussiana (denticulata of gardens); 4, Lastrea tenericaulis; 5, Adiantum, not fertile; 6, Statice brassicæfolia; 7, Adiantum pentadactylon; 8, Asplenium flaccidum, var.; 9, Eurya latifolia variegata.—*W. D.* Yes, Ornithogalum nutans. — *Y.* 1, Staphylea pinnata; 2, Lonicera Xylosteum; 3, Prunus Padus; 4, Philadelphus, no flowers; 5, Euonymus europæus; 6, Lonicera; 7, Pyrus Aria.—*A. H.* 1, cannot name without flowers; 2, Pteris tremula; 3, Galium saxatile; 4, Elæagnus pungens variegata; 5, Rhododendron, next week; 6, Rhapis flabelliformis.

PRIMROSES AND POLYANTHUSES: *W. Caudwell.* A very interesting series of flowers. The blue Primrose is particularly good, but the other unnamed flowers, plain and hose-in-hose, are only good border plants. The gold-laced Polyanthus, King Alfred, would not pass muster, the centre being a much darker yellow than the lacing. Of the others we greatly prefer Polyanthus Golden Queen of England, a well-formed deep golden-yellow with orange centre; and Polyanthus Golden King, a larger paler flower, with an orange line at the base of each segment crossing the golden centre and forming a yellow star. The others are of a more ordinary character, good as border plants, but nothing beyond. Even those we have mentioned above may too closely resemble others in cultivation, as we have no plants near us for comparison.

TRANSPLANTING OLD VINES: *J. A.* The best time will be about the middle of September, before the leaves fall.

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## CATALOGUES RECEIVED.

JAMES DICKSON & SONS, Newton Nurseries, Chester —Bedding and Border Plants.

J. LINDEN, Ghent, Belgium—New, Rare, and Beautiful Plants.

V. H. HALLOCK, SON & THORPE, Queens, New York, U.S.A.—North American Plants, Bulbs, &c.

COMMUNICATIONS RECEIVED.—J. L.—T. S.—J. S.—J. McK. —A. W. E.—J. D.—C. and L.—W. R.—J. C.—J. R.—R. W.—F. M.—D. W.—J. P.—T. B.—H. W.—J. D. H.—W. D.—The Secretary, Society of Arts.—Rchb. f.—H. J. E. —J. G. G.—C. K.—R. R.—F. F.—J. T. B.—Hawkins and Bennett.—J. F. F.—F. Fuller.

# Markets.

*COVENT GARDEN, May* 19.

A fair business has been done this week, and goods have been easily cleared, prices giving way somewhat. Some good samples of Grapes have reached us from the Channel Islands, arriving in good condition. *James Webber, Wholesale Apple Market.*

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 sprays .. | 0 9– 1 6 |
| Anemone, 12 bunches | 2 0– 4 0 | — 12 bunches | 6 0– 9 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Azalea, 12 sprays .. | 0 6– 1 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Bouvardias, per bun. | 1 0– 2 0 | Narcissus, in variety, 12 bunches | 6 0– 9 0 |
| Calceolaria, 12 bun.. | 0 0–12 0 | Pelargoniums, 12 sprays .. | 0 9– 1 0 |
| Camellias, per dozen | 1 0– 4 0 | — zonal, 12 sprays | 0 4– 0 9 |
| Carnations, 12 blms. | 1 0– 2 0 | Primula, double, per bunch .. | 0 9– 1 6 |
| Daffodils, various, 12 bunches .. | 2 0– 4 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Daisies, 12 bunches | 2 0– 6 0 | Stephanotis, 12 spr... | 3 0– 4 0 |
| Eucharis, per doz. .. | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Forget-me-not, 12 bunches .. | 3 0– 6 0 | Tuberoses, per dozen | 2 0– 3 0 |
| Gardenias, 12 blms.. | 1 6– 6 0 | Tulips, 12 bunches.. | 3 0– 6 0 |
| Heliotropes, 12 sp. .. | 0 6– 1 0 | Wallflowers, 12 bun. | 3 0– 4 0 |
| Lapageria, white, 12 blooms .. | 4 0– 6 0 | | |
| — red, 12 blooms.. | 1 0– 3 0 | | |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Genista, per doz. .. | 9 0–18 0 |
| Begonias, per doz. .. | 6 0–12 0 | Lilium longifl., doz. | 24 0–42 0 |
| Calceolaria, per doz. | 9 0–12 0 | Lily of the Valley, per pot .. | 1 6– 2 0 |
| Cineraria, per doz... | 6 0– 9 0 | Lobelia, per dozen.. | 5 0– 6 0 |
| Cyperus, per dozen | 6 0–12 0 | Marguerite, white, per dozen.. | 18 0–24 0 |
| Dracæna terminalis | 30 0–60 0 | — Yellow, per doz. | 12 0–30 0 |
| — viridis, per doz... | 12 0–24 0 | Mignonette, per doz. | 5 0– 8 0 |
| Erica, in variety, doz. | 18 0–30 0 | Myrtles, per doz. .. | 6 0–12 0 |
| Euonymus, various, per dozen .. | 6 0–18 0 | Palms in var., each | 2 6–21 0 |
| Evergreens, in var., per dozen .. | 6 0–24 0 | Pelargoniums, doz. | 18 0–30 0 |
| Ferns, in variety, per dozen .. | 4 0–18 0 | — tricolor, per doz. | 3 0–12 0 |
| Ficus elasticus, each | 1 6– 7 6 | — scarlet, per doz. | 4 0– 9 0 |
| Foliage Plants, various, each .. | 2 0–10 6 | Roses, various, doz. | 12 0–30 0 |
| | | Spiræa japonica, doz. | 9 0–18 0 |
| | | Stocks, per doz. .. | 4 0– 6 0 |

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Figs, per dozen .. | 9 0–12 0 | Peaches, per dozen.. | 15 0–21 0 |
| Grapes, per lb. .. | 3 0– 8 0 | Pears, per dozen .. | 4 0–12 0 |
| Lemons, per 100 .. | 4 0– 6 0 | Pine-apples, per lb. | 1 0– 2 0 |
| Melons, each .. | 7 0– 8 0 | Strawberries, per lb. | 4 0– 8 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. .. | 3 0– 6 0 | Garlic, per lb. .. | 1 0– .. |
| Asparag., Fr., bndl. | 2 0–15 0 | Herbs, per bunch .. | 0 2– 0 4 |
| — English, bund.. | 6 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. .. | 0 6– 1 6 |
| Beans, French, p. lb. | 1 0– .. | — Cos, each .. | 0 4– 0 6 |
| — Broad, per lb. .. | 1 0– .. | Mint, green, bunch.. | 0 4– 0 6 |
| Beet, per doz. .. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. .. | 1 0– 2 0 | Onions, per bushel.. | 11 0– .. |
| Carrots, per bunch.. | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 1 6– .. | Parsley, per bunch.. | 0 4– .. |
| Cauliflowers, English, each .. | 0 3– 0 6 | Radishes, per bun... | 0 2– 0 6 |
| Celery, per bundle .. | 1 6– 2 0 | Rhubarb, per bund. | 0 4– 0 6 |
| Cucumbers, each .. | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. .. | 2 0– 3 0 | Spinach, per bushel | 4 0– .. |
| | | Tomatos, per lb. .. | 0 9– 1 0 |

POTATOS:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 4*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

## SEEDS.

LONDON: *May* 18.—The recent welcome rains have, as was anticipated, caused a revival and final spurt in the demand for farm seeds. The present season closes with stocks all round unusually light. Timothy is dearer. For sowing Mustard and Rape seed there is more inquiry. Canary seed meets with increased attention. In blue Peas an advance is noted of several shillings per quarter. Feeding Linseed keeps steady. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CORN.

At Mark Lane on Monday English Wheat was saleable only in quite retail lots except at easier prices, and rates for foreign were, in some cases, rather lower on the week. Flour was drooping in value, and where sales were effected rates were easier. Barley was rather dearer on the week for all descriptions. Beans and Peas were without alteration. Maize continued very dull. Oats were a quiet sale, and 3*d.* to 6*d.* easier on the week.—On Wednesday the tone was not worse on the English Wheat stands; foreign on the spot met hardly any inquiry, but rather stiffer prices were asked for floating cargoes in all positions. Flour was heavy, and very dull. Barley was firm; Beans and Peas quiet and unchanged; Oats dull and rather drooping; whilst Maize was steady on the spot, and firm to rather dearer floating.—Average prices of corn for the week ending May 14:—Wheat, 44*s.* 10*d.*; Barley, 30*s.* 9*d.*; Oats, 22*s.* 5*d.* For the corresponding period last year:—Wheat, 44*s.* 9*d.*; Barley, 32*s.* 2*d.*; Oats, 24*s.* 11*d.*

## CATTLE.

At the Metropolitan Market on Monday the previous Thursday's improvement was not maintained in any department. The beast market cleared very slowly at about the rates of Monday se'nnight. Sheep sold much in the same way, and at easier prices in most instances. Lambs declined quite 6*d.* per stone, and calves were lower. Quotations:—Beasts, 3*s.* 8*d.* to 4*s.* 8*d.*, and 4*s.* 10*d.* to 5*s.*; calves, 5*s.* to 6*s.*, and 6*s.* to 6*s.* 4*d.*; sheep, 5*s.* to 5*s.* 6*d.*, and 5*s.* 6*d.* to 5*s.* 8*d.*; lambs, 7*s.* 8*d.* to 8*s.* 6*d.* — Trade on Thursday was very quiet. Scarcely anything was doing in beasts, which were about the same as on Monday. Sheep were dull and weak, and the supply of lambs was fully equal to the demand. Calves were inactive.

## HAY.

Tuesday's Whitechapel report states that supplies were large, and trade dull, with prices in many cases easier although not shown in the extremes of quotations. Prime Clover, 100*s.* to 124*s.*; inferior, 60*s.* to 70*s.*; prime meadow hay, 80*s.* to 112*s.*; inferior, 30*s.* to 70*s.*; straw, 30*s.* to 45*s.* per load.—On Thursday a rather short supply was on offer. Trade was steady, at firm prices, as follows:—Prime Clover, 100*s.* to 124*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 112*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 45*s.* per load. — Cumberland Market quotations:—Superior meadow hay, 108*s.* to 115*s.*; inferior, 70*s.* to 90*s.*; superior Clover, 115*s.* to 126*s.*; inferior, 90*s.* to 100*s.*; and straw, 42*s.* to 48*s.* per load.

## POTATOS.

The reports from the Borough and Spitalfields markets state that supplies are quite adequate to the demand, which is slack. Picked samples keep firm in price, but inferior qualities sell irregularly and in buyers' favour.—The imports into London last week were as follows:—341 bags Bremen, 8287 bags Hamburg, 10,699 bags Antwerp, 1400 bags Brussels, 965 bags Boulogne, 85 cases Malta.

**Government Stock.**—On Monday Consols closed at 102⅛ to 102¼ for delivery, and 102⅜ to 102½ for the account. Tuesday's figures were, for delivery, 102¼ to 102⅜, and 102½ to 102⅝ for the account. On Wednesday the closing prices were 102½ to 102⅝ for delivery, and 102 11/16 to 102 13/16 for the account. The final quotations of Thursday were, 102½ to 102⅝ for delivery, and 102⅝ to 102¾ for the account.


F. C. HILLS & CO.,
DEPTFORD and EAST GREENWICH, LONDON, S.E.,
HAVE APPOINTED
MESSRS. HOOPER AND CO.,
COVENT GARDEN, LONDON, W.C.,
the SOLE AGENTS in Great Britain and Ireland for the Sale of their very successful Special
CONCENTRATED POTATO MANURE.

TOBACCO CLOTH and PAPER, Best and Cheapest.—PAPER, 7*d.* per pound; 28 lb. 15*s.* CLOTH, 8*d.* per pound, 28 lb. 18*s.* Best ROLL, 9*d.* per pound, 28 lb. 18*s.* J. DENYN, Manufacturer, 73, Rendlesham Road, Clapton, E.

ARCHANGEL and ST. PETERSBURG MATS, RAFFIA, SEED BAGS and SACKS, NETTING and SHADING, &c. Prices on application.

MARQUEES and TENTS, SECOND-HAND GOVERNMENT TENTS, 45 feet round, complete, 35*s.*, suitable for the Garden, Cricket Clubs, &c. W. PETERS, 44, Tenter Street South, Goodman's Fields, E.

RAFFIA FIBRE. — RUSSIA MATS. — We beg to offer to the Trade Raffia direct from Madagascar, at wholesale price. We can offer Russia Mats to the Trade at very low prices this season.
MARENDAZ AND FISHER,
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Manufacturers of ROPES, TWINES, SACKS, TARPAULINGS, HORSE-CLOTHS, COCOA MATS and MATTINGS, SADDLERS and HARNESS MAKERS, ARCHANGEL and PETERSBURG MATS, RAFFIA FIBRE, NETTING, &c. COCOA-NUT FIBRE REFUSE, single sacks, 1*s.* each; 15 sacks, 12*s.*; 30 sacks, 20*s.*; truck-load, delivered to any station in London, 25*s.* Try our HEMP SASH-LINE, made especially for Greenhouses and Heavy Sashes—the best in the Trade.
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J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C

BELGIAN GLASS for GREENHOUSES, &c.,
Can be obtained in all sizes and qualities of
BETHAM & SON,
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B. & Son have always a large stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. and 21-oz.; and also large sizes in all qualities for cutting-up purposes, in 200-ft. and 300-ft. cases.

HORTICULTURAL WINDOW GLASS,
15-oz. and 21-oz., in Boxes containing 200 feet.
Carriage Paid to any Railway Station in England.
*Price Lists on application.*
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Established 150 years.
WINDOW GLASS, SHEET LEAD, PAINTS, &c.
THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

| | Inches. Inches. | |
|---|---|---|
| 15-oz., | 6 × 4 to 7½ × 5½, 9*s.*, 10*s.*, 11*s.*, 12*s.* | Per 100 ft. Box |
| | 8 × 6 to 10 × 8, 9*s.* 6*d.*, 10*s.* 6*d.*, 11*s.* 6*d.*, 12*s.* 6*d.* | |
| | 10½ × 8½ to 14 × 10, 10*s.*, 12*s.*, 13*s.*, 14*s.* | |
| | 15 × 10 to 18 × 12, 11*s.*, 13*s.*, 14*s.*, 15*s.* | |
| | 20 × 12 to 24 × 16, 11*s.* 6*d.*, 13*s.* 6*d.*, 14*s.* 6*d.*, 15*s.* 6*d.* | |
| | 20 × 17 to 24 × 18, 12*s.*, 14*s.*, 15*s.*, 16*s.* | |
| | Inches. Inches. | |
| 21-oz., Orchard House, | 20 × 12, 20 × 15, 20 × 13, 20 × 16, 20 × 14, 20 × 17, | 16*s.*, 17*s.* 3*d.*, 18*s.* 3*d.*, 20*s.* |

15-oz., for Cutting up, 34*s.*, 41*s.*, 42*s.* 6*d.*, 53*s.* per 300 feet case.
21-oz., for Cutting up, 34*s.*, 41*s.*, 50*s.*, 66*s.* per 200 feet case.
LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.
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TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
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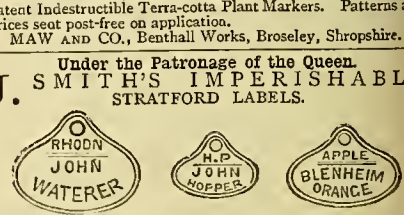
J. SMITH'S IMPERISHABLE STRATFORD LABELS.


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The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

# "ARCHIMEDEAN" AMERICAN LAWN MOWERS,

**Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.**

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

AWARDED
HIGHEST PRIZE AT
PARIS EXHIBITION, 1878;
and the Jury in their Report say:—
"The 'Archimedean' did the best work of any Lawn Mower exhibited."
Also
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**PRICES, without Grass Box.**

| | | | | |
|---|---|---|---|---|
| 8-in. | for Small Lawns and Edgings | £2 | 2 | 0 |
| 10-in. | ,, use by a Lady or a Boy | 3 | 3 | 0 |
| 12-in. | ,, ,, ,, ,, | 4 | 4 | 0 |
| 14-in. | ,, ,, Man | 5 | 5 | 0 |
| 16-in. | ,, ,, ,, on Level Lawns | 6 | 6 | 0 |

Grass Boxes extra if required.
8-in., 5*s.*; 10 and 12-in., 7*s.* 6*d.*; 14 and 16-in., 10*s.*

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|---|---|---|---|---|
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| 10-in. | ,, use by a Lady or a Boy | 3 | 10 | 0 |
| 12-in. | ,, ,, Lad | 4 | 10 | 0 |
| 14-in. | ,, ,, Man | 5 | 10 | 0 |
| 16-in. | ,, ,, Man and Boy | 6 | 10 | 0 |
| 18-in. | ,, ,, Man and Boy | 7 | 10 | 0 |
| 20-in. | ,, ,, Two Men | 8 | 0 | 0 |
| 22-in. | ,, ,, Donkey | 8 | 10 | 0 |

Boots for Donkey, 20*s.* per set.

**R., H. & J. also manufacture "Reversible" Lawn Mowers for Small Gardens and Amateurs, and "Horse-Power" Lawn Mowers for Large Lawns, Cricket Grounds, &c.**

*Machines sent on Month's Trial, Carriage Paid. Illustrated Price Lists free by Post.*

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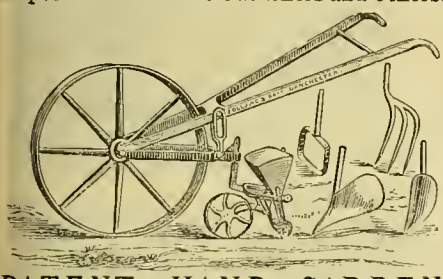

## PATENT HAND GARDEN PLOUGH and CULTIVATOR.

This capital little Implement is now coming into general use. It consists of one light but strong Steel Shovel for marking out rows to plant, or for loosening up the ground after the plants are up. Also a small Steel Plough to be used for hilling-up the rows when desired, and a Cutter for exterminating weeds, and Rake for pulverising the ground. These pieces are made separate, and attached or detached in a moment by means of a simple fastening. Its construction enables the user to push it readily and easily through the ground, stirring the earth, if required, to a depth of 6 inches. It is exceedingly light, strong and tasty, and fully adapted to the purpose designed.

*Price complete, with Shovel, Plough, Weed-cutter and Rake,* £2 2*s.* *If with Seed Drill attachment, extra,* 13*s.*; *if with Pony attachment, extra,* 10*s.* 6*d.*—Illustrated CATALOGUE, containing numerous Testimonials, post-free on application.

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WITH LATEST IMPROVEMENTS.
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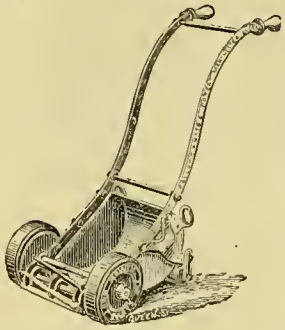
# LAWN MOWERS



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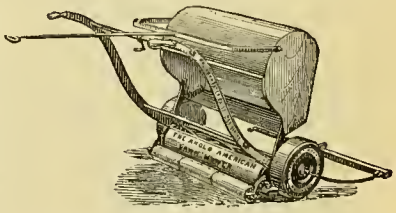

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## THE "ACMÉ" LABELS
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IMPERISHABLE.
Specimens and Price List on application.
SOLE MANUFACTURER,
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GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest Prices of
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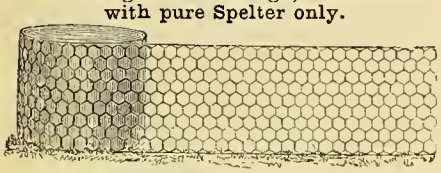
RALPH WALLER AND CO. (Limited), 45, Dale Street, Manchester, Manufacturers of all kinds of GARDEN NETTINGS, for protecting Fruit Trees from frost in the early spring; also Hothouse SHADINGS for Orchids, used and recommended by the largest growers in the Kingdom, of various thicknesses, superior to any other yet discovered for lightness, strength, and durability, standing as they do all weathers. TIFFANY of various kinds always on hand. NETTINGS and SHADINGS, in pieces 30 yards long by 1½ yard wide. TIFFANY, in pieces 20 yards long, 38 inches wide; also TIFFANY MINERALISED.
NETTING—No. 1, 4*d.* per square yard; No. 2, 3½*d.*; No. 3, 4½*d.*
HOTHOUSE SHADINGS.
FINE NETTING, 4½*d.* per square yard; No. 6A, 7*d.*; No. 6, 8*d.*; No. 6 Improved, 9*d.*
TIFFANY, No. 1, 3*s.* 6*d.* per piece; No. 2, 4*s.* 6*d.*; Mineralised, 6*d.* per piece extra.
Samples on application.

## GALVANISED WIRE NETTING,
**With Registered Selvage, Galvanised with pure Spelter only.**



*Prices per Lineal Yard, 24 in. high:—*

| Mesh. | Mostly used for | Gauge. | | Gauge. | | Gauge. | |
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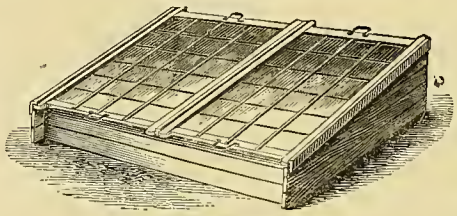

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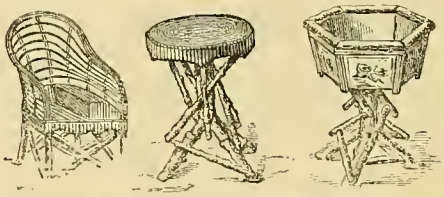

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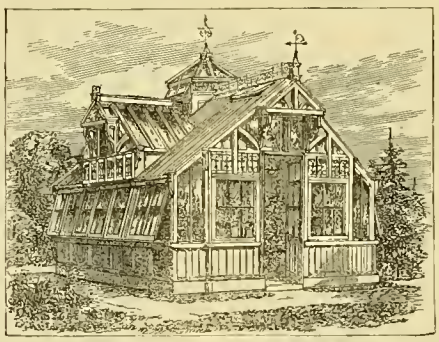

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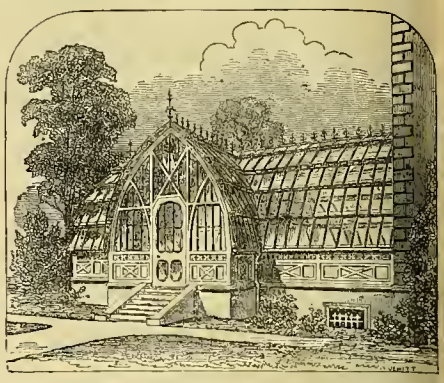

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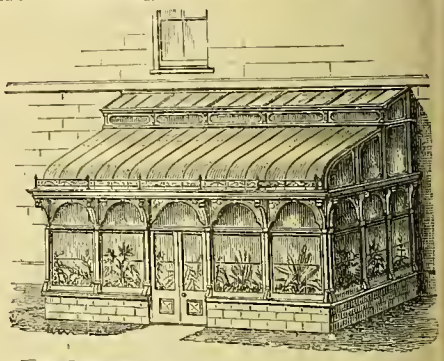

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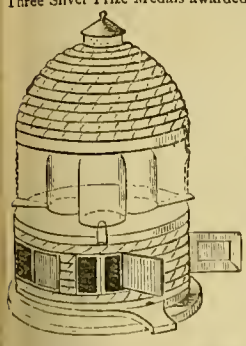

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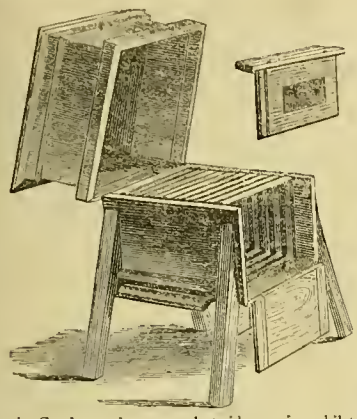

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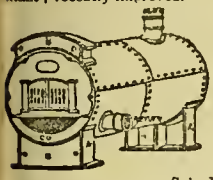

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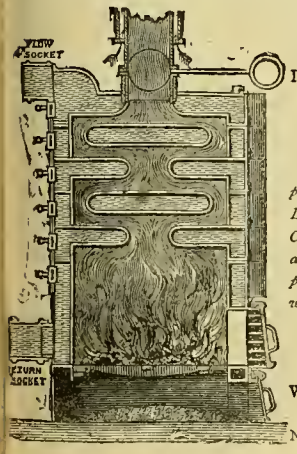


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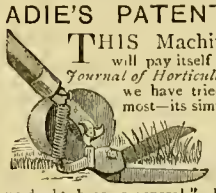

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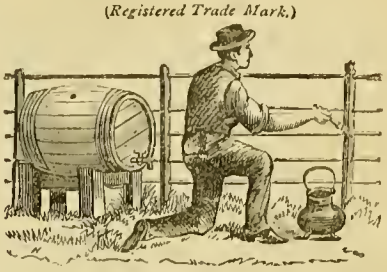

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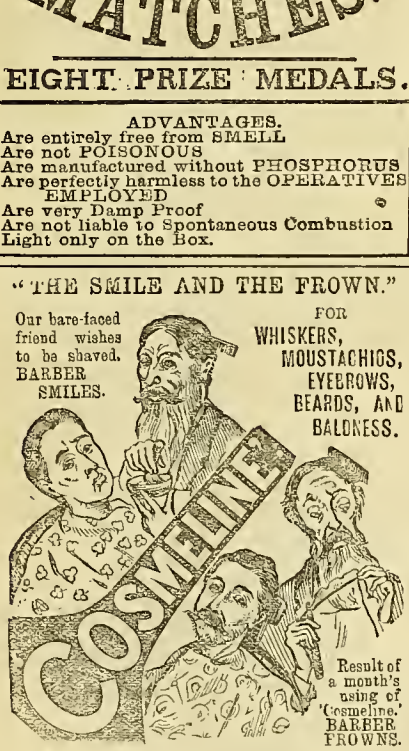


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DOUBLE STOCKS, New Large-flowered Ten-week, Giant Pyramidal, Dwarf Bouquet, Imperial, Brompton, Intermediate and East Lothian, each in selections, 1s. 6d., 2s. 6d., and 3s. 6d.; or each in mixed colours, 1s. and 2s. 6d.

DOUBLE GERMAN WALLFLOWERS, in selections, 1s. 6d., 2s. 6d., and 3s. 6d.; in mixed colours, 1s. and 2s. 6d.

EVERLASTINGS, for Church Decorations and Bouquets, in assortments, 1s. 6d., 2s. 6d., and 3s. 6d.

ORNAMENTAL GRASSES, for Bouquets and Flower Border Decorations, in assortments, 1s. 6d., 2s. 6d., 3s. 6d., 5s. 6d., 7s. 6d., and 10s. 6d.

Orders are now being booked for the beautiful Hardy WEARDALE and LONGFORD BRIDGE NEW DAFFODILS, which B. & S. have exhibited at the Royal Horticultural Gardens and the Royal Botanic Gardens for several years, and to which Exhibitors' Medals of the Highest Merit have been awarded.

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| 12 in 12 new vars. .. | 9s, 12s., and 18s. | 30 in 30 new vars. .. | 30s., 42s, and 63s. |
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| 1 each in 12 vars. .. .. | 3 | 6 to 5 6 | 5 each in 12 vars. .. .. | 10 | 6 to 15 0 |
| 1 each in 20 vars. .. .. | 7 | 6 to 10 6 | 5 each in 20 vars. .. .. | 15 | 0 to 25 0 |
| 1 each in 30 vars. .. .. | 10 | 6 to 15 0 | 5 each in 30 vars. .. .. | 30 | 0 to 42 0 |
| 1 each in 50 vars. .. .. | 15 | 0 to 21 0 | 5 each in 50 vars. .. .. | 63 | 0 to 84 0 |
| 3 each in 12 vars. .. .. | 8 | 6 to 12 6 | 10 each in 12 vars. .. .. | 15 | 0 to 25 0 |
| 3 each in 20 vars. .. .. | 12 | 6 to 21 0 | 10 each in 20 vars. .. .. | 25 | 0 to 30 0 |
| 3 each in 30 vars. .. .. | 21 | 0 to 30 0 | 10 each in 30 vars. .. .. | 42 | 0 to 63 0 |
| 3 each in 50 vars. .. .. | 42 | 0 to 63 0 | 10 each in 50 vars. .. .. | 84 | 0 to 105 0 |

Choice Mixed DAFFODILS, in Mixture for Naturalisation, per 1000, 63s.; per 100, 7s. 6d.
Prime Mixed DAFFODILS, in Mixture for Naturalisation, per 1000, 42s.; per 100, 5s. 6d.

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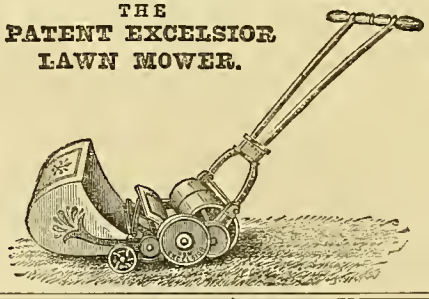
**THE PATENT EXCELSIOR LAWN MOWER.**



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DOES NOT RIB THE GRASS.
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IS A PERFECT MOWER.

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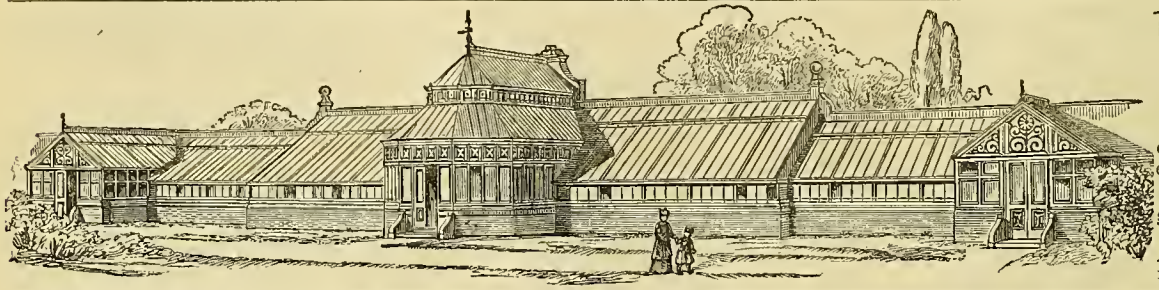

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Horticultural Building of every description made erected, fitted, and heated. Estimates and Plan gratis.

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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St Paul's, Covent Garden, in the said County.—SATURDAY, May 21, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 387.—Vol. XV. { New Series. } SATURDAY, MAY 28, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1881 will open on FRIDAY, June 3, at 2 o'Clock, P.M.
GREAT SHOW of AMERICAN PLANTS, by John Waterer & Sons, of Bagshot, will open the same day.
The INTERNATIONAL HORTICULTURAL EXHIBITION will open on AUGUST 24.
THREE THOUSAND POUNDS IN PRIZES.
For Schedules apply to BRUCE FINDLAY.
Royal Botanic Gardens, Manchester.

WEST of ENGLAND ROSE SHOW.
The FIFTEENTH ANNUAL EXHIBITION of ROSES, open to the United Kingdom, will be held in the Shire Hall, Hereford, on WEDNESDAY, July 6. Grapes and Strawberries will also be exhibited. All communications to be addressed to The Rev. G. M. METCALFE, Hon. Sec.
Lyde Vicarage, Hereford.

TIVERTON (Devon) HORTICULTURAL SOCIETY.
ELEVENTH EXHIBITION, JULY 7, 1881. Liberal PRIZES for CUT ROSES, open to all England, and to Subscribers for STOVE and GREENHOUSE PLANTS, FRUIT and VEGETABLES. Schedules on application to
Messrs. PAINE AND MILLS, Hon. Secs.

BRIGHTON AQUARIUM.—The FIRST SHOW of ROSES and DECORATIVE PLANTS will take place in the Aquarium on SATURDAY, July 9 next. Particulars and Schedules on application to
The MANAGER.

INTERNATIONAL POTATO EXHIBITION.
President, the Right Hon. the Lord Mayor of London.
The SEVENTH ANNUAL EXHIBITION will take place at the Crystal Palace on SEPTEMBER 20 and 21, 1881. Schedules of Prizes and all particulars may be obtained on application to J. A. McKENZIE, Secretary.
Tower Chambers, Moorgate Street, London, E.C.

ALEXANDRA PALACE, N.
(Lessees—Jones and Barber.)
EXHIBITION of FLORAL DECORATION and SHOW of PELARGONIUMS, June 10 and 11.
STRAWBERRY and CHERRY EXHIBITION, with FLOWER MART, June 17 and 18.
ROSE FAIR and PRIZE for the BIGGEST GOOSEBERRY, July 2.
GREAT ROSE SHOW, July 8 and 9.
J. FORSYTH JOHNSON, Horticultural Director.

GRAND FLOWER SHOW.—WORCESTERSHIRE AGRICULTURAL SOCIETY.
STOURBRIDGE MEETING, JULY 5, 6, and 7 next.
TWO HUNDRED and FORTY POUNDS in PRIZES for PLANTS, FLOWERS, FRUIT, and VEGETABLES, open free to all comers; also a COTTAGERS' SHOW. Entries close June 28. For Schedules of Prizes, apply to
J. S. HAYWOOD, Hon. Sec. Hort. Department, Seed Merchant, Worcester.

SUTTONS' CALCEOLARIA. THE BEST.
"Really grand in size, colour, and variety."
Rev. T. J. W.
Price 1s. 6d., 2s. 6d., and 5s. per packet, post-free.

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The Queen's Seedsmen,
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WILLIAMS' for AMARYLLIS and all other Bulbous Plants. For many years these Nurseries have been celebrated as possessing the finest collection of Amaryllis in the country.

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WILLIAMS' for GARDEN and FLOWER SEEDS and HORTICULTURAL SUNDRIES.

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WILLIAMS' PLANT HOUSES are constructed both for convenience and comfort, and Parties about Constructing and Furnishing Conservatories, Stoves, &c., will do well to pay a visit to these Nurseries, where any advice will be gladly given.

WILLIAMS' for all kinds of FLOWERING STOVE and GREENHOUSE PLANTS. Specimens a speciality.

WILLIAMS' for EVERYTHING for the GARDEN.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' ILLUSTRATED CATALOGUES, post-free upon application.

B. S. WILLIAMS, Nurseryman and Seed Merchant, Victoria and Paradise Nurseries, Upper Holloway, London, N.

DRIED FERNS, COLLECTION.—300 to 400 Species, Mounted and Named, price £5.
WANTED, Dr. ENGLER'S MONOGRAPH of the SAXIFRAGACEÆ.
W. H. STANSFIELD, 61, Percy Street, Southport.

Primulas — Primulas — Primulas.
Eleventh Year of Distribution.
WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free. Extra strong plants, in 60-pots, 2s. 6d. per dozen, or in EXCHANGE for MAIDENHAIR and other FERNS.
The above are quite equal to those I have sent out in previous years. Cash with order
JOHN STEVENS, The Nurseries Coventry.

WANTED, choice CUT FLOWERS for a City Shop doing a large business. Best market prices returned. State varieties and particulars to
A. M., 70, Camberwell New Road, S.E.

Cut Flowers.
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of HOTHOUSE and OUTDOOR FLOWERS. Cash by return of post if desired. Where money is objected to ORCHIDS, &c., MAY BE HAD in EXCHANGE.

FLORAL COMMISSION AGENCY.—Gentlemen and others having a surplus quantity of choice CUT FLOWERS, are requested to communicate with W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

Hothouse Grapes.
WANTED to PURCHASE, for the coming season.—Address, stating terms, which must be moderate, J. BINKS, 212, Monument Road, Birmingham.

LARGE CONSIGNERS of PEACHES and other CHOICE FRUITS, CUCUMBERS, CUT FLOWERS, &c., should communicate with
WISE AND RIDES, Tavistock Court, Covent Garden, London, W.C.

WANTED, large healthy Plants of SEAFORTHIA ELEGANS, KENTIAS, ARECA LUTESCENS, RHAPIS FLABELLIFORMIS, ASPIDISTRA LURIDA VARIEGATA, DRACÆNA TERMINALIS, and LUCULIA GRATISSIMA.
W. HOWARD, Southgate, N

Now Ready,
CARTERS ILLUSTRATED CATALOGUE of NEW and CHOICE PLANTS. Price 6d., post-free; gratis to Customers.
The Queen's Seedsmen, and by Royal Warrant Seedsmen to His Royal Highness the Prince of Wales, 237 and 238, High Holborn, London, W.C.

DAHLIAS and TEA ROSES. — Show, Fancy, and Bouquet DAHLIAS, very fine plants of the best varieties, at £1 per 100.
Well established, strong healthy plants, of the finest TEA ROSES, 12s per dozen, £4 and £5 per 100 Lists on application.
J. HOUSE, Eastgate Nurseries, Peterborough.

Now is the Best Time to Transplant Hollies.
HOLLIES, STANDARD, GOLD and SILVER, perfect Specimens, from 10s. 6d. to 31s. 6d. each. PYRAMIDS, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SEEDLING HOLLIES.—Several thousands of the above, extra fine. Apply
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

Green Holly Seedlings.
This being the best and safest time for transplanting Hollies,
PETER S. ROBERTSON AND CO. beg to offer GREEN HOLLIES, 2 and 3-yr. seedlings, mixed, at 6s. per 1000; if 25,000 are taken, 5s. per 1000.
Trinity Nurseries, Edinburgh.

Orchids, &c.
THE NEW PLANT and BULB COMPANY'S SPECIAL LIST (No. 51) is just published. Post-free on application.
Lion Walk, Colchester.

Hardy Rhododendrons and Azaleas.
ANTHONY WATERER has to offer many thousands of healthy, well furnished, and well budded RHODODENDRONS, of the best and most popular kinds.
HARDY AZALEAS, a selection of the most beautiful kinds known, all well furnished with buds.
Knap Hill Nursery, Woking, Surrey.

HOLLYHOCKS. — Strong plants now ready. List of varieties and price upon application.
L. WOODTHORPE, Glazenwood Nursery, Braintree.

Tricolor Bedding Geraniums.
ALFRED FRYER offers a large stock of the best varieties. Priced LISTS post-free.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

To the Trade only.
GLOIRE DE DIJONS. — One thousand, extra strong, in 4½-inch pots, £2 5s. per 100 for cash. No charge for packing.
MAIRIS AND CO., Rose Growers, Weston-in-Gordano, Bristol.

FLOWERING BEGONIAS.—Twelve large strong plants for 21s. These are the finest varieties grown, and will produce many hundreds of magnificent red, rose, and white flowers for five months at a time. Succeed equally well in a Greenhouse or planted out in a Garden. Plants are starting well in 4-inch pots. Hamper gratis for cash.
J. HOLLEY, Royal Nursery, Croydon.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

A Quantity of
SPECIMEN FLOWERING and FINE-FOLIAGE PLANTS, fit for exhibition during the summer and autumn. At very reasonable prices.
J. HOUSE, Eastgate Nursery, Peterborough.

NOTICE TO THE TRADE, AND LARGE BUYERS GENERALLY.
In consequence of the great demand this season for Autumn Struck GERANIUMS of all kinds, I shall not hold my Annual Sale by Protheroe & Morris, of 80,000 plants, but both the Trade and Public will be liberally treated with, in all purchases made at my Nursery.
JAMES PAGE, The Hornsey Nurseries, Hornsey, N.

FINEST GRASS SEEDS, specially prepared for LAWNS, BOWLING GREENS, CRICKET GROUNDS, &c., comprising the very best dwarf evergreen kinds, quality not to be surpassed, 1s. per pound, 20s. per bushel; 3 to 4 bushels required per acre.
RICHARD SMITH AND CO., Seedsmen and Nurserymen, Worcester.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1881.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.
BLACK NEGRO DWARF FRENCH BEANS.—Home grown, and fine stock; a few bushels at low rate. Sample and price on application.
JOHN K. KING, Seed Grower, Coggeshall, Essex.

## SALES BY AUCTION.

**Monday Next.**
ACTON, W.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, 6, Mill Hill Grove, Acton, W., on MONDAY NEXT, at 12 o'Clock, about 20,000 BEDDING PLANTS; also the erections of 5 GREENHOUSES, 4 PITS, FRAMES, HOT-WATER PIPING, BOILER, and BRICKWORK, and a few items of HOUSEHOLD FURNITURE.
Catalogues had on the Premises, and of the Auctioneers, 8, New Broad Street, E.C., and Leytonstone, E.

**Monday Next.**
2500 ODONTOGLOSSUM CRISPUM (ALEXANDRÆ), especially fine varieties, and splendid masses, in fine condition.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, May 30, at half-past 12 o'Clock precisely, by order of Messrs. Shuttleworth, Carder & Co., Orchid and New Plant Importers, 191, Park Road, Clapham, S.W., a fine importation of ODONTOGLOSSUM CRISPUM (ALEXANDRÆ), ONCIDIUM KRAMERIANUM, and ODONTOGLOSSUM GLORIOSUM.
May be viewed the morning of Sale, and Catalogues had.

**Monday Next.**
Importation of PHALÆNOPSIS, just arrived.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, May 30, a quantity of large plants of PHALÆNOPSIS LUDDEMANNIANA and P. VIOLACEA, as imported.
May be viewed the morning of Sale, and Catalogues had.

**Flowering Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 2, instead of Wednesday, June 1, as previously announced, at half-past 12 o'Clock precisely, some splendid varieties of ODONTOGLOSSUM ALEXANDRÆ, O. VEXILLARIUM, and O. HALLII, CATTLEYA MOSSIÆ, DENDROBIUM INFUNDIBULUM, MASDEVALLIA HARRVANA, &c. Part from the collection of John Day, Esq., of Tottenham.
On view after 2 o'Clock the day prior and morning of Sale, and Catalogues had.

SALE THIS DAY, THREE O'CLOCK.
**Field House, Larkhall Lane, Clapham, S.W.**
Opposite Hewitt's Brewery: close to Wandsworth Road Station.

MR. LUCKHURST will SELL by AUCTION, on the Premises as above in Lots suited to Private Buyers and the Trade, on SATURDAY, May 28, at 3 o'Clock precisely, about 300 Dozen of Choice BEDDING and WINDOW PLANTS, comprising Geraniums, Lobelias, Golden Feather, Ageratums, Petunias, Fuchsias, Begonias, &c.
Catalogues obtained on the Premises, and at the Auctioneer's Offices, 19A, High Street, Clapham, S.W.

**Midland Counties.—(5250.)**

FOR DISPOSAL, a valuable NURSERY BUSINESS, in a High-class Locality, doing an excellent local Trade. Two Nurseries thoroughly well-stocked, in perfect Working Order, attractive Shop, and Twelve-roomed Residence. Ill-health cause of disposal. Rent £70; small Premium. Incoming by valuation.
Particulars of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, London, E.C.

TO BE DISPOSED OF, the Old-established NURSERY and SEED TRADE of the late Mr. Henry Baker, Atherstone. The Nursery (about 8 Acres) is in an excellent neighbourhood, and close to a Market Town, in full working order, and every facility for doing a large trade. For particulars apply to
Mrs. BAKER, The Nurseries, Atherstone.

TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are 8½ Acres of deep rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business. For particulars apply to
J. WATSON, 38, Crown Street, Bury St. Edmund's.

**To Fruit Growers, &c.**

TO BE LET, about 1½ mile from Botley Railway Station, the centre of the celebrated Strawberry district, about 100 Acres of LAND, either together or in lots; suitable for Growing all kinds of Fruit.
For particulars apply, to Mr. H. PURCHASE, Southgate Road, Winchester; or Messrs. BLUNDELL AND SON, Portland Street, Southampton.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
GREAT FLOWER SHOW, FRIDAY, June 3; SATURDAY, June 4; WHIT-MONDAY, June 6; TUESDAY, June 7.
ONE THOUSAND POUNDS in PRIZES: Roses, Orchids, Azaleas, Pelargoniums, Rhododendrons, Fruit and Vegetables.
Competition for Silver Cups offered by Mr. Wm. Bull, F.L.S., for New Plants; also for Prizes offered by Messrs. Sutton & Sons, Joseph Davis & Co., and James Boyd & Sons.
Band of the Royal Horse Guards on June 3 and 4, and Full Bands all day on June 6 and 7.

| | | |
|---|---|---|
| ADMISSION | FRIDAY, from 1 o'Clock .. .. | 5s. 0d. |
| | SATURDAY, from 10 o'Clock .. | 2s. 6d. |
| | WHIT-MONDAY, from 10 o'Clock | 1s. 0d. |
| | TUESDAY, from 10 o'Clock .. | 0s. 6d. |

Or by Tickets purchased before the day by Fellows, for the first day, 3s. 6d.; second day, 2s.
Tickets at the usual Agents, and the entrances to the Gardens.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
GREAT HORTICULTURAL IMPLEMENT EXHIBITION and General Display of GARDEN STRUCTURES, TOOLS, and APPLIANCES at the Great Flower Show, June 3, 4, 6, and 7. Various Gold, Silver, and Bronze Medals, offered as Prizes for competition, with Certificates of Merit for New Inventions or Improvements

BATH and WEST of ENGLAND.
TUNBRIDGE WELLS MEETING, June 6.
HORTICULTURAL DEPARTMENT.
A £5 5s. CUP, or Money, will be given for best Three Bunches of BLACK GRAPES; and
A £5 5s. CUP, or Money, for best Three Bunches of WHITE GRAPES, to Amateurs or their Gardeners.
Hon. and Rev. J. T. BOSCAWEN.
Showyard, Tunbridge Wells.

BATH and WEST of ENGLAND SOCIETY
(Established 1777) and
SOUTHERN COUNTIES ASSOCIATION.
*Patron*—His Royal Highness the PRINCE OF WALES, K.G.
*President*—The Right Hon. the Marquess of Abergavenny.

TUNBRIDGE WELLS MEETING,
June 6, 7, 8, 9 and 10.
GREAT EXHIBITION of HORSES, LIVE STOCK, HOPS, POULTRY, MACHINERY, IMPLEMENTS, WORKS of ART and HORTICULTURAL SPECIMENS, WORKING DAIRY, EXPOSITION of BEES, Management and Appliances; COMPETITION of SHOEING SMITHS, &c.
JOSIAH GOODWIN, Sec.
4, Terrace Walk, Bath, May, 1811.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 8, New Broad Street, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

**Centaurea candidissima.**

H. B. MAY offers fine strong stuff, in large 60's, at 25s. per 100, for cash with order.
Dyson's Lane Nursery, Edmonton.

VARIEGATED GERANIUMS. — Extra strong Plants of all the best varieties, for Bedding or Pot Culture. List free.
E. COOLING, Mill Ash Nurseries, Derby.

HARDY CARPET BEDDING PLANTS. —Antennaria tomentosa candida, 1s. 6d. per dozen, 8s. per 100; Arabis albida variegata, 2s. per dozen; Ajuga reptans atropurpurea, 2s. 6d. per dozen; Veronica repens, 1s. 6d. per dozen, 7s. per 100.
J. J. MARRIOTT, Walsall, Staffordshire.

**Odontoglossum Alexandræ.**

HUGH LOW AND CO. have received in fine condition from their collector, large supplies of ODONTOGLOSSUM ALEXANDRÆ, amongst them extra fine masses, which they offer by the dozen, hundred, or thousand. Also to hand in quantity:—
ODONTOGLOSSUM NÆVIUM
" PESCATOREI
" PHALÆNOPSIS
" TRIUMPHANS
" TRIPUDIANS
ONCIDIUM CUCULLATUM
RESTREPIAS
Inspection invited.
Clapton Nursery, London, E.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.
Prices and plants need only be compared with those of other firms, to prove that in no instance can buyers of plants who study both price and quality be supplied more advantageously than by ourselves.
The Collections are all of the finest sorts, and as varied in colour as possible, fine for exhibition or home decoration, and as certain to be satisfactory to purchasers as collections can be. All are our selection.

| | Per doz.—s. | d. | | Per doz.—s. | d. |
|---|---|---|---|---|---|
| Abutilons, in variety .. | 3 | 0 | Hollyhocks, Seedlings.. | 4 | 0 |
| Achimenes, in variety .. | 3 | 0 | Helianthemums.. .. | 2 | 6 |
| Ageratums, small plants, per 100, 5s. .. .. | 1 | 0 | Herbaceous Plants, per 100, 20s. .. .. | 3 | 0 |
| Ageratums, in pots, per 100, 15s. .. .. | 2 | 6 | Heliotropes .. .. | 2 | 6 |
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| Chrysanthemums, in great variety, per 100, 15s. .. .. | 3 | 0 | Mesembryanthemum fol. var., per 100, 10s. | 2 | 0 |
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| Dactylis elegantissima, per 100, 6s. .. .. | 1 | 0 | Pæonies, white, blush, crimson, and other shades .. .. .. | 6 | 0 |
| Dahlias, per 100, 20s. .. | 3 | 6 | Phloxes, per 100, 25s. .. | 3 | 6 |
| Epiphyllum .. .. | 9 | 0 | Pelargoniums, Show, Fancy, and French, 6s. to .. .. .. | 9 | 0 |
| Ferns, Stove and Greenhouse, 6s. to .. .. | 9 | 0 | Potentillas, Double .. | 6 | 0 |
| Fuschias, per 100, 15s... | 3 | 0 | Rock Plants, per 100, 15s. | 3 | 0 |
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| Greenhouse Plants .. | 9 | 0 | Saxifrages .. .. | 3 | 0 |
| Geraniums, Double .. | 3 | 0 | Sedums .. .. .. | 3 | 0 |
| Geraniums for Bedding | 3 | 0 | Stove Plants, 6s. to .. | 9 | 0 |
| Geraniums for pot culture, 3s. to .. .. | 6 | 0 | Tropæolums .. .. | 3 | 0 |
| Gloxinias, 6s. and .. | 9 | 0 | Violas (immense stock of best sorts), per 100, 8s. to 12s. .. .. .. | 2 | 0 |
| Hardy Climbing Plants, in great variety, 6s. .. | 9 | 0 | | | |

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.
W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

OFFER to the TRADE of BEDDING PLANTS, in separate pots.

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| GERANIUMS, various sorts .. .. | 12s. per 100. |
| CALCEOLARIAS, Yellow .. .. | 12s. " |
| GAZANIA SPLENDENS .. .. | 12s. " |
| CENTAUREA RAGUSINA .. .. | 15s. " |
| PETUNIAS, Single .. .. .. | 12s. " |
| LOBELIA SPECIOSA (Crystal Palace) | 12s. " |
| ALTERNANTHERA, in three varieties | 10s. " |
| PYRETHRUMS, Herbaceous (double varieties from open ground) .. | 21s. " |

Various other BEDDING PLANTS at like moderate prices.
F. W. COOPER, Florist, Huntingdon.

ANTHONY WATERER respectfully invites the attention of intending Planters to the following LIST of desirable and in every way First-class Nursery Stock:—
BOX, Green and Variegated, many thousands, 4, 5, 6, 7 and 8 feet high.
YEWS, many thousands, 4, 5, 6, 7, 8 and 10 feet high.
" Golden, many thousands, 3, 4, 5 to 10 feet high.
" Irish, 6, 7 and 8 feet high.
HOLLIES, Common Green, many thousands, 3, 4, 5, 6, 7, 8 to 10 and 12 feet high.
" laurifolia, myrtifolia, Scottica, Hodgen's, and other fine varieties, a very large number, 5, 6, 7, 8 and 10 feet high.
" Variegated, many thousands, 5, 6, 7, 8 to 10 feet high.
" Golden Queen, 4, 5, 6 to 10 feet high.
" Silver, 4, 5, 6 to 10 feet high.
WATERER'S HOLLY, as Standards and Pyramids, the finest plants in the Trade
CHINESE JUNIPERS, 6, 7, 8 and 10 feet high; hundreds.
PICEA PINSAPO, 5, 6, 7, 8 and 10 feet high; hundreds.
CEDRUS DEODARA, 4, 5, 6, 7 and 8 feet high.
PICEA NORDMANNIANA, 4, 5, 6, 7 to 10 feet high; hundreds.
PINUS AUSTRIACA, 3 and 4 feet, transplanted Spring, 1880.
SPRUCE FIRS, 3, 4 and 5 feet, well furnished and finely rooted.
CUPRESSUS LAWSONIANA ERECTA VIRIDIS (the Knap Hill Cypress), many thousands, 3, 4, 5, 6, 7, 8 to 10 feet high, affording a choice to be met with in no other Nursery. All the large plants have been removed since October, 1879.
CUPRESSUS LAWSONIANA GRACILIS, 4 and 5 feet.
" ARGENTEA, 4 and 5 feet.
LIBOCEDRUS DECURRENS, 4, 5, 6 and 7 feet.
PINUS CEMBRA, 4, 5, 6 and 7 feet.
RETINOSPORA PISIFERA AUREA, 3, 4 and 5 feet hundreds.
THUYOPSIS BOREALIS, 4, 5 to 10 feet.
" DOLABRATA, 3, 4 and 5 feet.
THUYA AUREA, 2, 3 and 4 feet high.
" SEMPER-AUREA, 2 to 2½ feet high.
RHODODENDRONS of all colours, and for the most part well budded; many thousands of fine specimens, 3, 4, 5, 6, 7, 8 to 10 feet high.
STANDARD RHODODENDRONS, the finest plants to be found in any Nursery.
HARDY AZALEAS of the best kinds, 3, 4, 5 and 6 feet high.
The Plants referred to in this Advertisement have all been recently Transplanted.
Knap Hill Nursery, Woking, Surrey.

**Specially Cheap Offer of Bedding Plants.**
VERBENAS.—50,000 now ready for Sale.

S. BIDE is now prepared to supply to his numerous customers, as in previous seasons, really good, strong, spring-struck plants of Purple, Scarlet, White, and Pink Verbenas, at 6s. per 100; 50s. per 1000. Best Exhibition Varieties, 8s. per 100.
Strong healthy Cuttings of the above at half price. Free by post.
DAHLIAS, true to name, well established, in 60-pots, 25s. per 100.
GERANIUM, Flower of Spring, strong autumn-struck plants, 12s. per 100
ALTERNANTHERA, amœna and amabilis, strong plants, 8s. per 100.
IRESINE, Lindeni, 6s. per 100.
HELIOTROPE, light and dark, 6s. per 100.
COLEUS, Verschaffeltii, 8s. per 100.
Packages free. Cash must accompany all Orders. List of varieties of all the above free by post on application to
S. BIDE, Alma Nursery, Farnham, Surrey.

**Roses for 1881.**

WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, beg to offer strong plants of the undermentioned first-rate English raised novelties, 7s. 6d. to 10s. 6d. each:—
PRIDE OF WALTHAM (H.P.), delicate flesh colour; Two First-class Certificates.
LADY SHEFFIELD (H.P.), brilliant rosy-cerise; First-class Certificate.
RED GAUNTLET (H.P.), bright scarlety-crimson.
English raised ROSES of 1879 and 1880.
COUNTESS OF ROSEBERY (H.P.), brilliant carmine-rose; Three First-class Certificates; price, 2s. 6d. each.
CROWN PRINCE (H.P.), bright purple-crimson, 3s. 6d. each.
DUCHESS OF BEDFORD (H.P.), dazzling scarlet-crimson; First-class Certificate, 2s. 6d. each.
LITTLE GEM (Moss), crimson, beautifully mossed, 3s. 6d. each.
MASTERPIECE (H.P.), rich rosy-crimson, 3s. 6d. each.
A large general stock of ROSES for all purposes.
ROSES, in pots, for Outdoor Planting, 10s. 6d. to 30s. per dozen.
" " Climbing, 10s. 6d. to 30s. per dozen.
" " Pot Culture, 12s. to 30s. per dozen.
Half Specimen and Specimen ROSES, in pots, 5s. to £5 5s. each.
Priced Descriptive CATALOGUES free by post on application. Paul's Nurseries, Waltham Cross, Herts.

ASPARAGUS PLUMOSUS NANUS (VEITCH'S VARIETY).
A few strong and handsome plants of this fine ornamental variety for sale. A most useful plant for exhibition, also for table decoration, or where flowers are used, answering the purpose of Cut Ferns, being more elegant, and lasting green in water 3 months. Received a First-class Certificate from Royal Horticultural Society. For price and particulars, apply to
JAS. WINGFIELD, Widmore Hill Nursery, Bromley, Kent.

**To the Trade.**
MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.
Seed Growing Establishment, Wisbech.

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

**Verbenas.**

VERBENAS.—Extra strong and well-rooted Plants of Purple, White, Crimson, and Pink, 6s. per 100, 50s. per 1000; ten choice Exhibition varieties, beautifully clean and healthy, 8s. per 100, 70s. per 1000; Cuttings, 3s. and 4s. per 100, 25s. and 35s. per 1000. All securely packed. Terms cash.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock :—

VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s. ; or in twenty-five sorts, 10s.

LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.

PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.

" TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.

" SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.

" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.

" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.

" BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.

" Forcing, Show and French vars., 30s. per 100.

CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.

COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.

AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.

TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.

Packing included. Terms cash.
Cemetery Nursery, Gravesend.

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ILLUSTRATED CATALOGUE of PERENNIALS.—The present year's issue of this Catalogue, containing many rare and choice Hardy Perennials, also Selections of Hardy Terrestrial Orchids, Primula Sieboldii, Climbing and Trailing Plants, Aquatics and Bog Plants, Ornamental Grasses and Bamboos, Sarracenias, &c., may be had post-free upon application.

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

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BEDDING PLANTS. — Surplus Stock, Cheap. Quantity of CALCEOLARIA (Golden Gem), GERANIUM (Bronze, Tricolor, and best kinds), &c.—Apply to

GARDENER, Holly Lodge, Main Road, Stamford Hill, N.

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**DOUBLE CINERARIAS,**
FOR WINTER BLOOMING.

R. H. VERTEGANS is now offering SEED saved from his Superb Collection, at 3s. 6d. and 5s. per packet, post-free. Also Booking Orders for PLANTS, 12 varieties, selected from his large choice and noted strain. Names and Descriptions will shortly be published.

CHAD VALLEY NURSERIES,
Edgbaston, Birmingham.

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TWELVE RARE AMERICAN HARDY FERNS, 12s. Large, strong, imported, but now established plants of Osmunda cinnamomea, O. Claytoniana, Woodsia obtusa, W. ilvensis, Adiantum pedatum, Asplenium thelypteris, Ostrich Plume, Sensitive Fern, &c. All distinct, and strong enough for open-air rockwork. Package gratis for cash. J. H. LEY, Royal Nursery, Croydon.

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**To the Trade.**

CHRYSANTHEMUMS, best sorts, large-flowered Japanese and Pompon, in thumb-pots, 25s. per 100.

DAHLIAS, best varieties, in small thumbs, 20s. per 100.

DELPHINIUMS, best named, single and double, good plants, 5s. per dozen.

GARAWAY & Co. offer the above ; their own selection.

GARAWAY & CO., Durdham Down Nurseries, Clifton, Bristol.

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**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted Cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000 ; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.

EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

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KELWAY AND SON offer :—

50,000 DAHLIAS, in 400 varieties.
10,000 " single varieties.
50,000 PYRETHRUMS, in 50 varieties.
50,000 SCOLOPENDRIUM KELWAYI.
VERBENAS, PETUNIAS, LOBELIAS Brighton Blue and Brighton White, CARNATION (Red) Souvenir de la Malmaison.

Langport, Somerset.

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**New Early Peach.**

WATERLOO.—This fine Peach precedes the Alexander, and is probably the earliest of the large Peaches. The Waterloo is a valuable addition to the increasing number of early Peaches. It is large, brilliant in colour, and of delicious flavour. Strong Maiden Trees in pots, now ready to send out, 15s. each.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

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**100,000 Best Bedding and Pot**

GERANIUMS, including many new and choice varieties, by post or rail ; also very large stock of LOBELIAS, DAHLIAS, CHRYSANTHEMUMS, AGERATUMS COLEUS, CALCEOLARIAS, MESEMBRYANTHEMUMS, PETUNIAS (Single and Double), ALTERNANTHERAS, PYRETHRUMS, CENTAUREAS, CINERARIA MARITIMA, and all useful plants for bedding. See new Catalogue.

Twelve selected Double GERANIUMS, good plants, 5s. ; 12 do., good varieties, 3s. 6d.

GEORGE GUMMOW, 114, Loughborough Road, Brixton, S.W.

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**Gardenia intermedia.**

MESSRS. JOHN STANDISH AND CO. have to offer a very extensive stock of GARDENIA INTERMEDIA of all sizes, every plant being in the most robust health, and guaranteed perfectly clean. Nice plants in 3-inch pots at 2s. 6d. each ; larger, 3s. 6d. to 10s. 6d. each. Specimens, fine bushy plants, with plenty of bloom-bud on them, 1, 1½, 2 and 3 guineas each.

Royal Nurseries, Ascot, Berks.

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(Free of Duty.)

# CORRY & SOPER'S NICOTINE SOAP

(PATENT).

An effectual and speedy Eradicator of

## Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight,

and all

## Parasites affecting Plants, without Injury to Foliage.

*It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.*

**Especially adapted for the Destruction of Blight on the Coffee Plant.**

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general INSECTICIDE.

It has now undergone a thorough test by some of the most Practical Men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with PERFECT SAFETY TO FOLIAGE.

It may be used as a Dip or Wash for any description of Out or Indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

Some hundreds of Testimonials lately received from men of considerable experience throughout the Kingdom.

**Sold in Jars, 8 oz., price 1s. 6d. ; 20 oz., price 3s. ; and in Tins, 14 lb., price 15s. 6d. ; and Drums, 28 lb., price 25s. ; 56 lb., price 50s. ; 112 lb., 95s. Full directions for use on each package.**

**And 2 ounce Sample Jars, 6d. each.**
Full directions for use on each package.

Manufacturers of TOBACCO POWDER, TOBACCO JUICE (duty free), TOBACCO PAPER and CLOTH, at their Bonded Stores.

## Every known Horticultural Requisite kept in Stock.

*Wholesale from the Manufacturers,*

CORRY, SOPER, FOWLER & CO.
(LIMITED).

Offices and Show Rooms : FINSBURY STREET, E.C.

Manufactory and Bonded Tobacco Stores :

SHAD THAMES, S.E., LONDON.

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SEEMANN AND GOEPEL, Wandsbek, near Hamburgh, have to offer quantities of

PHŒNIX TENUIS, in store pots, 1-yr. seedlings, per 100, 15s. ; per 1000, £6 10s.

LATANIA BORBONICA, in store pots, last year's seedlings, per 100, 8s. ; per 1000, £2.

PANDANUS UTILIS, in store pots, this year's seedlings, per 100, 6s. ; per 1000, £2.

ARALIA SIEBOLDII, in small pots, last year's seedlings, per 100, 12s. ; per 1000, £4 10s.

CATALOGUES free by post on application.

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SPECIAL OFFER of CHOICE PLANTS.

FUCHSIAS, 12 best Exhibition varieties, 1s. 6d. ; 12s. por 100.
" 12 new Exhibition varieties, 2s. 6d. ; 20s. per 100.
COLEUSES, 12 new varieties, 2s. 6d. ; 20s. per 100.
" 18 new varieties, 3s. 6d.
AGERATUM, Dwarf, 12 for 1s. 3d. ; 8s. per 100.
IRESINE, 12 for 1s. 2d. ; 8s per 100.
VERBENAS, 12, in 4 varieties, 1s. 2d. ; 6s. per 100.
" 12, in 8 varieties, 1s. 4d. ; 8s. per 100.
CHRYSANTHEMUMS, 12, in 12 varieties, 2s.
" 100, in 50 varieties, 12s.
PELARGONIUMS, 100 Show and Fancy, in 25 varieties, 20s.
GERANIUMS, Bronze, Beauty of Calderdale, 12 for 2s. 6d., 18s. per 100.
" " Maréchal McMahon, 12 for 2s. 6d. ; 18s. per 100.
" " mixed varieties, 12 for 2s. ; 15s. per 100.
" Variegated Bijou, 12 for 2s. ; 12s. per 100.
" Double, 12 new varieties, 2s. 6d. ; 20s. per 100.
" Zonal and Scarlet, 12 varieties, 2s. 6d. ; 18s. per 100.
" " " mixed, 12 for 1s. 6d. ; 10s. per 100.
All well rooted and package free.
Terms—Cash with all Orders.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

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**Cheap Bedding Plants.**

H. I. HARDY, F.R.H.S., offers fine strong and healthy autumn-struck Plants of the following :—

GERANIUMS, Vesuvius and other best scarlets, from single pots, 2s. per dozen; stores, 12s. per 100. Master Christine and Madame Vaucher, single pots, 2s. 6d. per dozen, 15s. per 100. New Life, Crystal Palace Gem, and May Queen, from single pots, 3s. per dozen.

CALCEOLARIA, aurea floribunda, from single pots, 1s. 6d. per dozen ; 10s. per 100.

VERBENAS, 1s. 9d. per dozen from single pots, 8s. per 100 from stores.

LOBELIAS, Emperor William, proved the best dwarf blue for borders, 10s. per 100 from single pots, 6s pe 100 from stores. Seedlings, 2s. 6d. per 100, 20s. per 1000.

DAHLIAS, fine named Show varieties, in single pots, 4s. 6d. per dozen.

Terms cash. Package free, and extra Plants for carriage. A reduction made for quantities. CATALOGUE free by post.

**STOUR VALLEY SEED GROUNDS,**
BURES, SUFFOLK.

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GEO. JACKMAN AND SON have every confidence in recommending the undermeotioned, as choice and distinct varieties of their NEW HARDY CLEMATIS :—

C. BELLE OF WOKING (Jackman).—See Plate in *Florist and Pomologist* Magazine.—A fine double variety, of the florida type, with about eight series of sepals, and a small tuft of stamens. The colour is a charming delicate but decided tint of bluish-mauve or silver-grey, the innermost sepals having here and there a dash of reddish-lilac, the filaments white, supporting cream-coloured anthers. A decided acquisition. 10s. 6d. each.

C. ANGELINA (Jackman).—A fine variety of the early lanuginosa type, flowers are flat and full, 6 inches across, eight-sepaled, of pale bluish-mauve colour ; altogether a very choice variety. 10s. 6d. each.

C. MISS CRAWSHAY (Jackman).—A most distinct and charming variety, belonging to the patens group. The flowers are large for this type, 6½ inches across, eight-sepaled, and frequently a second row of sepals, of a pretty solferino-pink (pink shaded with lilac), soft and delicate in hue, and marked with a pale bronzy tint on the bar, the pinkish tint being paler on each side next the bar, and passing off to pale flesh colour. 10s. 6d. each.

The set of 3 varieties for 24s. The usual discount to the Trade.

Woking Nursery, Surrey.

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**To the Trade.—Large Plants in 48's of**

GERANIUMS—viz., Vesuvius, Wonderful, Madame Thibaut, Master Christine, and Madame Vaucher, in quantities of not less than two dozen, at 4s. per dozen. These are the same size and quality as sent to Covent Garden Market. Terms cash. Packages free.

GEO. POULTON, Fountain Nursery, Angel Road, Edmonton.

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LEE'S ARGENTÆFLORA VIOLET (for full description of which see April 30).—This nearly white, very sweet, long-stemmed Violet can be recommended, for its almost perpetual flowering showy habit, as a great acquisition. Plants now ready by post at 15s. per doz., 8s. 6d. per half-doz., 4s. 6d. per quarter-doz. Also Lee's VICTORIA REGINA, and Lee's ODORATISSIMA, 6s. per doz., 3s. 6d. per half-doz.—GEO. LEE, F.R.H.S., Market Gardener, Clevedon, Somerset.

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ALTERNANTHERAS, and other CARPET BEDDING PLANTS.

ALTERNANTHERA, amœna, 8s. per 100, 70s. per 1000.
" " spectabile, 8s per 100, 70s. per 1000.
" magnifica, 7s. per 100, 65s. per 1000.
" amabilis latifolia, 7s. per 100, 65s. per 1000.
" paronychioides major, 7s. per 100, 65s. per 1000.
" versicolor, 7s. per 100, 65s. per 1000.
" spathulata, 7s. per 100, 65s. per 1000.
MESEMBRYANTHEMUM, cordifolium var., 8s. per 100, 70s. [per 1000.
COLEUS, Verschaffeltii, 10s. per 100.
IRESINE, Lindeni, 8s per 100, 70s. per 1000.
LEUCOPHYTON, Brownii, 10s. per 100.
HERNIARIA, glabra, 5s. per 100, 40s per 1000.
LOBELIA, West Brighton Gem, 5s. per 100, 40s. per 1000.
MENTHA PULEGIUM GIBRALTARICUM, 5s. per 100, 40s. per 1000. All the above are well established plants.
New LIST of other kinds free on application to
WM. MILES, West Brighton Nurseries, Chftonville, Sussex.

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**Roman Hyacinths.**

DOUBLE ROMAN AND PAPER-WHITE NARCISSUS.
DOUBLE SWEET-SCENTED JONQUILS.

E. H. KRELAGE AND SON, NURSERYMEN, SEEDSMEN, and FLORISTS, Haarlem, Holland, are now ready to book orders for the above articles, to be delivered in August, or later in the autumn. A special offer, with prices, is sent on prepaid application. Early orders are solicited as especially Roman Hyacinths and Roman Narcissus are expected to become scarce at the end of the season.

NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties are now ready, 2s. 6d., 3s. 6d. and 5s. each. Full particulars and testimonials free on application to
Messrs. JONES AND NORTH, Hope Nursery, Lewisham, Kent.

PRIMULAS and CINERARIAS. — Fine, strong plants of the good Covent Garden Strains, of first-class quality, 1s. 6d. per dozen; 10s. per 100.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

POT ROSES and CLEMATIS.—A large and very extensive Collection of the above, including the finest varieties, ready for delivery in June. Early orders solicited.
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

To the Trade.—New Roses for 1881.
LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,
Gratis and post-free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

NEW ROSES for 1881, in pots. TEA and NOISETTE ROSES, in pots. Price Lists free.
CLEMATISES, best new and old sorts. New List to be ready (D.V.) by end of May.
EWING AND CO., Eaton, Norwich.

Drumhead Cabbage Plants.
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WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff, 6s. per 100, 50s. per 1000; strong plants from single pots, full of cuttings, 12s. per 100; 100 rooted cuttings, in twelve best show kinds, 8s., packing included. Terms cash.
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CRANSTON'S
KING'S ACRE SWEDE.
A large and handsome free-growing purple-top variety, perfectly round in shape, with small neck, and single tap-root.

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YELLOW-FLESHED STUBBLE TURNIP.
The most nutritious variety in cultivation, of quick growth, and a splendid keeper. Is distinct from any other Turnip. Seed can only be procured direct from us.

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## Hybrid Perpetual and Tea Roses
IN POTS.

*Strong Healthy Plants,*
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*Free on application to*
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| Daniels' Prize Cineraria. | Per 100. s. | d. | Per doz. s. | d. |
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| *ANTIRRHINUMS, very choice mixed .. | 7 | 6 | 1 | 0 |
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| CALCEOLARIAS, Daniels' Prize .. .. | 10 | 6 | 1 | 6 |
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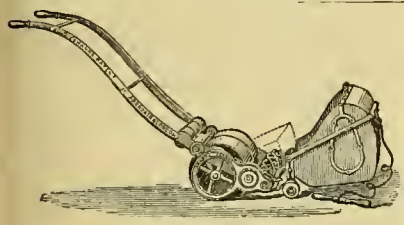

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**RHODODENDRONS**—this Collection also containing some fine Specimen Plants; and a General Collection, consisting of KALMIAS, ANDROMEDAS, CALLUNAS, ERICAS, DABŒCIAS, GYPSOCALLIS, &c.

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## "ALFRED NEUNER."

**SOLE AGENTS**
FOR
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AWARDED TO
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**The following is the Raiser's Description**:—This is a gem of the first water, equal, if not superior, in profuse blooming quality and vigorous healthy growth to the valuable single white variety Davidsonii, of which this double white one is a sport. The flowers are rather larger than those of the single-flowering, and composed of three perfect rows of petals of the purest waxy white colour, each floret resembling a miniature Tuberose. The trusses are large and perfect, and are freely and without interruption produced, even on the small side shoots, which generally make no flowers on the single one, and according to our observation and experience for the last two years it will bloom more freely and constantly than the single variety. This double Bouvardia will prove a standard flower, indispensable in all fine cut-flower work.

*From* Thomas Meehan, *Philadelphia*.—"You have a grand thing in the Double White Bouvardia. It will make a sensation. I exhibited your specimen flower at the Academy of Science, where it was much admired. It is a capital addition to winter flowers."

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**Orders now being Booked for Execution in strict Rotation, on arrival of our Supplies from America. Stock very limited.**
**Price, in 3½-inch pots, 21s. each; in 2-inch pots, 15s. each. Trade price on application.**

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PATRONISED BY
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NEW and CHOICE

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*Post Free.*

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**TWO THOUSAND POUNDS**

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Will be awarded on FRIDAY, June 3, at the Royal Horticultural Society's Exhibition.

Particulars of these Prizes are given at pp. 182 and 183 of Mr. WILLIAM BULL'S CATALOGUE of NEW PLANTS for 1881.

**The Prizes to be awarded on Friday, June 3, will be as follow:—**

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**1st Prize, a SILVER CUP, value .. .. 15 Guineas.**
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FOR NURSERYMEN.

**1st Prize, a SILVER CUP, value .. .. 15 Guineas.**
**2d Prize, a SILVER CUP, value .. .. 10 Guineas.**
**3d Prize, a SILVER CUP, value .. .. 6 Guineas.**

In each and all cases the above Prizes are offered for Twelve New Plants of Mr. W. Bull's introduction, and sent out since the commencement of 1878. The Plants available for these Prizes to comprise only those announced in Mr. William Bull's Catalogue, as sent out by him for the first time. The Catalogue can be easily referred to, or a List of the Plants had on application.

In each and every entry the names of the Twelve Plants to be exhibited must be sent with the entry. Exhibitors can only compete for one Prize at a time in each class.

The Twelve Specimens must be twelve distinct species or varieties, but each may be composed of one or more individual plants, if grouped in one pot, pan, or vase.

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Establishment for New and Rare Plants

KING'S ROAD, CHELSEA, LONDON, S.W.



THE

# Gardeners' Chronicle.

*SATURDAY, MAY 28, 1881.*


## FOLKLORE OF BUDDING AND GRAFTING.

IN early times trees were regarded with reverent eyes, and looked upon as sentient beings. They played an important part in classical writings, and the traditions concerning them are innumerable; there is, however, no intention in the present paper to treat in any way of these, but only to bring under notice some scraps of folklore about budding and grafting. In a local newspaper of Western France we lately saw an article, evidently written in perfect faith by its author, who was much exercised about the mysterious influence which he had reason to believe was exerted by sheep over the movements and functions of the sap in trees, and he appeals to scientific men generally, and particularly to the directors of agricultural establishments (*stations agronomiques*) to investigate and explain the why and wherefore. According to our author, workmen in France who bark trees for tanning purposes, do not like a flock of sheep to pass near them when they are at work; in such a case they are convinced that the sap will cease to flow, and that the bark will not separate from the sap-wood. Our author confesses that the reason he uses the word "seems" is, because he has never himself performed the operation of either budding or grafting at a short distance from a road during the passage of a flock of sheep. He frankly adds that it never entered his mind at such times to take a twig, and after making a couple of incisions crosswise, to attempt to lift the bark—unfortunately one does not look at everything—but in spite of all this he is a firm believer, because many persons worthy of confidence have frequently stated that the peasants had excellent grounds for their belief, indeed that they were perfectly right. Porteau, who witnessed the fact at Versailles in 1817—a period when the royal gardens were beyond the Porte St. Antoine, and crossed by the high road to Marly—relates that one day some gardeners busy budding near the road were obliged to cease working, because the bark suddenly refused to separate from the sap-wood. At that moment a great flock of sheep passed by, raising a cloud of dust and infecting the air with a greasy odour. The workmen, forced to relinquish the task they had commenced, attributed the state of affairs to the sheep. Porteau was staggered at the explanation; but it was in vain that he himself tried to account for the event of which he had been a witness in any other manner. In Normandy, about Rouen, both gardeners and nurserymen, look upon sheep with equal distrust; the Archives de la Société d'Agriculture de la Seine-Inférieure bear witness to this. No only do the Normandy nurserymen blame sheep for hindering grafting, &c., but they positively affirm that their presence prevents newly-planted trees from taking root. One day a certain Mons. de Malaysie, who had had a lot of trees and shrubs planted in his park, complained to the nurseryman who had done the work that some were sickly and others dying. As is the custom in that district the planter had contracted to replace any plants which died from natural

causes the first year, but in this case he firmly refused to do so because a few ewes with their lambs had been turned into the park to graze; the sickness and death of the young trees had been caused by the withdrawal (*retrait*) of the sap, and he attributed that to the sheep. Another time, on the same estate, some workmen were peeling Oaks under the most favourable conditions. All at once the bark would not part, and that it might not be broken into small pieces and spoiled in the useless attempt to continue, the work had to cease. The proprietor could not understand it, but the workmen, who had not remarked any change in the temperature, thought at once that there must be sheep in the neighbourhood, and said so; they were not mistaken—M. Malaysie's sheep were grazing a short distance off on the other side of a slope! The two following years exactly the same phenomena were repeated, and sheep were each time assumed to be the cause.

M. Joigneaux, the writer of the article from which the above extracts have been taken, does not fail to see that some good might come out of the extraordinary effect produced by sheep on the sap of trees. Could not, he asks, trees which are strong growers and shy fruiters be made to bear? and in other cases could not the cruel spring frosts be set at defiance by using sheep to prevent the flow of sap until danger had passed? If only scientific men would study this question, the sheep or its "scientific equilent" would be called upon to play a considerable *rôle* in fruit-tree culture.

What a pleasant, and, moreover, profitable thing it would be if nets and shading, root-pruning, or transplanting, Paradise stock and Quince stock, could be entirely superseded, and vigour of plant, earliness and lateness, as well as fruit-bearing characters, modified and determined by the sheep or its "scientific equivalent." In these days of telephone and telegraph, electric lights and electric railways, it is not safe to presume on our knowledge, but still we fear it will be a very long time before the gardener's art will be so materially aided that the judicious use of a 5*s.* jar or canister of the "scientific equivalent" of the sheep would render its happy possessor in some respects quite independent of meteorology.

## New Garden Plants.

NOLINA GEORGIANA.* (See p. 697.)

This is a Liliaceous plant with a very large tunicated bulb, and long (1—2 feet), dry, harsh, toothletted, narrow, strap-shaped leaves, from amid which rises the erect flower-stalk, 2—3 feet high, provided with leaf-like bracts, diminishing in size from below upwards, and branching at the top into a many-flowered panicle with spreading branches. The individual flowers are small, whitish, each with a perianth of six equal oblong segments, six perigynous stamens, and a three-celled ovary, with a peltate, nearly sessile stigma, and two ovules in each cell. The fruit is capsular, the seeds oblong, ovoid, usually reduced to one or two only. The plant is a native of Georgia.

Though the individual flowers are not striking, yet in the mass they are handsome. Mr. Baker tells us the flowers are occasionally polygamous, and that Dr. Gray points out a relationship to the Mexican genus Beaucarnea, of which this may be an outlying form. Flowering specimens were lately shown before the Scientific Committee by Mr. Elwes, who grew them under glass, and to whom we are indebted for some of the above particulars. We doubt the hardiness of the plant in any but the most favoured localities in England, but, in countries with a hotter summer, this would make a conspicuous ornamental plant. *M. T. M.*

ODONTOGLOSSUM MACULATUM (*Llav. Lex.*), ANTENNATUM, *n. var.*

A very curious variety. A long slender peduncle showed every flower as it developed, bearing on each side of the face a styliform hairy wing, which would appear never to have been seen, or at least described before. I had this great curiosity from my excellent correspondents, Messrs. Haage & Schmidt, Erfurt, who possess an exceedingly rich stock of plants. *H. G. Rchb. f.*

* *Nolina Georgiana*, Mich. ex Chapman, "Flora of Southern United States," p. 483; Baker in "Journ. Linn. Soc." xiii., 292.

PHALÆNOPSIS EQUESTRIS (ROSEA) LEUCASPIS, *n. var.*

This is a very distinct variety, having a white callus with brown dots, and no brown on the base of the lip. I saw it, however, with some yellowish hue in 1854, in a specimen from Mr. Pescatore's garden, sent and grown by the indefatigable Mr. Lüddemann. At present I have fine flowers at hand, sent from Mr. G. T. Barber, Old Hall, Spondon, Derby, a most enthusiastic Orchidist. *H. G. Rchb. f.*

IMPATIENS MARIANÆ, *n. sp.**

A very lovely species, with thickish stems, covered when young with numerous hairs. Leaves stalked, cuneate oblong acute, with very shallow serratures or crenatures, dark green, with fine light spaces between the principal lateral nerves. Flowers in cymes, evidently of a charming lilac-purple, rather large, equalling in size those of a small garden Balsam. The lip has a longish, slender, hooked spur. As was stated by Dr. (now Sir Joseph) Hooker in the case of these plants, the standard appears to be very polymorphous. It has a hairy ridge over the body, reminding one of certain species of the molluscous genus Patella. This ridge extends into a blunt or acute body at a distance of one-third of the whole length from the top. I have also found it much nearer to the top and extended into a curious body, quite like the hooded petal of an Aconitum, which gave the flower a singular appearance. The yellow inflexed auricula under the longer portion of the petal is very curious. The ligular appendages to the filaments appear to be subject to many variations. Once I found a single blunt, triangular, upright, membranous body; at another time an emarginate membranous body; on another occasion two blunt fleshy masses; and finally, in the same flowers some filaments appeared to be free from ligular appendages. I could not find any smaller heteromorphous flowers, such as have been observed in some species of Impatiens, and in Oxalis. We may soon be able to control these indications, taken from dried flowers, by living plants, as the species is grown at Herrenhausen, near Hanover, by Herr Hofgartner Wendland, and at the Botanic Garden at Göttingen, by Herr Gartenmeister Giseler. It was found by Mr. Gustav Mann in the Makum Forest on the right bank of the Dehing River above Jaipur, in Upper Assam, where it covers the ground like a beautiful carpet, growing in the deepest shade under trees over 100 feet in height, which almost exclude the light, and it thrives well in very wet localities, flowering in June and July. It was introduced by Mr. Mann into the garden of Shillong, in the Khasi Hills, where it grows well at an elevation of 5000 feet, and has become a favourite garden plant on account of its pretty foliage. I have searched in vain for it in Sir Joseph Hooker's *Flora of British India*. Mr. Gustav Mann could not find it in the vast Kew herbarium. In the Calcutta herbarium it was under Griffith's n. 1245, mixed up with I. porrecta.

I have, with great satisfaction, given the elegant plant the name of the late excellent Mrs. Mariana Mann. She was not only a great lover of plants, especially of Lilies, but a most intelligent custodian of Mr. Mann's botanic treasures. *H. G. Rchb. f.*

VANDA TERES AUROREA, *nov. var.*

A lovely variety. Flowers snow-white, with a light rose hue on the anterior part of the lip, and some light yellow in its throat. It is No. 619 of the flowers sent by Mr. W. Bull, who we hope may possess a large stock of the plants. *H. G. Rchb. f.*

* *Impatiens Marianæ*, Rchb. f. (Hook. f., *Flora Brit. Ind.*, i., p. 471, ad B. iii., post, p. 472, n. 98).—Succosæ: caule crassiusculo primum pilosulo; foliis anthesi exstipulatis petiolatis laminis cuneato ellipticis acutis humillime glanduloso crenato serratis discoloribus hispidulis, in pagina superiori pallide variegatis, lamellis pluricellularibus apice glanduloso peltatis sub lamioa ac io laminæ basi; cymis uoi seu bifloris, rhachi tomentosa; calycis sepalis oblongis acuminatis apicem versus hispidulis; labio extinctoriiformi io calcar uociuatum expanso; vexillo cuneato oblongo acuto dorso carinato ultra medium conico seu obtuso abrupto; petalis bifidis lacinia altera abbreviata rotuodata; altera elongata semioblonga; uno latere undulata, altero rectilinea plana cum auricula flava inflexa in basi. *H. G. Rchb. f.*

## ACACIA DISEASE.

THE fungus of the Acacia disease (Æcidium ornamentale, Kalch.) has confined itself at present (as far as my knowledge goes) to attacks upon Acacia hirsuta. How overwhelming and destructive these attacks are, is shown in the illustration (fig. 123), engraved from Nature. The fungus attacks the branches and young shoots of A. hirsuta, and completely enveloping them in one dense mass of fungus growth, the shoots get twisted into curves and horn-like forms (as if writhing in misery under the attack). Anything more unpleasant, from a horticultural point of view, it is almost impossible to conceive. The attack made on the Acacia by this Æcidium is unusually severe, for the fungus perfectly covers every portion affected, not leaving a vestige of the parts under attack visible. The Æcidia or "Cluster-cup" fungi are extremely common in this country, one of the most notable being A. berberidis, Per., common on the Berberry, and said to be a condition of the Corn Mildew. A. violæ, Schum., is also very frequent on Violets, as is A. grossulariæ, DC., on the leaves and fruits of Gooseberries and Currants. The fungus of the Sempervivum disease—Endophyllum sempervivi, Lev.—is also a very close ally, and if the reader will refer to the description and illustrations of this latter pest in the *Gardeners' Chronicle* for May 22, 1880, he will see the points in which the Sempervivum and Acacia diseases agree with each other, and also the points in which they differ. In the Sempervivum fungus the spore-bearing flasks are entirely immersed in the body of the leaf, whilst in the Acacia fungus these flasks are studded all over the surface.

When a portion of the diseased Acacia twig is placed under a magnifying power of 30 diameters, the yellow, swollen, pulverulent-looking mass resolves itself into innumerable elongated flasks, or peridia, as seen in figure; each of these flasks opens by a mouth at the top, and the mouth is fringed with recurved teeth, as shown. Ten thousand of these flasks (at least) are nestling close together on the twig illustrated. To see something of the structure of the flasks a section must be carefully made across several with a sharp lancet, and if the cut is skilfully made, the interior of the flasks will be seen in the woodcut. The wall of the flask is built up of a single layer of cells or small bladders placed side by side, as indicated by the somewhat thicker lines running up both sides of the figure. Inside each flask will be seen an almost uncountable number of spores, disposed end on end in necklace-like fashion; if these spores are put down at ten thousand in each flask the number will be probably considerably under-estimated, and ten millions of spores on the twig illustrated will be a very moderate computation. The spore-flasks or peridia in this species are elongated to an extent unknown to me in any other Æcidium, as the usual form of the flask is like a tea-cup in shape—sometimes like a saucer. To see the spores, or reproductive bodies analogous with seeds, a much higher power is necessary. The spores are shown magnified 480 diameters; it is now seen that each spore is furnished with a somewhat thick skin, and the protoplasm or condensed living matter within is irregularly indented and folded like the brain of an animal—a very common phenomenon in spores. It is apparent that the reproductive power for evil in this parasite is very great, and wherever a living company of the fungi exists the size of the assembled host on fig. 123 there is at least ten millions of chances that the fungus may fix on another host-plant. The fungus when growing has an extremely beautiful appearance: it looks like a fine and beautiful piece of jeweller's work in gold: everywhere studded with minute and perfect circles, hence the plant has been termed Æcidium ornamentale from its beautiful and ornamental aspect.

The specimen engraved was sent by Prof. MacOwen from the Cape of Good Hope, to the Rev. J. E. Vize, of Forden, Welshpool. Whether this parasite will spread amongst other members of the family to which the Acacia belongs, in the same way as the fungus of the Hollyhock disease has spread from the Marsh Mallows of Chili, to the Hollyhocks of Europe, time will show. *W. G. Smith.*

## BRITISH GUIANA.

(*Concluded from p. 658.*)

WHERE many Palm trees of one species are gathered together in any one spot in the forest the scene has a very distinct character. The most common of these social Palms is the Æta (Mauritia flexuosa), which, though it occasionally grows singly at the river side, its seed having probably been placed by the current, yet grows more generally in large numbers, either in some swampy part of the forest, or entirely filling some moist valley on the savannah. A large Æta swamp in the forest is a curious and somewhat gloomy place. There are hardly any other trees or plants. The simple massive trunks, free for some distance from the ground from all *débris*, but crowned with giant fan-like leaves, of which some hang withered and brown against the trunk, rise at some distance from each other, each from a hillock of fallen and decaying leaves, and between the hillocks stretches the bare black mud, through which narrow streams of dark red water wind in places. The leaves of the Palms interlock and make a roof and a thick shade, hardly less dense than that in the rest of the forest. Occasionally from one hillock to another a fallen trunk lies like a bridge, and in other places there are a few young Palms, stemless as yet, their leaves rising straight from the mud. As far

as one can see, looking between the trunks, the scene as it is in the foreground is continued. A swamp filled by the Troolie Palm, Manicaria saccifera, is equally striking. In the north-western part of the colony, between the mouths of the Orinocco and the Essequibo, large stretches of land are occupied almost exclusively by this Palm, the immense leaves of which, uncut into leaflets, and sometimes from 30 to 40 feet long by 5 feet broad, meet overhead, and thus maintain a constant gloom and a damp and humid atmosphere round their stems, which is very favourable to the growth of small Ferns. It is while standing in a Troolie forest up to one's knees in the level floor of Palm *débris*, and gazing up at the almost monstrously gigantic leaves, that one most realises the effect of tropical vegetation.

The most graceful of all the Palms of Guiana, the Manicole (Euterpe oleracea), grows in masses at the sides of most rivers; but in places it also occupies whole swamps. These differ principally from the Æta swamps, in that the Manicole grows, not singly but in groups, each raised on a common dense mass of exposed roots, and consisting of many gracefully bent slender stems of very various heights. These groups arise in this way. A single seed takes root and sends up a single stem; but after a time a new stem buds out from the base of the original stem, and this happens again and again until the whole group, or plant, perhaps consists of a dozen stems of various ages. And as the number of the stems increases, more and more supporting roots are sent out, and these in time get welded into a great mass, and gradually push up the crown, which carries the stems far into the air. Because of their most feathery foliage and the grouping of the slender stems each clump of these Palms is a thing of exquisite beauty, and the swamp in which many of these clumps stand as islands has none of the solemnity of the Æta or Troolie swamp, but is rather full of light and cheerfulness.

A much rarer Palm, which also sometimes grows in considerable quantity in swamps within the forest, though hardly ever entirely occupying such places, is the Booba (Iriartea exorrhiza). It grows so often scattered singly in Manicole swamps that we may well insert one or two in our imaginary picture of such a place. The straight stem of the Booba, instead of rising directly from the ground, is supported high in air on many much forked, prickly roots, sometimes 8 or 9 feet high; each leaflet of its feathered leaves is triangular, like those of a Maidendair Fern, and is set on to the midrib at a peculiar angle, which gives to the whole crown of leaves a most plume-like effect.

One other Palm, which though rare in Guiana, grows within the forest in at least one place in considerable numbers, is an Attalea, perhaps A. speciosa. It grows among trees and shrubs of the ordinary type, but its huge feathered leaves, in that they are not raised as in other Palms on a trunk, but spring directly from the ground, have a peculiar effect.

Passing out of the forest into some open space, either a river-course or a glade, the edge of the forest as seen from here presents a very different aspect. We will suppose ourselves to look at it from some river.

The character of the riverside vegetation within reach of the tide differs somewhat from that which prevails in the higher parts. Generally in the former parts the true forest does not extend to the open river, but between the two a belt of Mangrove trees (Rhizophora Mangle) stands, raised high above the mud flat on aërial roots, except where in one or two places a projecting spur of the higher real bank runs out above the mud, through the Mangroves, into the river, these banks being clothed by a dwarf Palm (Bactris) so densely packed that the bold feathered leaves completely hide the stems, and the whole look like high swelling banks of Fern leaves. In the shallow water of the bays between these banks and the lines of Mangroves numbers of Eucharis-like Lilies raise over the water their grassy leaves and clusters of large delicate, sweet-scented flowers, sometimes pure white (Crinum Commelyni), sometimes with red-stained anthers (Hymenocallis guianensis).

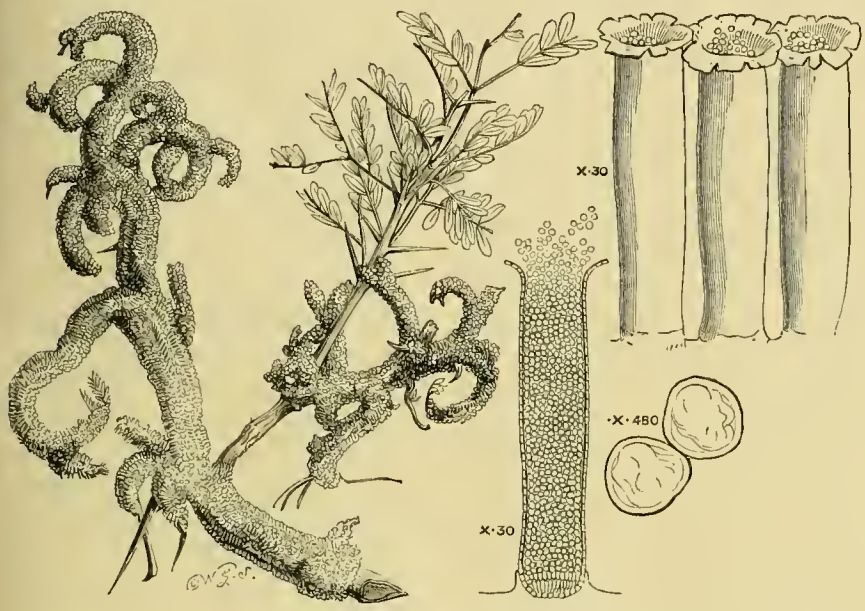


Fig. 123.—ACACIA DISEASE. (SEE P. 688.)

It is somewhat difficult to describe a piece of the bank along the higher parts of the rivers, for each stretch differs, yet differs but slightly, not so much in the plant materials which compose it as in the way in which these materials are combined. In a typical stretch of river bank three somewhat different phases of vegetation are chiefly discernible, according as the bank has not within any recent period either been increased or decreased by the action of the passing river, or has been washed away, or has had new soil added outside it. As the traveller faces the bank he may from one place be able to notice all these three phases; part of the bank is undisturbed; part has recently been carried away, so that the river here has made its way into the forest, and runs immediately next to the forest wall; and a little lower down the earth thus swept away has been again deposited, built up as it were in a spit of low land, which runs from the original, somewhat higher bank, out into the river.

Where the bank has been undisturbed the forest leafage slopes with well rounded curves down to the water's edge, trees, shrubs and creepers being all blended into one; and the whole is continued without the slightest break in the almost perfectly faithful reflection by the water. In the mass no single plant is distinctly seen, and the general monotony is broken only by some isolated patch of colour. Yet on the other hand many individual flowers and seeds attract the observant eye. In one place, for example, a number of large pods hang each at the end of a whip-like stem some 2 feet in length, and again, a very curious green flower, shaped like the spokes of a wheel, are sure to attract notice; but so confused is the mass that it is long before it is possible to determine that the former belong to a tree (Eperua falcata), the latter to a creeper (Marcgravia umbellata). In short, the whole is one confused rounded mass of innumerable plant forms.

Where the bank has been broken away, the foliage no longer passes in this rounded mass down to the water, but the trunks of the outermost trees of the forest rise like a wall, perpendicularly from the surface of the river. The creepers, which before the bank gave way ran over the roof of the forest, have now already sent down tendrils towards the water; and there, weaving themselves together, hang exactly like a drawn curtain, straight down from the outer edge of the tree branches which project over the water. At certain seasons of the year this curtain of creepers is dyed with the most brilliant colours by the various flowers which it puts out. In one place, the wall of trees and creepers is broken by a magnificent Palm, Maximiliana regia. This plant is a study in itself. The word Palm generally calls up in the mind an unvaried picture of a more or less tall, more or less straight trunk from the top of which a few leaves branch off somewhat at right angles; as a matter of fact, though such a description does roughly apply to the generality of Palms, yet differences, slight in themselves, in the nature of the trunk and in the set of the leaves and leaflets, give to each genus and often to each species a very distinct aspect. For instance, this Cokerite could never be mistaken at any distance for any other Palm occurring in Guiana. It grows singly, though occasionally there are a good many near together. Occasionally there is a clear, columnar stem for some little distance from the ground, but upward from this, or much more often from the ground itself, the bases of the stalks of former leaves still remain, encircling the stem, and these adherent remnants of stalks are longer and longer passing up the tree from below till the present green leaves are reached, and these, set not at any acute angle to the stem below them, but at a very obtuse angle, rise high into the air, and curve very gradually and gracefully outward. The whole shape of the tree is in fact that of a vase, which from a very narrow base curves continuously outward. The leaves themselves are feathered, but the many long grassy leaflets are thickly set on the midrib at a peculiar angle; and these, straight for some distance, then hang their ends loosely down, so that the whole leaf has the aspect, not, as usual among feathered Palms, of a flat feather, but rather of a curled ostrich plume. The plant is made yet more beautiful by the fact that among the *débris* on its stem some Ferns have taken root, chiefly Nephrolepis acuta and Polypodium aureum, and these mingle their green leaves with the great hanging bunches of yellow Palm flowers and fruits.

On the spit of new-forming land plants have already begun to grow, and the refuse from the first-coming plants is gradually building up soil for more enduring forms. Nearest the river, the spit is edged with a uniform belt of some particular bush, growing in the water, either Guavas (Psidium aquaticum and P. aromaticum), with white scented flowers and green-yellow bitter-tasted fruits, or Mahoes (Hibiscus tiliaceus), with leaves like those of English Lime trees, and large pale primrose-coloured Mallow-flowers with chocolate throats, or Inga (I. Meissneriana) along every branchlet of which white flowers, like downy feathers, nestle thickly. Over these bushes twine not a few creepers, their roots on land, some bright coloured, such as purple Bignonias, Allamandas with huge yellow trumpet flowers, and a Combretum with scarlet bottle-brush flowers. Behind this outer hedge the spit is for some distance back covered by a tangled mass of lower vegetation, apparently of shrubs, but so completely clothed by Convolvulus (Ipomœa) and other creepers that it is impossible to discern their kind. From among these shrubs rise a few single Trumpet-wood trees (Cecropia peltata), the straight or but slightly branched stems of which, each crowned with a rosette of large Maple-shaped leaves, spring up to a great height in a few months, and then, by their equally

rapid decay, help largely in the formation of soil for more permanent trees. Accordingly, yet further back, but still on the spit, a few Long Johns (Triplaris surinamensis) rise singly; for these, less enduring than the true forest trees, but more so than the Trumpet-woods, grow on the soil deposited by the latter, and in their turn prepare the soil for more noble products. Lastly, where the original bank begins, the dense forest wall serves as a background to all this ephemeral vegetation.

One other very characteristic riverside picture must be given. In this, as far as the eye can see, the whole sandy bank is occupied by a dense thicket of Souari Palms (Astrocaryum [vulgare?]), their long grey stems, curved in various directions, clear of hanging leaves, but horridly armed with long spines arranged in broad bands round the tree, their feathered greyish-green leaves also spiny, and the ground round their roots made impassable to naked feet by an unbroken carpet of heaped spines and spiny *débris*.

Passing from the forest tract to the savannah the characteristic scenery may easily be shown in a few pictures. The first is taken from the great savannah of the interior. The scene is bounded towards the right by a distant chain of mountains, on the face of which bare cliffs and wooded slopes mingle; toward the left the plain rolls away until it meets the horizon. The land is not unlike those wider parts of the English downs where the rolling surface is broken by a few stunted Hawthorns or clumps of tall Furze. But in the hollows between the ridges of the savannah, instead of the Fir, Beech, and Hazel coppices of the English downs, there are long, regular-looking groves of Æta Palms or belts of other tropical trees. The Æta wood is like that which has already been described. The shrubs are windblown, but many of them bear bright flowers. Commonest of all among the shrubs are hard-leaved, yellow-flowered Curatellas. Here and there the highest ground is so thickly covered by these shrubs that it looks almost well wooded. In parts the soil is somewhat exposed and stony; but even here there are numbers of a curious low-growing plant (Scirpus paradoxus), with a thick swollen trunk, like that of a Tree Fern, surmounted by a dense rosette of very fine grass-like leaves. In other places there is high and luxuriant grass, among which mix many bright flowers, chiefly white, red, blue, and yellow Pea-flowers, and even a few ground Orchids. One great stretch of ground is entirely covered with a Cabbage-like plant, with great bunches of yellow flowers (Byrsonima). A second savannah picture shows more sandy ground, a coppice not far off forming a background. On the loose sand there are many scattered tufts of coarse grass, and amongst these stand a few tall straggling plants (Jatropha urens) with inconspicuous flowers and Hemp-like leaves, which, when touched, sting more sharply than any Nettle.

Of the scenery of the somewhat different and peculiar sandstone part of the savannah, lying between the Kaieteur Fall and Roraima, I have told elsewhere.

Before leaving the subject it must be mentioned that there are certain water plants which are so striking and in places so abundant that in themselves they make scenes. Two of these (Mourera fluviatilis and Lacis alata) grow on the half-submerged rocks in most of the falls. As the water decreases in the dry season, the tall spikes of bright pink flowers of the former plant rise from their large leaves, the edges of which are cut and curled into the likeness of moss, which lie flat on the rocks; and at the same time and place innumerable tiny pink stars rise an inch or two over the equally moss-like leaves of the Lacis. A rapid, apparently encircled by the forest, and with its rocks all reddened by these flowers, is very beautiful and noticeable. *Everard F. im Thurn.*

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Rhododendron hybridum.—In the winter garden at Kew this interesting shrub is now in bloom. Its parents were Rhododendron maximum and Azalea viscosa, the latter being the seed bearer. The coriaceous evergreen foliage, the number of stamens and general look of flowers are decidedly Rhododendron-like, but it shows the Azalea influence strongly in the blueness of the leaves, and in other minor characters. It was raised by Mr. Herbert, of Spofforth, in the first quarter of the present century.

## MORE NOTES ON FLOODS.

Effects of "Underdraining."—Underdraining clay soils, though undoubtedly (as set forth in the paper read by Mr. Bailey Denton at a meeting of the Farmers' Club on February 7 last) it sends more water to the rivers than would otherwise have reached them, yet does not, as a rule, I submit, tend to increase floods; but in many instances may actually tend to alleviate them by rendering the land above the drains to a certain extent more porous and sponge-like or capable of holding a greater quantity of water than before in temporary suspension, so that much of that which would otherwise have run at once off the surface, passes through the soil to the drain, and while doing this gives time to that which had more immediately reached the streams to get away. Increased "arterial drainage," if by this term is meant large open main drains which conduct water collected by smaller drains and watercourses to the rivers more quickly than it would otherwise have reached them, do (a fact beyond the power of any one to controvert) tend to increase floods along the valleys of the rivers with which they communicate.

Contributions to Floods, and How They Should Not be Dealt With.—Much as improvements in certain agricultural districts have tended to the increase of floods, the growth of towns and the ever-increasing area built over has tended and is tending to produce them to a much greater extent. Land built over ceases to absorb rainfall; almost every drop that falls on it is conducted quickly to the nearest stream, and hardly any of the rain which falls on the streets of a town sinks into the earth. Improved methods of paving prevent this, and improved sewerage schemes conduct it immediately to the nearest river. Rivers have, in fact, been misused as the "waste pipes" of the districts through which they flow.

The floods might, in some instances, be avoided by simply putting a river into such a condition as to make it capable of carrying all the water rightly and wrongly hurried into the sea, without overflowing; but this would, even in those cases where it was very fairly possible, be enormously expensive, and it is for other reasons one which the intelligence of this part of the nineteenth century should be too great to sanction. When rainfall has once been got rid of in the sea, it ceases to be of use to man inland till brought back again by the agencies of the sun, wind, clouds, and rain—agencies which cease to act towards this end during periods of long-continued drought; likewise water hurried to a river from upland districts immediately ceases to be available for use in those districts.

The Proper Way to Prevent Floods is to prevent the rainfall from reaching the streams more quickly than these under fair conditions are able to carry it off, and to remove or prevent the accumulation of undue obstacles to the passage of water in the streams and rivers.

The Proper Way to Alleviate Droughts is to look after the storage of water in tanks and reservoirs and in the "bowels of the earth." Surplus water should, wherever possible, be poured into the earth to feed the deep springs, which will then be in a condition to keep up a good dry-weather flow in the rivers, as well as be in a condition to yield copious supplies for the use of man all through long droughts and a series of dry seasons.

Dry Seasons. — During the succession of dry seasons which followed soon after "that memorable year of floods, 1860," brooks, small rivers, and ponds never known to fail before in the memory of "the oldest inhabitant," frequently went dry. Since 1860 it is acknowledged on all hands that drainage has increased to an immense extent, and the area of country since then covered with buildings, streets, and roads, is enormous; consequently, although we have lately passed through a series of exceedingly wet years, the springs cannot be in such a good position to stand the tax upon them which a series of dry seasons will impose as they were after 1860; therefore, the dry-weather flow of our rivers during the next series of dry seasons may be expected to be much less, and in certain instances to give out entirely much sooner than after 1860, and yet the demand for water in the coming will be much greater than in the past dry periods.

Who's to Pay?—The funds necessary to carry out the works to prevent floods and to alleviate droughts should be raised from two sources: one, a general tax, to which the whole community, directly or indirectly, should contribute; and the other a local tax, to which property holders should contribute according to the circumstances and nature of their holdings. This will appear more plain when the following two questions have been efficiently answered:—Firstly, who will benefit by the carrying out of such work? and secondly, who are the persons whose property tends to the formation of floods? To the first of these questions I would suggest as answer—principally those who have houses, buildings, and cultivated lands on the area liable to be flooded, and in a less degree the entire community; and to the second—principally the owners of roofed buildings, streets and roads; then the owners of clay lands and well-drained marshes; then the owners of mixed soils. Light lands do not as a rule contribute to floods. Land and other owners of property who efficiently treat their surplus water should not be made to contribute to the local tax except in certain exceptional cases. A certain proportion of the expense then should be borne by the Imperial exchequer, so that every one may more or less help to pay for that from which every one will more or less receive benefit. Houses, lands, streets, and roads should be made to pay according to superficial area if above the flood line; but if they stand upon the area liable to be flooded, then in assessing the tax upon them the damage they are likely to be saved from and their consequent increase in value should be considered. Lands should be taxed according to perviousness; thus, very stiff clays should pay more than moderate clays, and moderate clays more than mixed soils. Light porous lands contributing nothing to floods, and receiving no benefit from their prevention, should contribute nothing to this tax. Light soils in dry districts, however, may benefit much from the proper storage of water, and should contribute to this end accordingly.

Marshes or Water Meadows.—Though by the avoidance of floods marshes and water meadows will lose the fertilising deposit usually left behind by floods, on the other hand they will benefit by having removed all risk of occasional loss of hay crop and other disasters caused by floods coming during the summer time.

Storage of Water for Domestic Use.—Rainwater from the roofs of buildings even in the smokiest towns, may be so cleansed by a simple process (lately fully described by Mr. Shirley Hibberd) in its passage to the storage tanks as to be quite suitable for all domestic purposes, not excepting cookery, for which, as for all other domestic uses, its superiority over hard water is universally acknowledged. *J. C. Ewing, Eaton, Norwich.*

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## RHODODENDRONS.

(*Continued from p.* 595.)

Being in Edinburgh early in April last I did not omit to visit some of its Rhododendrons. Unfortunately I had not time to visit all.

To begin with my ever-hospitable host, Mr. Anderson-Henry—he had, among others, a remarkably fine plant of R. fulgens in full bloom in a cold house. The brilliant scarlet of this species is almost unrivalled, and the truss is much more compact and fuller than that of R. Thomsoni, which in colour it resembles. The leaves are clothed beneath with a dense coppery tomentum, after the manner of R. campanulatum and Batemanni. A good figure is to be found in the *Botanical Magazine*. Its early habit often prevents success, when it is treated as a wholly unprotected plant; but very slight protection suffices. Mr. Henry's plant was in a pot, and not many feet high, and yet covered with a profusion of blossom. I have never seen a better type of the species. Mr. Boscawen has also a very fine plant, but of my pleasant visit to his plants more anon.

An interesting Rhododendron was blooming close to Mr. Henry's front door. The interest lay in the probability of its being a new species. It was labelled as having been raised from Indian seed, but we could not identify it. We thought it might be a natural hybrid. It had something of the character of R. Thomsoni, yet was very distinct. It should be

watched when blooming in better form than after the late cruel winter.

This last paragraph raises a most important question, viz., how far natural hybrids prevail among Rhododendrons. We know that under cultivation many very distinct species freely interbreed and produce fertile progeny. We know that some of these species grow side by side on their native mountains. I have written to my correspondents near the spot, in the hope that they will investigate this question, which is of very great interest in connection with a genus so prolific of species growing in proximity. Sir J. Hooker said of Sikkim, "What surprised me more than the prevalence of Rhododendron bushes was the number of species of this genus;" and Beccari said of Borneo that almost every mountain peak had its own special forms. I trust to be in a position some day to lay further information before my readers.

The Rhododendrons of Messrs. Downie & Laird, of Edinburgh, are well known, but their Easter show quite astonished me. In their winter garden (which every one should visit) stood splendid plants of hardy hybrids in full bloom, such as one rarely sees anywhere, and which betokened years of care and skill. From the street the view was brilliant, and, on entering, quite dazzling. Trees, 10 and 12 feet high, and many feet through, stood up and down and across the large glasshouse, and all seemed to be at their best—pictures of health and vigour, and ablaze with blossoms. I found out later that these plants were not the first, nor would they be the last, in the succession of Rhododendrons which this house displays every spring. John Waterer and Michael Waterer were there, of course, and Lady Eleanor Cathcart, that most Pelargonium-like of Rhododendrons, Sir Joseph Whitworth, Sir R. Peel, Auguste van Geert, Lady Falmouth, Camille de Rohan, and many more. Among whites were Mrs. John Clutton, and a very fine form or hybrid of R. arboreum album, densely spotted. Broughtonii, which carries the largest truss I know (except that of a stupendous hybrid in the Temperate-house at Kew), had gone by, and been removed, together with Grand Arab and other early scarlets; but I saw the plants later at the nurseries.

Mr. Downie, by years of skilful treatment, has induced a habit of early blooming in these his show plants, so that now with very little heat they bloom in the earliest days of spring, keeping all their brilliancy of colour.

At the back of the house I found a splendid plant of a scented Rhododendron, called Duchess of Buccleuch, evidently a hybrid of the Sesterianum breed. Large white flowers, flaked with delicate primrose, covered the bush below in hundreds, while above rose a mass of yellow buds in a later stage of bloom. Not far off was R. fragrantissimum, another hybrid of a similar type, not so large, but very fragrant.

Young Mr. Laird took me out to the nurseries, where, amid multitudes of herbaceous plants, the grand Rhododendron specimens are prepared for the public eye. I was much pleased to see the attentive care bestowed on them, and to see what a thorough Rhododendron fancier Mr. Downie is. He showed me plants of R. Veitchianum and javanicum and Veitch's Princess Royal (which last had bloomed for six months continuously), and a very fine variety, or perhaps species (the flowers were unfortunately over), with Falconeri leaves but argenteum blossoms, which Mr. Downie had named "Lady Balfour of Burleigh." Large trees of R. Dalhousiæ and hybrid Countess of Haddington were not yet in bloom, but I received the last truss of that king of hardy Rhododendrons, Broughtonii.

Mr. Laird kindly accompanied me to a private collection, where I saw that curious Rhododendron of the Malayan type, R. retusum. The flowers, small and tubular, are coral-red, not unlike those of some Fuchsias. I find that it will thrive in a temperate-house, although a little more heat is desirable. Mr. Davies, of Ormskirk, has, I hear, mated it with R. javanicum. R. Thomsoni was in bloom in the same collection, and a form of Calophyllum or Jenkinsi in bud, under the name of R. Walkeri. By this remark I do not mean to imply that Calophyllum and Jenkinsi are one and the same species, but that I am awaiting the distinctions which Mr. C. B. Clark will probably explain.

My visits to the Botanic Garden, the Lawson Company, Messrs. Dickson, of the Pilrig Park Nurseries; and Messrs. Backhouse, of York, I hope to describe in my next. *J. H. Mangles, Valewood, Haslemere.*

(*To be continued.*)

Hybrid Rhododendrons.—After such winters as the past two, we naturally look around us on the dead and dying evergreens, wondering whether this or that will revive with the slowly approaching warmth. The limbs that were paralysed with excessive cold, of Yews, Hollies, and others, are as still as death, and the sap or life refuses to enter them. Rhododendrons, exceptionally, have weathered the blasting frost to such an extent as to astonish everybody that are interested in the world's garniture; and we, moreover, wonder why it is that the crossbreds or hybrids of this exceptionally fine evergreen have withstood this severe ordeal more nobly than the species. Yet, such is the fact: while the ponticum, from the Caucasus, the catawbiense and maximum, American, the caucasicum and arboreum, Persian and Indian, as species are non-hardy, the sturdy crossbreds or hybrids of these parents are as hardy as Tweedside itself or the crossbred sheep it feeds. The late Duke of Roxburgh had an eye to futurity and encouraged the planting of hybrid Rhododendrons, costing a great deal of money yearly, and had it not been for the good taste and guidance of his Grace scarcely an evergreen would have been seen to-day at Floors. Out of the many thousands that were planted in his Grace's time, few have succumbed to the past winter, and strange to say, the finer the kinds or the more beautiful the flowers the hardier they seem to be. In noticing this fact, which may be worthy of mention, and which has been the subject of conversation with many, it may be well here to mention the name of Waterer, of Bagshot, in connection with these hardy crossbred Rhododendrons, as he has done so much to this end, and to the vast benefit of every individual interested, and more especially the landed proprietors of large demesnes who have not only had their pleasure grounds beautified at little cost, but their game protected in severe weather by means of this magnificent crossbred evergreen, and that in spite of crotchety notions that game refuse their genial protection. When one looks at the splendid heads of bloom in their season, lasting, when shaded especially, a very long time—three weeks or a month—the eye must be dim indeed that does not see in it a very magnificent object. Whether as standards or dwarfs, any one possessing a collection of them has a collection of evergreens of great value. When they do well, standards with heads 6 or 8 feet in diameter and as much through, they are noble and stately when properly and judiciously located.

The late Baron Rothschild encouraged the introduction of these hybrids into France, and large consignments of these splendid standard Rhododendrons were exported there, and this example was imitated by many others, including the Count and Countess Henkel—with whom the writer had the honour of serving—some of which cost £30, including carriage—not a great sum considering the time, care, and attention devoted to the rearing of such fine plants. The Municipality of Paris, with the late M. Barrillet as *jardinier en chef*, did a vast deal in garnishing the unique public gardens of Paris with them, and this under cultural difficulties unknown to most people in this country. There, they have not only the frost in severe winters, which we have here, but gardeners have to contend with the grub of the May-bug, which is most destructive to all fibry-rooted plants, such as the Rhododendron, and as many as 130 of these pests have been taken from the roots of one standard Rhododendron in the springtime, commonly called *hannetons;* and so detested is this grub by French cultivators that were they perhaps to give it another name, it would be unlawful. This subject might be greatly extended, and its object is only to show that we have a most valuable hardy evergreen in our midst, which has been seeded, crossed, and grafted—improved, in short, by many men of no selfish aim, but the desire to do good to all men. *Henry Knight, Floors.*

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Sarracenia Popei x .—Mr. Moore, of Glasnevin, kindly sends us flowers of this hybrid Sarracenia—one of the most beautiful we have seen, the velvety-crimson pendulous petals being margined with a narrow border of pale-yellow, and of a creamy-pink colour within. The pitchers are erect, trumpet-shaped, winged; the margin recurved, glossy-red, the lid ovate acuminate, 3½ inches across, glossy, with red veins. We shall have occasion to allude to this lovely variety in a future number.

## SOURCES OF CARBON IN PLANTS.—II.

(*Continued from p. 607.*)

M. Dehérain next proceeds to criticise certain experiments made by M. Grandeau, by which the latter savant has shown that humic matter obtained from the soil is not diffusible through a membrane, whence he argues it cannot be assimilated by plants. In answer to this M. Dehérain endeavours to show, that it is by no means certain that the action of the roots of plants towards humus is analogous to that of parchment paper, and that moreover it is extremely probable that the substance we extract from soils by means of alkaline solutions is not the same thing as humus in its natural state, and that consequently it cannot be expected to behave in the same way.

The points relied on by M. Dehérain in support of the view that some plants obtain a portion of their carbon from the soil, may be briefly summarised thus:—

1. That De Saussure found that solutions of ulmic matter were decolorised by plants grown in them.

2. That Leguminosæ can only be grown continuously on land which contains large accumulations of old organic matter.

3. The apparent consumption of carbon observed in the large experiments with Maize at Grignon, and also in the small pot experiments with the same plant.

As to the first point, it can scarcely be considered as proven that the decolorisation observed can have arisen from absorption of the humic matter by the plant, besides the amount of humic matter stated to have been taken up bears so small a proportion (1:117) to the total increase of the plant as to be practically not worth notice.

With reference to the behaviour of Leguminosæ, it may be as well here to enumerate a few points, all of which have been before dealt with in different papers by Lawes and Gilbert, and which are worth taking into consideration before finally adopting all M. Dehérain's explanation.

The first point to be noticed is the behaviour of leguminous plants towards nitrogen. It is well known that although they remove large quantities of nitrogen from the land, yet the direct application of nitrogenous manures seems to have but little influence upon them, and that, moreover, a crop of Clover is an excellent preparation for one of corn, which is largely dependent on a supply of nitrogen for successful growth; indeed, the upper layers of the soil are always found a little richer in nitrogen after Clover than they were previously. Now, may not this fact, coupled with that of the large quantity of nitrogen taken up by these plants, indicate that they require their nitrogen in a particular state of distribution, as, for instance, at some depth in the soil? With reference to the beds of Clover referred to above, it must be remembered that they were extremely rich in nitrogen, and that to a considerable depth. The amount of nitrogen removed from these plots has been very large, amounting to something like 200 lb. of nitrogen per annum during seventeen years. (Address, Chem. Sec. Brit. Ass., 1881, p. 17.)

It may also be worthy of consideration whether, as remarked by Dr. Gilbert in "Notes on Clover-Sickness," published in the *Journal* of the Royal Horticultural Society (vol. iii.), Leguminosæ may not require their nitrogen in some special form of combination, either in organic matter or as nitric acid. The probability of these suppositions seem indicated by the large quantity of lime combined with any fixed acid found in their ash, and the latter seems favoured by the fact that nitrate of soda although producing no very striking effect on such crops is decidedly superior to ammonia salts.

The results of M. Dehérain's experiments at Grignon are extremely interesting, but the experimental period seems too short to found any definite opinion on them at present, although the question is well worth future investigation. It appears strange, *primâ facie*, that there should be so great a physiological difference between two plants so closely related as Maize and Wheat, especially as past experience seems to show that the Gramineæ as a class are similarly affected by like manurial conditions, all, including plants so diverse as Wheat and Sugar-cane, being apparently most benefited by nitrogenous manures. The amount of carbon taken up by the roots in the Grignon experiments (if any) is, moreover, so incon-

siderable that we cannot conceive how it can be necessary to the plant unless it fulfils some special function, and this appears very improbable, unless, indeed, as was before hinted, it should serve as a vehicle for nitrogen.

Moreover, there is a decided difference between Maize and Clover which seems to point out that they require very different conditions of soil for healthy growth, and this is, that whilst the capacity of land for the continued growth of the leguminous plants is by no means improved by the application of farmyard manure, for the growth of Maize it is thus benefited. If a supply of carbon to the roots is a necessary condition of successful growth in both cases we should naturally expect that the most favourable conditions would be somewhat similar for both crops. *P., Rothamstead.*

[By misadventure the previous portion of this article (p. 607) was inserted without having been seen in proof by the author. The following errors require correction :—Omit the fifth paragraph from the top of col. *a*. In the next paragraph, between "atmosphere" and "usual," insert "richer in carbonic acid than." The first table in the third column should be headed, "Carbon in soil samples in grams per kilogram." The words maize and forage, placed separately at the head of the second and third columns in the same table should have been together—"Maize-forage"—as a general heading to both columns. In the little table at the bottom of the same column .4 should be 4.0. For "millegram," also, read "milligram." Eds.]

## AUCUBA JAPONICA.

This plant, as its name implies, is a native of Japan, and was introduced to this country about the year 1783. Being diœcious, or belonging to that class of plants which have male flowers upon one plant and female upon another, it so happened that only the female variety was introduced until within the last few years, consequently the plants bore no fruit or berries until quite lately. Indeed, the plant was for some time after its introduction considered tender, and treated accordingly, by being retained in the greenhouse or other glass structure. But on its requirements being better understood, it has now for many years been rather extensively planted out as a hardy shrub, and although in reality somewhat tender, and liable to be slightly injured during very severe winters, it nevertheless succeeds pretty well as such, more particularly in towns and their vicinity. Indeed, it may be considered pre-eminently a town plant, as it withstands the injurious effects of smoke and other atmospheric impurities possibly better than any other evergreen tree or shrub, and it is certainly quite as hardy as the common Laurel, and is indeed sometimes erroneously called the spotted or variegated Laurel.

The winter we have just emerged from has been exceptionally severe, and the Aucubas, like many other species of evergreen shrubs, have in most localities suffered, more particularly in heavy, damp soils, in low-lying localities, and where near to water, while in slightly elevated positions, and where partially sheltered from the north and east winds, they have, in many instances, sustained no injury whatever. This I find to be the case in many of the small and comparatively sheltered gardens in the town of Bury St. Edmund's, where there are many plants of the Aucuba to be found, of considerable dimensions, perfectly uninjured, and at the time I now write they are breaking into growth, and will ere long be in bloom. But, unfortunately, they are all of the female sex, none of the male variety being as yet in their vicinity, consequently there will be no fruit or berries produced by them; and this is much to be regretted, for when well-grown plants of the female Aucuba are clothed with their bright scarlet berries they are exceedingly ornamental, retaining, as they do, the same throughout the entire winter, even until late in spring, and as far as I have observed birds do not appear to molest them. Moderate sized plants are also very useful when grown in pots, as when covered with their bright berries they form very attractive plants under glass, or for the decoration of the conservatory during the winter months.

If flowering plants of the male variety are growing even at some considerable distance from plants of the female sort the latter seldom fails to become fertilised through insect agency, or the pollen may even be conveyed to them by the motion of the atmosphere. Although male plants can be readily obtained at any nursery establishment, many people are not aware of the circumstance, and I am inclined to think that it might answer the purpose of nurserymen or others to collect the pollen of the male variety, and offer it in packets to the public. It retains its fertilising property for almost any length of time, and if carefully applied to the blooms of the female plant by means of a small soft brush or camel-hair pencil the result would be the covering of such plants with their very pretty red fruit, which could hardly fail to greatly enhance such plants in the estimation of their owners. The gardens of Europe, as well as of America, are indebted to the enterprise and indefatigable industry of the late Mr. Robert Fortune for the introduction of the male variety of this plant, as well as for many other valuable introductions which now enrich them. *P. Grieve, Bury St. Edmund's.*

## PLANT PORTRAITS.

Aquilegia formosa, Fisch., *Bot. Mag.*, t. 6552.—A handsome Columbine from the Rocky Mountains, with yellow sepals and long scarlet spurs. Kew.

Asparagus plumosus, Baker, *Flore des Serres*, t. 2413, 2414.—See *Gard. Chron.*, June, 1880, p. 745.

Begonia Ed. Pynaert, *Revue de l'Hort. Belge*, February.—One of a series of crosses between Begonia discolor or Evansiana ♀, and a form of B. rex. Leaves large, deep bronze with a broad silvery band, and a few similar spots between the midrib and the margins; nerves red.

Begonia socotrana, Hook. f., *Bot. Mag.*, t. 6555.—See *Gard. Chron.*, Jan. 1881, p. 8, with cut.

Cereus Fendleri, Engelmann, *Bot. Mag.*, t. 6533.—Stems ovoid, fluted, 9—12 ribbed, spines tufted, spreading, unequal, straight, slender; flowers large, purple, about 3 inches in diameter. Native of New Mexico. Hort. Kew.

Cladrastis amurensis, Benth., *Bot. Mag.*, t. 6551.—Synonymous with Maackia amurensis and closely allied to Cladrastis lutea, the Virgilia lutea of gardens. It is a small hardy deciduous tree, with pinnate leaves like a Wistaria, and dense long racemes of small white papilionaceous flowers. Native of Manchuria and Yesso. Kew.

Dahlia Walter Williams, *Floral Mag.*, t. 448.—A bright scarlet Dahlia, of correct form, substance and centre. Keynes & Co.

Dahlias, Single Varieties, *Garden*, February 5.—1, coccinea; 2, lutea; 3, Paragon; 4, glabrata.

Delphinium cashmirianum, *Garden*, December 4.—A remarkable species, with globose or bell-shaped purplish downy flowers, with short curved spurs, bifid, as appears from the plate, at the apex. Kashmir.

Epidendrum raniferum, *Floral Mag.*, t. 445.—Leaves oblong acute; flowers numerous, in pendulous racemes, each about 2 inches diameter; sepals and petals oblong, green, spotted red; lip 3-lobed, anterior, lobe bifid. Mexico. Hort. Bull.

Gentiana acaulis, L., var. alpina, Grisebach, *Flore des Serres*, t. 2421.—Distinguished from the type by its short, small, and less leathery leaves. It is the G. Kochiana of Perrier and Songeon.

Grape Golden Queen (Pearson), *Flore des Serres.*—A cross between Alicante and Ferdinand de Lesseps; bunch wedge-shaped, regular; berries of moderate size, oval obtuse, yellowish-amber, flavour aromatic; leaves thick, like those of a Fig.

Hechtia cordylinoides, Baker, *Bot. Mag.*, t. 6554.—A fine Bromeliad of tufted habit, lanceolate recurved leaves, remotely and strongly saw-toothed; flowers numerous, small, in a much-branched panicle. Mexico. Kew.

Heliconia striata, Hort. Veitch, *Flore des Serres*, t. 2416.—A provisional name for a plant introduced by Messrs. Veitch from New South Wales, though it is doubtful if that is the native country. The plant is of tufted growth, with long rose coloured petioles, leaves ovate acute, or acuminate, green, with white or rose coloured nerves. It is catalogued by Mr. Bull as H. aureo-striata.

Hoya Cumingiana, Dcne., *Flore des Serres*, t. 2415.—A reproduction from *Bot. Mag.*, t. 5418.

Hyacinthus candicans, *Garden*, January 15, 1881.—A beautiful hardy Liliaceous bulbous plant, with broad lanceolate leaves and racemes of long, stalked, pendulous, bell-shaped, white flowers, lately called Galtonia candicans. South Africa.

Impatiens amphorata, Edgw., *Bot. Mag.*, t. 6550.—One of the handsomest of the Himalayan Balsams, with angular, elliptic, or lanceolate acuminate crenate serrate leaves; flowers in terminal panicles, 1½ inch long, pale lilac lip, with a thick obtuse spur from which proceeds a slender tail-like process. Kew.

Kniphofia Uvaria var. maxima, Baker, *Bot. Mag.*, t. 6553.—The Kniphofia or Tritoma maxima of gardens. Differs from the ordinary form in its robust habit, longer and broader leaves, stouter scape, and longer flowers. Orange Free State. Kew.

Lælia Perrinii nivea, *Floral Magazine*, t. 429.—A lovely variety, with white sepals and petals, the lip tinted with pale violet at the free end. Mr. B. S. Williams.

Lælia xanthina, Lindl., *Flore des Serres*, t. 2418.—Pseudobulb spindle-shaped; leaf oblong, strap-shaped; raceme four to five flowered; flowers 3 inches across; sepals and petals oblong obtuse, brownish-yellow; lip trowel-shaped, obscurely three-lobed in front; whitish, with pink veins. Brazil.

Leptospermum lanigerum, *Garden*, January 3, 1881.—A half-hardy Myrtaceous shrub, with small, linear-lanceolate leaves, and numerous white starry flowers. Native of Tasmania.

Peach Washington Rath Ripe, *Florist*, February.—A handsome late Peach of excellent quality. It is of American origin. The flesh is of a rich orange colour, and remarkably sweet and melting.

Pear Calabasse de Tirlemont, *Bulletin d'Arboriculture*, January, 1881.—Form of Beurré Durondeau, colour and flavour of Poire de Tongres.

Pelargonium (Double Zonal), Bizarre, *Revue de l'Horticulture Belge*, April, 1881.—Leaves crumpled, trusses of moderate size, flowers well formed, double white, shaded rose.

Plum Rivers' Grand Duke, *Florist*, April, 1881.—A late Plum, raised by Mr. Rivers, and said to be the best grower of all the Plums. The fruit is oval, blackish-purple, flesh greenish-yellow, brisk, and rich in flavour.

Pothos celatocaulis, N. E. Brown, *Flore des Serres*, t. 2419, 2420.—See *Gard. Chron.*, Feb. 14, 1880.

Rose Jules Margottin, *Journal des Roses*, Dec. 1880.

Rose Julius Finger, *Journal des Roses*, April, 1881.—A Rose said to be a perfected Captain Christy, and raied by M. François Lacharme. The flowers are large, well-formed, pure white, with a rosy centre.

Rose Louis Van Houtte, *Journal des Roses*, January.—A well-known H.P. Rose, raised by Lacharme in 1867. The petals are of a fiery red bordered with crimson.

Rose Madame Hardy, *Journal des Roses*, August, 1880.—One of the best white Roses of the Damask section.

Rose Mary Pochin, *Floral Mag.*, t. 446.—A fine H.P. of regular outline, evenly recurved petals, and rich crimson-scarlet colour. Raised by Rev. S. N. Pochin.

Rose Mrs. Jowitt, *Floral Magazine*, t. 430.—A noble H.P. Rose, globular in form, glowing crimson, richly perfumed, foliage vigorous. Raised by Mr. Cranston, and certainly one of the finest Roses raised.

Saccolabium Harrisonianum, Hook., *Flore des Serres*, t. 2412.—Leaves closely set in two ranks, oblong, channelled obliquely, notched at the ends; flowers very numerous, white, 1 inch across; sepals and petals oblong obovate; lip oblong obovate saccate. Pulo Copang, China seas.

Tillandsia Lindeni var. Regeliana, *Illust. Hortic.*, t. 370.—The form with short flower-stems, rose-coloured bracts, and blue flowers.

Veronica teucrium, L., *Belgique Horticole*, 1880, t. 7.—A beautiful old-fashioned herbaceous plant of creeping habit, oblong coarsely serrate leaves, and terminal many-flowered racemes of bright blue flowers.

Viola calcarata, L., *Gartenflora*, t. 1028.—The varieties figured are the white flowered variety, albiflora and var. Halleri, with dark-blue flowers and a yellow centre.

Wormia Burbidgei, Hook. f., *Bot. Mag.*, t. 6531.—A stove shrub with elliptic glabrous leaves tapering into a dilated stalk and few flowered cymes, bearing yellowish-white flowers 3 inches in diameter, the fine oblong obtuse petals crisped and waved at the edges. Native of Borneo, where it was gathered by Mr. Burbidge. Messrs. Veitch.

## Foreign Correspondence.

HYACINTHUS CANDICANS.—Your issue of February 26 has just reached me, in which I notice an admirable illustration of H. (Galtonia) candicans shown *en masse* as grown by Mr. Pounsett, of Wallingford, which tempts me to say a word regarding what is destined to become a general favourite wherever bulbous plants are grown and appreciated in the ratio they deserve. I had occasion to retrace my steps through Natal during the month of February of the current season, where I refound this noble Hyacinth in its fullest glory. As seen in the rich alluvial fertile gorges and kloofs of the Quathlamba Mountains, numbered by thousands, it affords a sight and a treat to the lover of the beautiful in Nature not easily erased from the memory. In its sequestered habitats, which are at a considerable altitude, and consequently cool, though sheltered, it attains 4 to 7 feet in height, and being taller than the generality of the herbage in its vicinity it shows the innumerable spikes of its sweetly simple pendulous flowers to the best advantage. Growing at such an elevation here I am quite convinced that it will prove thoroughly hardy in any reasonable soil or position in England, though I should say it would appreciate being planted several inches deep, for whilst many bulbs were immediately beneath the surface in its quieter home, I may mention that the fine spikes were those from bulbs at a greater depth, being quite 6 to 9 inches beneath the sod. As a hardy white-flowered border plant it is not likely to be surpassed in beauty and usefulness for some little time to come, when grown as at Wallingford more especially, and it is of the simplest culture. *Wm. Nelson, The Nurseries, Prinsberg, Clocolan, viâ Ladybrand, Orange Free State, South Africa, April* 24.

## GARDEN GOSSIP.

BY A LADY.

AN AFRICAN BUTTERCUP. — Only a Buttercup! Very true, and only a yellow Buttercup, but a very handsome one, and a great ornament to our spring garden. In habit it is very different to any of our English Buttercups, as may be seen by the drawing, fig. 124; while fig. 125, which is of the natural size, shows how completely it beats any English Buttercup in that particular, almost rivalling the Marsh Marigold (Caltha palustris) in size and colour.

My drawings are taken from a plant the root of which was originally brought me from Algeria six years ago, and which has blossomed with me every year since, but never looked better than it does this year; so that I can recommend it as perfectly hardy, since it has stood this last winter out-of-doors, and not suffered. Ranunculus spicatus (for so it is called) retains its Algerian habits, always dying down early in the summer, as if to avoid an anticipated drought, appearing again in September and October, and, in mild winters, remaining above ground, its handsome leaves forming a conspicuous ornament to the winter garden. In winters like the last it gets cut back by frost, but, nothing daunted, it puts out fresh leaves when the cold weather is over, and only blossoms a little later than it would otherwise have done. It has flowered with us this year in April, and has remained in blossom for three or four weeks.

I think it is interesting to notice the different habits of flowers, and to observe how they retain under cultivation those acquired in a wild state elsewhere, and which are only intelligible when we understand the climate of their native country. I have several Algerian plants, and they all have the same habit—which, indeed, I believe is common to many herbaceous plants from both shores of the Mediterranean, and to be accounted for by the summer droughts, which have obliged them to store up nourishment in bulbous roots, or corms, and to depend on the winter rather than the summer for their life above ground.

GROWTH OF THE WINTER ACONITE.—Has any one, who is neither a gardener nor a botanist, ever observed the slow growth of the Winter Aconite? If any place where they have been left undisturbed for years be examined now, when the flowers are gone off, there will be found numerous seedling plants in various stages of growth; some in their first, some in their second or third year. The youngest seedlings consist of two cotyledons on a long stem, with a long tap-root, and few if any fibres; there is no trace of a plumule between the cotyledons. In about the month of April a swelling appears on the root. This is full of starch, and is destined to become the future corm. Later on, about June or July, the cotyledons and tap-root die, and nothing is

FIG. 124.—RANUNCULUS SPICATUS: TO SHOW HABIT.

left but the incipient corm, as large as a very small Pea. The seedlings in their second year are easily distinguished from those in their first, because instead of a pair of entire leaves we find only one, and that lobed, as in the mature plant, and the root is now furnished with fibres. In successive years the action of root and leaf will, of course, make the little corm

FIG. 125.—RANUNCULUS SPICATUS: FLOWERS YELLOW. NAT. SIZE.

bigger; but, to judge from the slow progress made in the early years of its life, many must elapse before it attains the size of the "roots" that are sold to us by the seedsmen.

Similarly slow growth teazes any one who attempts to raise Crocuses from seed, as I have tried to do, when Crocus seed has been gathered for me abroad. I have had seedling Crocuses for many years, but none of them have ever blossomed. *A. B.*

## Apiary.

BEES IN IRELAND.—With the exception of early spring flowers, perhaps nothing gives the keen student of Nature so much pleasure as to listen to the hum, and watch the ceaseless activity of the honey-bee, on a warm spring day. They occupy a more favourable position than any of the pets with which man usually surrounds himself, inasmuch as they maintain their right to search for honey in the most secluded and inaccessible places, and are always welcome, where less favoured individuals would be peremptorily warned off. Perhaps your readers will be surprised to hear that bee-keeping, more's the pity, is almost unknown in this part of Ireland. The fruit trees are one mass of bloom; the Wallflowers, and Forget-me-nots, &c., are looking as attractive as possible, and though they may be loaded with honey, it is all to no purpose, as there are no bees to gather it. Thus, tons of good nutritious food are annually wasted, which otherwise might be turned to good account. There can be little doubt but that bee-keeping might be carried on with advantage and profit here, if the people could be brought to take it up. So thinks a small band of gentlemen, who have formed themselves into an Irish Bee-keepers' Association, working on the same lines as the British Association. I am sure that your readers will heartily wish the Irish Bee-keepers' Association success, and I have no doubt but that in a few years jars of pure Irish honey will be as much in request in England as those from California and elsewhere. *F. Fuller, The Grove, Belfast.*

BEES SWARMING. — We have had through the past winter but one solitary hive of bees. The preceding seasons had not been favourable to the insect that evoked such a eulogy from Dr. Watts, for the little things could not gather honey all the day, nor find flowers rich with the sweet nectar. Thus, in spite of feeding, many stocks dwindled and died, and one only remained. Fortunately it was a strong one, and was kept up to pitch by means of ample supplies of sugary nectar, so that when the spring did fairly come the early birds were enabled to soar off and catch the early worms. Like the proverbial hen with one chick, our single hive obtained immense attention. At all sorts of hours it was being unreasonably watched for evidences of the swarm which was inevitable and was nearly due. 'Tis true we did not put the high price upon it, being yet a bird in the bush, which the oft-quoted couplet does, remembering that whatever a load of hay might have been worth when that ancient maxim was constructed, it is now the value of many bee-stocks. The first symptoms of the approaching migration was seen in a small mass of insects gathered round and about the mouth of the hive. This gathering varied in bulk from day to day; a warm morning would bring out such numbers as to put us on the tip-toe of expectation, to be dashed soon by heavy clouds and cold winds that sent the bees in to find warmer quarters. Then there is an old tradition that not till drones take wing will a swarm come forth, and not a gentleman would show himself. One day, when the sky becomes suddenly overcast and rain falls, the bees cluster so thickly about the entrance that the gatherers of honey and pollen returning hurriedly from their work find it difficult to get inside, and it is necessary to assist them by removing some of the cluster aside. At another time the waiting crowd, because of the warmth, creep up under the old sack which at once shades and shelters the straw house; yet still day after day passes and they do not come. At length the morning opens with exceeding brightness and warmth, and as if by intuition the insects anticipate a hot day. There is a larger gathering about the hive entrance than usual, but we take breakfast in peace, expectation having been so long excited that it is now somewhat cooled. Presently there is a cry, "The bees are out!" and rushing to the spot we find such to be the case, for not only are they out, but all in a state of the most frantic excitement, flying here and there like raving maniacs, creating a furious uproar, pretty much as if some insect Pandemonium had broken loose. Thomas holds to the notions of his fathers, and seizing the big water-pot commences to drum upon it with the handle of his knife, making a hideous noise. Polly, not to be behindhand, runs for the fire-shovel and poker, and helps to render confusion worse confounded. We shout ourselves hoarse to stop the

din, but in vain. It is a part of the accepted tradition that this clatter shall be sounded, so that if of no avail to induce the insects to settle, it shall at least proclaim to all the world that the swarm is ours if it inclines to migrate. But that mishap is not to follow; for after many of the exhausted insects have settled all about, a larger cluster is seen to be gathering upon an Apple tree stump close by, and then we feel easy. And a very convenient stump it is, too, and most convenient it is on the part of the bees that they determine to alight upon the side that somewhat overhangs on the east. In the meantime a hive has been prepared with sugar syrup, and the floor-board is close by; and Thomas, who prides himself upon his ability to hive bees, and "is'nt a bit nervous," has thought it to be wise to protect his hands, arms, and neck, and light up his pipe as an infallible protection to his face. Then the hive, turned upside down, is stood in a bucket, and placed beneath the stump. With both hands, and in a trice, Thomas sweeps the whole lump into the hive, claps on the board, and inverts the hive on to the ground, and in half-an-hour all is quiet and orderly, and the bees are at work as though nothing had happened. Thomas got one sting in the face, but that does not make him wink; and when at night the hive is placed in its permanent position there is an ending to our excitement and the first bee-swarm. *A. D.*

## Orchid Notes.

Orchids at Meadowbank.—Since the acquisition of the Boyd collection of Orchids by Mr. Anderson, a visit to this place will again prove of considerable interest to those who have a love for Orchids, and a keen appreciation of the many beautiful forms which from time to time make their appearance amongst them, and of which there are at the present time a goodly number in this collection. Some of these fine forms I had not previously seen, such as Odontoglossum cirrhosum Klabochorum, with flowers twice the size of the ordinary form. Several plants of this species were in bloom in the same house, but the variety Klabochorum, in juxtaposition with some others considered to be fine forms, was most marked. Some of the Masdevallias were grand in the extreme, such as the violet-coloured M. Harryana, M. Lindeni, M. ignea violacea, M. Lindeni grandiflora, known as the Meadowbank form; M. Harryana sanguinea superba, known as Wrigley's grand variety; M. trochilus, M. peristeria, &c. Of Odontoglossums the following fine sorts were either in bloom or coming into bloom:—O. pulchellum giganteum, O. Chestertoni, O. Pescatorei grandiflorum, O. radiatum var. superbum, O. Andersonianum, a grand form; O. triumphans superbum, O. Alexandræ maculatum, O. Hallii superbum, O. citrosmum album, a unique specimen; O. vexillarium roseum, O. Roezlii album superbum. Of miscellaneous Orchids there were a number in bloom, the following being particularly worthy of notice:—Trichopilia crispa marginata, Boyd's magnificent variety; T. suavis, known as the Chatsworth variety, Oncidium sarcodes, Epidendrum vitellinum majus, Cypripedium Boxallii, C. barbatum biflorum, C. nigrum grandiflorum, C. Sedeni, C. villosum, Dendrobium crystallinum, D. chrysanthum micropthalmum, D. chrysotoxum, Saccolabium Blumei Dayanum, S. guttatum, &c. Independently of variety, almost the whole of the above-named plants are in luxuriant health, the kinds generally known as cool Orchids especially so. The weak point at Meadowbank appears to be as of yore—the East Indian plants; and although there are plants here in average health, the lack of the heat and moisture, absolutely necessary to the successful cultivation of the plants properly belonging to this department, is as fully evident here as it is in most other Orchid growing establishments now-a-days. Cattleyas and other plants belonging to the intermediate section appear to be generally well grown, many fine specimens being pointed out to me as having formed part of "the Boyd collection." Since taking the above notes I have read Mr. Thomson's interesting letter, which has to some extent saved me the trouble of repeating the history of the Cattleya Mendelii. That letter must convince every one of the true value of a fine variety of any Orchid as compared with an ordinary one. The Cattleya named formed part of "the Boyd collection" above-named, and was sold by Mr. Anderson, as I understood at the time, under the named of C. Mendelii superbissima. I also noticed that Messrs. Veitch had a First-class Certificate for a Cattleya under that name. In Mr. Anderson's catalogue the same plant appears with the variety name of "pulcherrima." If I could stand godfather to such a gem I would not give it two names. Which is correct? *Robert Bullen.*

Dendrobium nobile.

Taking it in all points this is the best Dendrobium yet introduced. It grows more freely than any other. It readily increases, and may be had in flower from the middle of December to the middle of June. As the plants go out of flower those that require it should be repotted and placed in any house where they can obtain a moist stove temperature. When growth is completed the plants should be removed into a cooler house, with a rather drier atmosphere, and after a time into the greenhouse. We have two plants that have been standing in our greenhouse since October, and have been dried up all the time. They will be watered and placed in a warm house, and the stems will plump up directly; we hope to have them in flower this year in July; we have had the earliest in flower two weeks before Christmas. At the last exhibition in the Town Hall, Manchester, Mr. Speed sent a plant of this species from Chatsworth 5 feet high, 4 feet through, and thickly studded with upwards of 1700 blooms. These large specimens are very grand, but it is better to have a number of moderate sized specimens which can be placed in heat at different times to make a succession of bloom. *J. Douglas.*

Dendrobium thyrsiflorum.

I send you a photograph of a very fine specimen of Dendrobium thyrsiflorum, grown by Mr. J. Ward, gardener to T. Haddon Oakes, Esq., Riddings House, Alfreton. The piece was bought of Messrs. Veitch about three years since for as many guineas, and last year bore eight spikes. It last season made several very fine growths, with remarkably fine leaves of great substance, and is now bearing eighteen spikes. *Wm. Elphinstone, Shipley Hall Gardens, Derby.*

Spotting on Orchid Flowers.

It is not at all unusual to see Orchids with their flowers very much injured by spot. This is caused by water condensing at night and forming a dew on the flowers. In the first place, to keep the plants in health, it is necessary that the atmosphere should be moist; and I have seen gardeners throwing water about late at night after the house has been shut up some time; what wonder, then, if the flowers of certain delicate species get injured? At present Orchid-houses are very gay with flowers, and no one likes to see them suffer injury from any avoidable cause. I find they suffer most when there is little or no heat in the hot-water pipes, and that even the most delicate flowers are safe if the pipes are made comparatively warm, and the ventilators are opened a little at the top of the house. It is best not to throw water about in the house after 4 P.M., nor should water be allowed in the evaporating troughs until the principal bloom is over. *J. Douglas.*

A Double-lipped Odontoglossum.

A short time since, when paying a visit to Mr. Bull's nursery, my attention was attracted to a double-lipped flower of Odontoglossum pendulum; the plant which bore it was a very fine one, and had two fine racemes well laden with flowers upon it; all but this double-lipped flower, which has been obligingly placed in my hands by Mr. Bull, were quite normal so far as I observed. This one was the lowest on the raceme; and of the two lips one is quite normal in size, form, and colour; the other, which springs from the right-hand side of the column immediately beneath the stigma, is smaller, and has a roundish front lobe; the callus and coloration is the same as in the lower lip. All the other parts of the flower—sepals, petals, column, column-wings, and anther—are quite normal; therefore, this appears to be a case of chorisis, or deduplication of one organ alone, in which the parts are superposed. *N. E. Brown.*

Dendrobium Falconeri.

At the spring show at Reading, on the 19th inst., Mr. Pound, gr. to G. May, Esq., of Caversham Warren, exhibited three fine examples of Dendrobium Falconeri; but the one in question was grown on the dead stem of a Tree Fern, 18 inches long, and apparently had been twined round, and had attached itself firmly to the stem, and was literally covered with fully expanded flowers to the number of 160. This plant ought to have graced the table of the Council-room at South Kensington, and would, I feel sure, have caused as much sensation as did Odontoglossum Phalænopsis when exhibited by the late Mr. Hubbersty, when gardener to O. O. Wrigley, Esq., of Bury, Lancashire. Mr. Pound grows this Dendrobium (in a smaller way) as directed by Mr. Swan, but whether with more rest I do not know. These plants were suspended, after they had finished growth, in a cool vinery all through the winter months, till about the middle of February, and were then removed to their usual growing quarters. The other two plants were equally good, but not quite so large, each bearing respectively 134 and 136 flowers. *S. Johnson, Royal Nursery, Ascot.*

Mr. Bockett's Orchids.

In the cool department here there have lately been flowering some beautiful forms of Odontoglossum crispum remarkable for the chaste character of their flowers; there are many yet to bloom, from 150 to 200 spikes still being to open. A thousand newly imported plants of O. crispum have lately been added to the collection. The most beautiful kinds of Masdevallia, such as M. Lindeni, M. Harryana, and the deep-coloured bull's-blood variety are blooming finely. In the warmer division the plants are making excellent progress; the very large stock of Phalænopsis bloomed early, and now, relieved of their flowers, are making beautiful growth, abundance of roots and stout leaves being present in all directions amongst them. Mr. Ebbage's system of treatment is to keep them near the glass, shaded whenever the sun comes upon them, but never, even for ever so short a time, when it does not; this, as a matter of course, often necessitates the blinds being rolled up and down frequently in the course of a day. A fair quantity of air is admitted in the daytime; by this means the growth gets fully solidified as it is made, and not liable to be affected by spot in the way that results with weak sap-distended cells present in soft spongy growth. In addition to those named above the following were in bloom:—Aerides crispum, A. Fieldingii, A. japonicum; Cattleya lobata, C. Mendelii, C. Regnelli; Colax jugosus; Cypripedium barbatum, C. Veitchii, C. niveum, C. caudatum; Dendrobium Devonianum, D. Pierardi, D. Bensoniæ, D. crystallinum; Epidendrum vitellinum; Lycaste aromatica, L. Schilleriana; Lælia elegans alba, L. purpurata; Mesospinidium sanguineum; Odontoglossum radiatum, O. Pescatorei, O. Rossii major; Oncidium concolor; Phalænopsis amabilis, P. Lüddemanniana; Promenæa citrina; Sophronites grandiflora; Trichopilia tortilis; Vanda cristata. Several plants of a remarkably fine form of Calanthe vestita rubro-oculata were in bloom from bulbs imported last year from Borneo, immensely strong, and as they appeared here altogether of a finer character than the ordinary variety of this plant.

Orchids at Messrs. Veitch's.

Among Orchids now in bloom here is a plant of Cattleya Mossiæ alba, with nearly pure white flowers; Anguloa Ruckeri var. sanguinea, a form with the ground colour of the type but much more deeply coloured spots; Cypripedium selligerum ×, a hybrid of remarkable merit; C. albo-purpureum, with pale rose flowers; Chysis aurea, Cattleya Warneri, very deeply coloured. Various Phalænopsis are coming into bloom, such as violacea, tetraspis, Curtisii, sumatrana, cornu-cervi, &c.

Mr. Bull's Exhibition.

We referred last week to the remarkable collection Mr. Bull has got together of flowering Orchids backed up by noble Anthuriums, graceful Palms, and the like. We refer to the matter again because the exhibition is still on view and is assuredly one of the most remarkable character. Selected varieties of such species as Odontoglossum vexillarium, O. Roezlii, O. crispum, O. Pescatorei, O. citrosmum, O. Hallii, O. tripudians, O. hastilabium; Cattleya Mendelii, C. Warnerii, C. elegans; Lælia purpurata var. Brysiana, Epidendrum alatum, Schomburghia tibicinis, Masdevallia chimæra, M. nycterina, M. bella, M. militaris, M. lilacina, M. Russelliana, with 130 flowers, constitute the staple, but every day fresh features are apparent as the flowers open.

Oxalis bonariensis.—One of the most showy and free-flowering of the species of Oxalis now in bloom in the Kew collection is O. bonariensis, which has long-stalked umbels of salmon-pink flowers. O. floribunda is a plant of similar size and habit, with purplish-rosy blossoms. Both are easily grown, and very desirable greenhouse plants.

# Garden Operations.

## KITCHEN GARDEN.

The subjects in this department have been considerably benefited by the refreshing showers which we had last week, advantage was taken of them here, and doubtless in many other places, to proceed with the thinning and transplanting of Onions, Beetroot, and Parsley—an operation that should always, when an opportunity is given for its being done, be carried out during showery weather, because then the young plants not only draw and transplant better and with more expedition, but are obviously less subject to check than if performed when the ground is otherwise than moist; indeed such work should not under such a condition be proceeded with. The *modus operandi* adopted by ourselves, and perhaps by many others, in the thinning and transplanting of the above roots is a simple one; but nevertheless it is a mode of procedure that is not so well known, and consequently not so frequently practised as the advantages under certain conditions to be derived by its adoption entitles it to be, and is as follows:—Onions.—As soon as the young plants are large enough to handle, and the nature of the weather permits of its being done, they are thinned to 2 or 3 inches apart in the row, and the blanks, if any, are filled up as the thinning is proceeded with, taking care in planting that the holes are made deep enough that the fibrous roots may not get bent in the transplanting process, and that the bulbs are not buried deeper in the soil than they had been before. I am aware that most growers allow a greater space between the individual Onions than we do, with the obvious intention of obtaining larger bulbs; however, for all ordinary purposes, 2 or 3 inches between each bulb in the row will be amply sufficient, and it is perfectly astonishing the size to which Onions, pushing each other out of the way as they grow into the 12-inch space between the rows, will attain. Moreover, I find that medium-sized Onions keep better than larger ones. In thinning the crop we leave half-a-dozen of the outside rows to be thinned as required for immediate use. Beetroot.—Some seasons half our crop is obtained from transplanted plants, which in every particular are as good and as well grown as those not so treated. The one essential point, assuming that the ground is of the right description and has been properly prepared for the young roots, as in the case of seed, is to make the holes deep enough for the young roots to be transplanted in their entirety, and about the same depth in the soil as they were before, without being curved in the process of transplanting, as in that case deformity of root will be the result. The advantage referred to above consists in this, that the treatment of roots is accommodated to existing circumstances, which will admit, say, of ten rows being sown at the proper time—the whole space which it was intended to crop with Beet being then, and for a month or six weeks afterwards, occupied with other crops. Thus subsequently, when the ground is ready, and from the same sowing, we transplant fifty rows without in any way detracting from the value of the crop. The same course, if rendered necessary through the force of circumstances, might also be applied with equal advantage to Onions, always providing that the transplanting process is carried out with care and at the proper time, when the bulbs and roots are quite young and the ground moist, and that the plants are subsequently attended to with water at the roots. Parsley, too, through some cause or other, is not so generally transplanted as it deserves to be—not but it will do equally as well if the necessary number of drills are sown at one time, but, as a matter of economy, a small patch of seed could be sown about the first week in March and two months later the requisite number of rows transplanted therefrom, which plants will grow freely and exhibit as little tendency to run to seed as those sown and afterwards thinned out to the proper distance in the rows, 6 or 7 inches from plant to plant. Cucumber growing on ridges and Vegetable Marrows will now require to have the hand-glasses in which they are growing raised by placing a brick-bat under each corner of the glasses and the shoots taken outside underneath in different directions, and the plants must by no means suffer for want of water at the roots. Capsicums, where much in demand, may now be planted out under a south wall in a bit of rich soil, which should then be watered to settle the soil about their roots. Tomatos out-of-doors should also receive attention in the way of watering and training the shoots when necessary; and the recently transplanted herbs must be duly attended to. Make a sowing of Rosette Colewort for winter use. As the Celery plants from the second sowing become fit for planting out, let them be transferred to the trenches prepared as recommended in a former Calendar, and planted in the way there described. Make another good sowing of Peas of the British Queen and Victoria Marrow type; and attend to the landing-up and sticking of advancing crops. Scarlet Runners should also receive attention in this direction.

General Work.—Landing-up Brussels Sprouts, Cauliflowers, Cabbages, and French Beans; Dutch-hoeing, watering, &c.; weeding and rolling of kitchen garden walks, and otherwise maintaining the gardens in a clean, neat, and orderly condition.

Forcing Department.—Give copious supplies of liquid manure to Tomato plants growing in pots and borders of limited space, and keep the shoots and foliage well thinned and stopped, in order to fully expose the fruit to the sun's rays. *H. W. Ward, Longford Castle, Wilts.*

## FLOWER GARDEN.

Shrubs, Trees, and Roses.—In these parts very little rain has fallen during the last three months, whilst harsh easterly winds have been more than usually prevalent; hence, for all trees and shrubs that were moved in autumn and spring, artificial watering has become a necessity. A heavy mulching of litter when first planted saves an immensity of labour in watering, and this should still be retained. Even old established Roses, though well mulched, seem to be feeling the effects of the drought; and if a healthy growth and fine flowers are expected they must have abundant supplies of water—diluted sewage would be better—and if labour and convenience will allow, overhead washing by syringe or garden engine is desirable. Keep the plants free of root suckers. Brier stocks should have all the buds rubbed off except those that are to be budded, and as a rule three shoots on a single stock are sufficient to the formation of good-sized heads. I need scarcely add that they should be securely staked, and climbing kinds also need to be occasionally examined as to supports, else the free growth of this season may be torn away by the first gust of wind or heavy rain.

Annuals, Perennials, Herbaceous Plants, &c.—The planting out of Asters, Stocks, Dianthus, and other summer and autumn-flowering kinds should not be longer delayed. When they are to be planted in beds or masses for cutting the best way of doing it is to plant in drills; they are then more readily and effectively watered, a procedure necessary till they are well established in the new soil, after which, the drills being filled in, the plants have so deep a hold of the soil that staking is rarely necessary. Thin out Mignonette and other annuals that have been sown where they are to flower by sowing at once; there is yet time to get a good display from such varieties as Virginian Stocks, Candytufts, Clarkias, Eschscholtzias, Collinsias, Saponarias, and also for Sweet Peas and Nasturtiums. Herbaceous borders are beginning to get very gay, the Pyrethrums making an especial good show just now; but please note, opponents of bedding, on the ground of labour, these also require the expenditure of labour if they are to show up to the greatest advantage—first plenty of water, and next the flower-stems must be supported by stakes, as very few of the varieties will bear the weight of their own flowers: and so it is with many others. Potentillas need it now, and so do several Delphiniums, Veronicas, and Pæonies, the only notable exceptions that are at the present time in full flower are the procumbent-growing kinds, such as Lithospermums and Phlox verna and the Irises. The fact is, there is nothing to be had from a garden that is worthy of the having without toil and anxiety, and why should there be, seeing that at least half the pleasure of a creditable production is to feel that by our own labour we have in some degree contributed to its finer developement? If imbued with this feeling, the tying-up of flower-stems, the watering of plants that need it, and stirring the soil or mulching as required, will not be a task but a pleasant duty.

Bedding Plants.—Every kind, except sub-tropicals, Coleus, and Alternantheras, should now be planted, and if the present drought continues the entire surface of the beds should be mulched either with old Mushroom-bed dung or with Cocoa fibre refuse; the time requisite for the application of the same will be saved by the lessened labour of watering, not to mention the immediate and more kindly growth of the plants. Above all, take pains in planting; the longer time required to do the work well will be more than compensated by the well-doing of the plants. Tender varieties should be gradually inured to bear full exposure. A good way of hardening off tall subtropicals is to stand them against the fruit walls, or under the shade of trees, or in groups in any sheltered spot, where, if needed, tiffany or some other slight covering might be easily applied. It will not be advisable to plant them out till the end of the first week in June. *W. Wildsmith, Heckfield, Hants.*

## FRUIT HOUSES.

Peaches and Nectarines.—The fruit in the early house will now be colouring and ripening very fast. Before they do so give them a thorough watering with tepid manure-water somewhat stronger than they have previously had. Expose the fruit to all the sun and light possible, giving them plenty of air by day, and a little by night, as before directed. Syringe as long as possible without injuring the fruit. Do not allow the fruit to get thoroughly ripe before gathering; if allowed to do so it will lose that brisk flavour so much prized in a Peach, and become flat. I never place nets under trees as some growers do, but look them over on alternate mornings (or every morning if the weather is very hot), and gather all that are sufficiently ripe; by doing so very few fruit are spoiled through falling off. The second house will be hard on the heels of the first, and will soon require tying down close, and the fruit getting up above the foliage; keep the roots well supplied with tepid manure-water. The fruit in succession-houses may be finally thinned, and the young shoots may be allowed some little liberty for awhile as regards tying, but all gross shoots must be pinched. In late houses stopping, heeling down and thinning fruit must be attended to if not already done. *J. Wallis, Keele Gardens.*

### Melons.

Whoever complains of the weather lately in respect of bringing forward indoor crops must be very fastidious and difficult to please. Better opportunities have seldom fallen to the lot of those who are engaged in early forcing and producing fruit of the very best quality. Indeed, if there be any fault to find it is that crops of all kinds are coming in with a rush, and unless steps be taken to regulate the supply according to the demand, a blank may occur in what is desirable above all things with private families, viz., a regular succession of ripe fruits. Melons are rather difficult fruits to retard, still, with the exercise of a little foresight, it may be quite possible to make ends meet by shading a portion of the fruit-bearing plants during the hottest part of the day, and by giving abundance of air from early morning until the sun decreases in power late in the afternoon. Fruits may also be cut rather under than over-ripe, wrapped up in silk-paper, and placed in a dry drawer, where they will keep fairly good for a week. Of course where early crops are ripening fast, succession crops will also be making proportionate progress, and while the former are being retarded the latter should be encouraged by liberal treatment, in the shape of frequent waterings of liquid-manure at their roots, and early closing-in in the afternoons, to swell off their crops as early as the urgency of diverse cases may demand. If the plants are kept properly nourished at their roots syringing overhead may be dispensed with when the fruits are about half grown. Should, however, insect pests establish themselves upon the leaves of plants, and it is a compulsory matter to ply the syringe among them, it should be done about 4 P.M., in order that the moisture may be absorbed from the leaves gradually under the influence of declining heat and light.

Where early-bearing plants have not vigour enough left in them to finish a second crop, a batch of plants should be in an advanced state ready to take their places as soon as the house can be cleared of its present occupants. All the preparation that will be necessary in the majority of cases will be to wash down the house, stir the soil in the beds afresh, and if dry, water, to render it mellow, and in a fit condition for replanting.

Melons may now be planted in pits and frames that have been occupied with Potatos, bedding plants, &c. *W. Hinds, Canford, Dorset.*

### Cucumbers.

Plants that have been raised from seeds during the early spring and that have been in full bearing for some time, will be greatly invigorated by a short recuperative season, by reducing the number of fruits upon the plants to the lowest minimum that can be afforded consistent with keeping up an adequate supply. And if in addition to this a good surface dressing is given to the roots of the plants and the shoots are judiciously thinned out to make room for the young fruit-bearing wood a handsome and profitable return may be expected which will doubly repay for the labour and the short interval that must elapse while the plants are re-establishing themselves into a vigorous and fruitful state. Where Cucumbers are grown in pits and trained over the surface of the bed two plants generally occupy the centre of each light, one being trained to the top and the other to the bottom of the pit. In this case, when it is found necessary to add fresh compost to the plants, they should be thinned out as directed and carefully raised from the bed while a rich top-dressing is given, into which they will strike root freely from as many joints as it is thought desirable to peg close to the surface of the bed. The plants should then be carefully shaded and syringed overhead twice daily, to encourage fresh growth and a prolongation of fruitfulness. See to the stopping, training, and earthing-up of succession plants as previously directed. *W. Hinds, Canford, Dorset.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | May 30 | Sale of Imported Orchids, at Stevens' Rooms.<br>Clearance Sale, at Reid's Nursery, Acton, by Protheroe & Morris. |
| Thursday, | June 2 | Sale of Flowering Orchids, at Stevens' Rooms.<br>Meeting of Linnean Society, at 8 P.M. |
| Friday, | June 3 | Royal Horticultural Society's Great Summer Show commences at South Kensington.<br>Annual Grand National Horticultural Exhibition commences at Old Trafford, Manchester. |

WHILST it may appear strange that the zeal just now showing itself in favour of teaching the elements of agriculture and horticulture in certain of our rural elementary schools should come chiefly from outside those professions, yet it is not unreasonable that some evidence of it should be found amongst educationalists. If we remember right it was the present Lord MOUNT-TEMPLE who some years since drew attention to the fact that on the Continent gardening constituted a part of the regular teaching in many schools, and further stated that the teachers had to qualify themselves for the purpose. Probably that estimable nobleman did not anticipate that if school gardening became possible in this country it would lead to any vast increase of horticulturists, or that gardening would thenceforth enter into a sort of earthly millennium. He probably thought that by increasing a taste for gardening amongst children as they grew up in life that taste would develope into a habit, and as a result hours too often spent idly would be usefully employed, and a genuine social and moral reform would follow. With such ideas it would be impossible not fully to sympathise. But a new supporter of the suggestion has been found in the person of a teacher and schoolman who entertains more ambitious projects, for he not only proposes that both practically and theoretically the elements of agriculture and horticulture shall be taught in our rural schools, but further hints that by so doing we may not only recuperate distressed farming, but help us in gardening to largely dispense with the foreigners' products.

"*The School Garden as an Aid to Technical Education in Rural Schools*" is the title of a small but sanguinely written pamphlet, the author of which is Mr. T. WILKINSON, headmaster of the Board Schools, Harrow—a man undoubtedly of high position in his profession, and one in feeling and knowledge quite capable of stating his case. The author dashes boldly at the issue by making a demand that in the rural schools the professions relating to the produce of the land shall be taught as class subjects, be subject to the same conditions as grammar, history, or others now taught, and be capable of earning grants when the pupils shall efficiently pass the annual examination. So far the Education Department already meets the suggestion partly by making theoretical agriculture a class subject, thus admitting that there is justice in the requirement that in the rural districts children shall be taught something of what constitutes perhaps the chief industry in their locality. The author asks that only the children being taught in the higher, or fourth, fifth, and sixth standards shall be instructed in practical gardening and farming, and though it would be essential that the number of pupils taught must be limited, yet this limitation constitutes one of the weak points of the proposal, because in the strictly rural districts boys, or the larger portion, are removed from school as soon as they have passed the fourth standard and are a certain age. The boys that are longest kept at school are those of tradesmen, small shop-keepers, and those above the labouring class in life, most of whom intend their children to follow some other vocation than that of farm labourers. Mr. WILKINSON proposes to establish gardens in every village or school district, the ground being allotted in the extent of from five to eight poles to each lad over a certain age, which he is to till, sow, plant, and manure, and on it be taught, as far as can be, practical gardening and farming. Knowing how much the latter is now dependent upon machinery of all kinds, on the breeding and rearing of animals of several kinds, and on a wide technical experience, it will probably raise a smile to learn that it is seriously proposed to teach elementary agriculture and gardening also on a plot of land one or two rods in extent.

The assumption that agriculture is now in a state of depression partly because the labourer's child is not taught something of its elements is somewhat gratuitous and not borne out by facts. A few years since farming was at the apex of success and prosperity, and then we heard nothing of the need for this elementary instruction of the labourer. We do not say that he would not have been the better for it: poor pariah of the soil, his ignorance has been his heaviest misfortune! Still it is evident that agricultural depression must now be due to other causes than the labourers' ignorance, and these are mainly of a meteorological and political nature. There is not much charity shown by the author in his sneer at JOSEPH ARCH and his fellows. No body of working men in this country ever more needed a prophet than did the rustic labourer, and if his leaders have had to bear some hard blows they have experienced the lot of all who have honestly and truly striven to improve the social and political condition of their fellows. Well, as little can be taught of practical farming on a tiny plot of ground, so also can little be taught of gardening—that is, other than which is very elementary indeed—be demonstrated. Digging, hoeing, sowing, and planting do not constitute a hundredth part of what exists under the comprehensive head of horticulture, and all this labour is so simple that any boy may, after he has left school, pick up the elements in any garden in a few weeks. There would be good reason to fear that gardening on such a scale would be mere play or pastime, and must be altogether wanting in those features that would make the work a reality. But what is obvious is, that whilst little could be so taught, much might be learned were the selected boys taken to perform certain work under proper instruction, for, say, two half days per week, on some good farm or in a good garden, where they would see the most important operations of either farming or gardening in complete action, and, what is most important, be taught the reason of the various operations. This would be teaching them real work, and not that of the toy garden. But it must be realised that already boys have little enough time allotted to them at school to learn of that intellectual knowledge which is so essential to their future welfare. Many will smile contemptuously at the small amount of knowledge found in the proverbial three R's; but it is forgotten that these three R's are the keys which unlock the stores of knowledge open to all who can read, write, and cipher, and, as we have all found to our cost, it needs many years at school and much hard grinding to get these well grasped. As school hours cannot be extended, the addition of other subjects must cause a deficiency in the attention given to those now taught; and there is this danger, that the crotchets of enthusiasts may, if put into practice, be not altogether productive of good.

Theoretical agriculture and horticulture may to some extent be taught through reading books, always provided that those who prepare these books fully realise that they must be, to suit the intelligence of boys in the rural districts, of the most simple and elementary kind. Still the few fitting compilers of such books might be found, whilst the large number of instructed teachers needed to train in practical knowledge may not be forthcoming. Mr. WILKINSON gives an elementary syllabus of lessons that will strike most readers as being somewhat advanced, still much would depend upon the form in which they were presented to the youthful mind. Unfortunately, the brightest boy intellects are found in town schools, and the poorest in the schools of the rural districts. That the author is earnest and anxious to promote the object he has in view, there can be no doubt. His pamphlet is well worthy perusal, and commands respect, even though in many things we are unable to commend his conclusions.

—— THE ROYAL HORTICULTURAL SOCIETY'S GREAT SUMMER SHOW.—We understand that from the entries that have already been received, the great summer show, which commences on Friday next, will be of unusual excellence, and, above all, as regards the display of articles covered by the term "horticultural implements and appliances," which promises to be the most complete of its kind that has been brought together of late years. It is by some regarded as at least unfortunate that this show should clash with the annual one held at the same time at Manchester, but we believe it will be seen that there is room for both, and we certainly think the Council have done wisely in determining to try the experiment of catering on a large scale for the holiday people. May the rain come soon, and then let both exhibitions enjoy a week of fine weather.

—— THE LINNEAN SOCIETY.—At the anniversary meeting on the 24th inst. Sir JOHN LUBBOCK, Bart., was elected President, in the place of Dr. ALLMAN, who retires. A better selection could not have been made, as Sir JOHN combines wide scientific knowledge of natural history with business habits and a courteous and conciliatory manner. The Secretaries are B. D. JACKSON, Esq., Botanical, and G. ROMANES, Esq., Zoological; and the Treasurer, F. CURREY, Esq.; and the new Members of Council, in addition to those mentioned, are ALFRED W. BENNETT, FRANCIS DARWIN, and E. R. LANKESTER.

—— BATH AND WEST OF ENGLAND SOCIETY.—The visit of the Bath and West of England Society and Southern Counties Association to Tunbridge Wells in the first week in June will be the fourth which the Society has made to the south-east of England. At Southampton in 1869 the amalgamation of the old Bath and West of England Society with the Southern Counties Association was inaugurated, and two years afterwards at Guildford the union was cemented. Since then (in 1875) the Society has visited Croydon, and now the time is rapidly approaching for another and farther excursion into its "Southern Division." The show will open on Whit-Monday, June 6, and close on the following Friday. It may be added that the show ground at Tunbridge Wells is situated charmingly and conveniently on the Frant Road. The railway companies, particularly the South-Eastern and the Brighton and South Coast Companies, will run a special service of trains, and there is little doubt that the magnitude and interesting character of the exhibition, together with the far-famed natural beauties of Tunbridge Wells and its neighbourhood, will attract large numbers of visitors during the Whitsuntide holidays.

—— A HORSE POISONED BY OLEANDER.—Professor JAMES LAW writes in the *New York Tribune*:—"A case that occurred recently under my notice may be recorded as a warning of the dangerous qualities of a favourite house-plant. A fine healthy mare ate a single tuft of leaves from a branch of an Oleander temporarily set by the door, then went on a journey of six miles, appearing playful and well, but on returning refused her feed. Next morning she still refused to eat, looked dull and haggard, and had partially lost control of her hind limbs. The mare died before assistance could be obtained, and on opening the body the dark red congested stomach showed the action of an acrid poison, and inquiry brought out the account of the cropping of the Oleander, of the injurious qualities of which the owner was entirely ignorant. As this ignorance is very widespread, it may be well to say that all parts of this plant are deadly. A very small quantity of the leaves are fatal to the horse, as we have just seen. The flowers have produced death in those who carelessly picked and ate them. The branches divested of their bark and used as skewers have poisoned the meat roasted on them, and killed seven of twelve people who partook of it."

FIG. 126.—NOLINA GEORGIANA. (SEE P. 688.)

—— Hender's Crimson Vesuvius Pelargonium. — The old Zonal Vesuvius seems to be as eruptive as its namesake. Several sports or evolutions have already appeared, including a white, and the striped form named New Life. Messrs. Hender & Sons sent us a short time since a crimson-scarlet, many shades deeper in colour than the original, and apparently a very fine thing. They say the habit is, if possible, superior to that of the old Vesuvius, and that the trusses are much larger and the colour much deeper. So far as the trusses and colour are concerned this is certainly borne out by the specimens before us. They add, "the dulness of the old variety was its only drawback, and now we think the sport perfection. Indeed, we think we have in it the best bedding Zonal ever sent out." If the old compact floriferous habit is retained, it will be certainly hard to beat, and will take a high position for bedding purposes.

—— Pyrus Maulei.—In the arboretum at Kew this charming Japanese shrub is now in flower. In habit it comes near the old Pyrus japonica, although it is most distinct from that species. The orange-scarlet flowers are produced in great profusion, and these are followed by handsome fruits, of which a very agreeable jam can be made. An illustration of a flowering branch is given in *Gardeners' Chronicle*, n.s., vol. i., p. 759, and another of a fruiting spray in vol. ii., p. 741.

—— A New Journal of Biology.—We have received the prospectus and a specimen number of a new German journal of biology, entitled *Biologisches Centralblatt*, edited by Dr. J. Rosenthal, Professor of Physiology, Erlangen, assisted by Dr. M. Rees, Professor of Botany, and Mr. E. Selenka, Professor of Zoology. It will contain original articles, but the greater part of the space will be devoted to notices of interesting publications in the various branches of biology. Without excluding criticism, anything inciting discussion will be avoided; and, generally speaking, an epitome rather than a critical review will be the aim. Authors are specially invited to contribute abstracts of their own works.

—— The White Beam.—At midsummer one common fault in English scenery is the too monotonous tone of green. Of course a judicious landscape gardener who has a competent knowledge of the resources at his command will know how to obviate this, but the process is often slow and expensive, but by the use of the White Beam, Pyrus Aria, both difficulties may be got over. Though a native tree it is not seen so often as its merits demand. The common White Poplar is another cheap and effective tree that might be used with advantage.

—— Bossiæa linophylla.—Few conservatory plants can surpass this pretty shrub for decorative purposes. Its Pea-shaped flowers, orange-yellow streaked with red, are borne in great profusion on gracefully drooping sprays. It was first discovered by Robert Brown, and was introduced to this country at the very commencement of the present century. A fine specimen, 6 or 7 feet in height, is now in bloom in the winter garden at Kew. A native of South-west Australia.

—— The Florence Botanical Collection. —In another column we print a letter of Mr. Ball's on the subject of the proposed removal of the garden and botanical museums from their present palatial and every way suitable site to a position infinitely less fitted for the purpose, and open indeed to the strongest objection. Those who were at Florence in 1874 will remember how superbly yet conveniently and commodiously housed were the collections. Now it is absolutely proposed to remove the living plants from their present site to a small town garden, cribbed, cabined, and confined, and to transfer the museum specimens from their sumptuous and convenient quarters to a building which for 300 years has served as stables either for the Grand Dukes or for the cavalry barracks. When we referred to this matter on a previous occasion we did so with some hesitation, not knowing what reasons might be assigned for the change; but with the fuller knowledge we have since gained we now desire to add our protest to that of our Italian *confrères* against this reckless piece of barbarism, and trust that so extravagant a malversation of public monies may not be sanctioned, but that the money destined for the removal of the collections may be spent upon the much-needed remodelling of the Botanic Garden, and the improvement of the herbarium and library.

—— Choisya ternata.—After the past winter, which has proved so disastrous to many of the other shrubs from Mexico which have been tried in the open air at Kew, Choisya ternata has proved itself a valuable wall plant. A few leaves were browned, but as soon as the sun began to get strength the snowy white starry blossoms were produced. Bushes against walls at Kew have been in flower for some time, whilst other plants, which might have been expected to be more hardy than it, have, under the same conditions, succumbed.

—— The Fiftieth Part of the "Flora Danica."—This, the next to the last part of the work, commenced in 1761, contains sixty plates (the ordinary number), representing forty-four flowering plants, and thirty cryptogams, altogether seventy-four species or varieties. Of these, twenty-one belong to Greenland, five to Iceland, and four to the Faroe Islands; sixteen were drawn from Swedish or Norwegian specimens, two came from Schleswig-Holstein, and the others were found in Denmark proper. Although usually quoted as the *Flora Danica* it is really a *Flora Scandinavica et Greenlandica*, including also the plants of Iceland and the Faroes. A noteworthy feature of this fine work is the tardy adoption of the Linnean binomial nomenclature. The first edition of the *Species Plantarum* was published in 1753, but it was not till the last part of the ninth volume appeared (1810) that the Linnean names were accorded priority in this purely Scandinavian work.

—— Sarracenia Culture.—Glasnevin has, among other things, obtained a repute for the culture of these plants. Mr. Moore tells us he keeps them at a low temperature during the winter, and moist and warm in summer. S. purpurea and flava, and Darlingtonia californica, have proved hardy at Dublin in spite of 27° of frost last winter. Mr. Moore grows in all seventeen species and varieties and on these there were lately over 300 flowers expanded at one time.

—— Royal Horticultural Society of Antwerp.—A grand International Exhibition will be held under the auspices of this Society in Antwerp, beginning on Saturday, August 13, 1881. M. Vanderlinden is the Secretary.

—— Lonicera semperflorens.—The pale coral-red flowers, borne in tufts, and the perfoliate glaucous leaves of this greenhouse climber are so elegant that we wonder not to see it more frequently. It is just now in flower in Messrs. Veitch's nursery, and, indeed, is so for several months of the year.

—— Handbook of Conifers.—We are glad to learn that Messrs. Veitch's illustrated and descriptive list of Conifers is now ready. Their experience and their rich collections should render this a most valuable handbook. We shall refer to it on a future occasion.

—— Value of Fruit Grown in the United States.—The following extracts are from the report of the United States Commissioner of Agriculture. The estimated annual Peach crop is valued at 56,135,000 dols. Large quantities of Apples and Peaches are used in the manufacture of brandy. Much attention is being given to Grape culture and the manufacture of wine. Two hundred thousand acres of land are planted in vineyards, and the Grape crop amounts in value to 2,118,900 dols., the whole wine product being 15,000,000 gals. The Orange flourishes in California and the Gulf States, but only in Louisiana, California and Florida is it extensively cultivated, the soil and the climate of the two last-named States being specially adapted to its needs. Florida Oranges always command a much higher price in American markets than those grown elsewhere, and they are certainly superior to the imported fruit. The yield from a single tree has reached the almost incredible total of 30,000 Oranges. The estimated value of the Strawberry crop is 5,000,000 dols. In California it is reported that there are 60,000 acres of this fruit under cultivation. Around New Orleans Strawberries fruit nearly all the year round. In 1877 there were shipped from Virginia over 3,000,000 quarts of Strawberries, and there were 10,000 pickers in the fields gathering the fruit at one time. There is one farm of 185 acres exclusively planted with Strawberries. The estimated value of the smaller fruits, other than those mentioned, is given at 10,432,800 dols., making a total valuation of the whole production of fruits in the United States of 138,216,700, a sum nearly equal to one-half of the Wheat crop of the country.

—— Pelargonium obtusatum.—When will the pure yellow bedding Pelargonium be raised? If the species whose name appears at the head of this note would allow itself to be utilised by hybridisers a good step in advance would be made. It is a peculiar species, and belongs to a desert form of the genus; it is remarkable for its thick, erect, fleshy rootstock, which stands above-ground, and bears leaves before the flowers appear. The large pale yellow blossoms are borne in shortly-stalked, many-flowered umbels. It is a native of the dry districts of Namaqualand, and is now in bloom at Kew.

—— Wallflower. — Mr. Leitner sends us specimens of that singular form in which the petals are greatly reduced in size and form, and wherein the stamens are replaced by open carpels, bearing ovules at their edges, and surrounding the normal pistil. It is the var. gynantherus of De Candolle, and has frequently been described and figured.

—— Localities best suited for Maturing Seed.—The last report of the United States Commissioners of Agriculture contains a paragraph under the above heading by Mr. Peter Henderson, of New Jersey. It is interesting in its relation to the seed trade between the States and this country. Seed-growing, it is stated, is now getting to be one of the industries of the United States, and owing to the great variety of climates and soil at their command, the Americans are now supplying Europe with that which a few years ago they imported. Further, the reporter predicts that in a majority of the seeds of the garden, the balance of the trade will ultimately be in their favour, as it already is with a majority of the seeds of the farm. There are certain seeds, however, which cannot be harvested good, and it will always pay better to import them than to sow inferior home-saved. Thus all Cauliflower seed is imported from Europe. All attempts that have been made to save seed there have proved nearly abortive. The imported seed is rarely imported at less than 25*s.* per pound, and some of the famous early kinds, as "Snowball," cost nearly £20 per pound. Parsley, Endive, Radish, and Spinach seed is also nearly all imported. The reason why they cannot be profitably raised in the United States is that the winter is too cold and the summer too hot. Some plants, like the Radish, will produce seed, but the first generation shows great degeneration. Little Cabbage seed is now imported, though it is sold much cheaper in Europe than in the States, because the crop is too important to risk any consideration of price, and what are grown as the favourite varieties in Europe are not to be compared with those which have originated in America. Seed saved near the sea is preferred. From the export it would seem that many other seeds that are now raised would be imported were there no great risk of getting impure seed. Celery seed, for example, is grown by market gardeners at five times the cost of imported seed, as the danger of getting a spurious sort is so great. Large quantities of Peas are still imported, but the great bulk used are grown in Canada and New York State. The Oat is a plant that rapidly deteriorates from home-grown seed, the third generation being on an average 12 to 14 pounds lighter per bushel than the average weight of Scotch Oats.

—— The Bagshot Rhododendrons.—We understand arrangements have again been made for a grand display of Rhododendrons by Messrs. John Waterer & Sons, of Bagshot, and the exhibition in the gardens of Cadogan Place will be continued throughout the month of June.

—— Terraces.—The fine effect of simply turfing these down right up to the wall, and of dispensing with all flower-beds in that situation, is beginning to be more fully recognised. At Dunorlan, Tunbridge Wells, where is a fine stone terrace, the turf is continued uninterruptedly in this manner right up to the wall. The same plan is adopted in some of our cathedral closes. Canterbury, for instance, rises sheer from an expanse of turf, and who would be Goth

enough to commit the impertinence of putting flower-beds in such a situation? The difference is, of course, great between the two instances we have mentioned, but the principle is the same.

—— Pelargoniums, Hydrangeas, and Heaths, at the Clapton Nursery.—The immense number of the decorative varieties of Pelargoniums now grown in this establishment, conclusively point to the way in which the sorts that come under the head of decorative kinds are taking the place of the show varieties, that at one time were almost alone held in favour by cultivators of these plants, and undoubtedly beautiful as are the colours and shades of the latter with their faultlessly regular even petals, they yet lack the simple elegance, the profuse and early disposition of blooming, and the close short-jointed habit of growth (which reduces the use of sticks and ties to a minimum) that the decorative kinds possess. The very large trade done at this establishment in a wholesale way with provincial nurseries in Pelargoniums, as in other kinds of plants, is apparent from the quantity grown—some 30,000 annually—and from the fact of the stock in a great measure now consisting of these decorative sorts, it is evident that they are in general request in the provinces, as they are in the neighbourhood of London. The following varieties are grown:—Duchess of Bedford, Duchess of Edinburgh, Triomphe de St. Mandé, Empress of India, Mrs. Bradshaw, Mermerus Improved, Queen Victoria, Prince of Wales, Volonté National, Madame Thibaut, Miss Maillor, Emily Everard; two other Continental varieties—Lucie Lemoine, a crisped flower, beautifully frilled on the edge of the petals, which are almost all of a size, giving the individual flowers an elegant campanulate form—colour pure satiny-white, with the faintest pink streak at the base of the petals; Madame Kœnig, form of flower much like the last, pure white without any mark of colour; both have an excellent habit of growth and flower, and will answer beautifully for bouquet work, the more than ordinary crisped form of the flowers being so much better for such use than when they open flat. Quantities of this large stock of Pelargoniums are beautifully grown, some up to a size equal to that of the usual market plants, stout, bushy and smothered with flowers, ready for giving immediate effect where required. Two kinds of Hydrangeas are grown, the old variety and Thomas Hogg; in all some 15,000 are yearly propagated. They have for some weeks back been a sight worth seeing, the long banks they form being a complete sheet of delicate blush and white. Comparatively little as Heaths are now seen in private gardens, still some people must cultivate them, for here they go on being grown with no diminution. One would suppose that the number of long rows of pits filled with them would more than suffice to furnish all the growers in the kingdom. Besides the multitude of winter flowerers, such as hyemalis and allied kinds, there are vast numbers of hard-wooded sorts, stout bushy plants, in various sizes, from the usual trade examples up to others considerably bigger. The yellow Cavendishiana and the bright pink ventricosa coccinea minor are present in quantity; these two sterling kinds are general favourites, free growers and free bloomers, that will stand more rough usage than some of the more tender sorts. The stock is very extensive, consisting of 30,000 hyemalis, 15,000 gracilis, 6000 candidissima, 10,000 ventricosa, 4000 Cavendishiana, 3000 perspicua nana, and various others, the principal of which are colorans, caffra, cerinthoides, cerinthoides coronata, ovata, verticillata, Willmoreana, melanthera, grandinosa, and most of the popular hard-wooded varieties.

—— Professor A. W. Eichler, Director of the Royal Botanic Garden and Museum, Berlin, author of *Entwicklungs geschichte des Blattes, Blüthendiagramme*, &c., has recently been elected a foreign member of the Linnean Society.

—— The Decorations at Perth.—On the occasion of the Queen's recent Northern journey, the Royal party were served with breakfast by Mr. and Mrs. M'Donald, of the Royal Refreshment-rooms, Perth. The rooms were beautifully decorated with Orchid flowers and Maidenhair Ferns, provided by and arranged under the personal superintendence of Mr. James Anderson, Meadowbank Nurseries, the flowers being much admired by Her Majesty, especially a floral arch of cool Orchids thrown across a spacious dish filled with beautiful Hamburgh Grapes. Some of the Orchid flowers were selected to be taken to Balmoral, along with a bouquet from Scone Palace, and a basket of Lily of the Valley from Sir John Richardson.

—— Dracocephalum nutans.—This pretty Labiate, introduced many years ago to English gardens, seems considerably less common than it should be. It is a dwarf, neat-growing plant, with sky-blue flowers, which are freely produced during the greater part of summer. It is a native of the Altai Mountains, and is now in flower at Kew.

—— The late Mr. John Miers.—A portrait of the late Mr. John Miers was presented to the Linnean Society at the Anniversary Meeting (May 24), by his son, Mr. John W. Miers. Mr. Miers' labours on the Botany of South America are well known, and he had been long connected with the Society both as a member of Council and otherwise, and his latest work was published in their *Journal*, at the age of 90. A portrait of the late Zoological Secretary, Prof. St. George Mivart, was also presented by a committee of his friends.

—— The Flower Show in Paris.—We understand that the recent exhibition in Paris was a great success. The grand prize was given to Mr. Moser, nurseryman, of Versailles, for a splendid lot of Rhododendrons, Conifers, &c. Amongst the other winning lots were those of Messrs. Saisson-Lierval, Savoye, Landry, and Mathieu for Palms, Ferns, &c. The great attraction seems to have been a group, not for competition, exhibited by Mr. Bergman, head gardener to Baron Rothschild, at Ferrières, to whom was given the Diplôme d'Honneur.

—— The Weather.—General remarks on the temperature, rainfall, and duration of bright sunshine, for agricultural and sanitary purposes, during the week ending May 23, issued by the Meteorological Office, London:—The weather during the first few days was dull, cold, and showery, with thunder in many places, but during the latter part it was warm and brilliantly fine. Temperature, on the whole, was again a little below the mean in all districts. The readings were lowest at the commencement of the period, when minima ranging between 31° and 33° were registered in all the "Wheat-producing" districts. The maxima occurred on the 23d, when the thermometer rose to 76° at Londonderry, to 74° at several of the central and South English stations, and to between 71° and 73° elsewhere. Rainfall was slightly more than the mean except in "England N.E.," the "Midland Counties," and "Ireland, S." Bright sunshine was more prevalent than it was during last week in all districts, except "Scotland, E." The percentages were rather high, varying from 66 or 67 in the S.W. to 43 in the extreme N. Depressions observed:—During the earlier part of the period a rather large depression (gradually filling up) lay over Scotland, while several small subsidiary disturbances passed from W. to E. across England. Fresh to strong south-westerly winds consequently blew at all the English and Irish stations, and moderate easterly winds in the north of Scotland. From the 21st until the close of the week, however, an anticyclonic system prevailed, fresh easterly winds being experienced in the S., and southerly breezes in the W.

## Florists' Flowers.

New Auriculas.—In some remarks on Auriculas by me at p. 639, it was stated that "there did not seem to be any striking new varieties exhibited" at Manchester. This remark has brought out the fact that there were some really good flowers adjudicated upon after the show. About twenty judges and exhibitors met at the "Bull's Head," under the presidency of Richard Gorton, Esq. Two seedlings were selected for First-class Certificates—viz., Reliance, from Mr. Thos. Mellor, of Ashton-under-Lyne. It is a very good white edge, probably a seedling from Smiling Beauty, but is a decided improvement on that fine flower, though much like it. The other certificate was awarded to Mr. Pohlman, of Halifax, for Brunette, an exceedingly good self, with good properties, and the flower flat and circular. There were other good flowers exhibited on this occasion, but the committee did not venture to make any further awards. *J. Douglas.*

## Home Correspondence.

The Florence Botanical Gardens.—I beg to forward to you a copy of the protest of the botanists of Florence against the proposed removal of the herbarium, botanical museum, and annexed garden in that city. The unfavourable opinion of the projected change expressed in this document is fully confirmed by Sir Joseph Hooker and Dr. Asa Gray, who have recently examined the present botanical establishment, which they pronounce to be one of the finest and most complete in the world; and the buildings to which it is proposed to remove the collections, which they find to be altogether unsuitable for the purpose. They likewise consider the site of the proposed new botanic garden to be open to serious objections. The result of the project, if it should unfortunately be carried into effect, would be the serious injury, and probable ultimate destruction of a herbarium which among other priceless collections includes the type specimens of the classical works of Desfontaines, Labillardière, and Ruiz and Pavon, besides those of the Canarian flora, and the other works of the late Mr. Barker Webb. Botanists who may wish to associate themselves to the protest, are requested to send their names to Mr. E. Sommier, Lung' Arno Corsini, Florence. *John Ball*, 10, *Southwell Gardens*. [It would be well if Mr. Ball were to circulate among English botanists and horticulturists familiar with the facts of the case a protest for signature, and transmission to Florence. Our opinion on the matter is given on p. 698. Eds.]

The Compass Plant.—The following interesting communication regarding the Compass Plant, lately figured in the *Botanical Magazine* (t. 6534), is from the pen of the distinguished officer of the United States Army who is mentioned in that work as being the first to announce the fact of the north and south direction of the edges of the plane of the leaf-blade of that plant. *J. D. Hooker.*

"I have read your communication for the *Botanical Magazine* on the Compass Plant of the Western prairies. Dr. Asa Gray told me verbally of his interesting trip in 1877 with you to the West, and of your seeing the Silphium laciniatum on its native prairies. I am pleased to see his letter incorporated in your article. I wish to inform you that in all the later editions of *Evangeline* Longfellow made a correction of his allusion. You say 'I cannot congratulate the poet on the fidelity of the plant as a delicate one.' The fact is, when I saw in his first edition that he called it a 'delicate plant,' I wrote him that, on the contrary, it was a robust plant, and, therefore, a better image of faith—

'Such in the soul of man is faith.'

He changed it into vigorous plant, and omitted the words 'fragile stalk.' This is a decided improvement, although it is hard to improve that charming poem. Every possible experiment was tried on the plant. It could not be moved by a powerful magnet; nor did the most delicate instruments show the existence of any magnetism. Thus it doubtless points to the north under the action of light. The number of stomata on each face being equal, it faces the rising sun and the setting sun as a position of stable equilibrium. If, by a strong glare of light, it should at noon present its face to the south, and thus be east and west, this would be a position of 'unstable equilibrium.' Thus some of the observers have often reported an exceptional east and west position. This movement is of the character of the example given by Charles Darwin in his letter of Feb. 22, 1881, in *Nature*, where 'the leaflets move 90° in a direction opposite to the proper one.' In like manner the letter of Dr. Asa Gray, which you have quoted, says, 'I have several times met with a leaf abruptly and permanently twisted to a right angle in the middle, so that while the lobes of the basal half pointed, say, east and west, those of the apical half pointed north and south. Mr. Darwin, in the paper in *Nature* above referred to, gives examples of plants directing 'their edges towards the light.' Mr. William Saunders, Superintendent of the Botanical Garden in the Agricultural Department in this city, showed me a plant of the Eucalyptus polyanthemus whose leaves are always vertical. He says the number of stomata on the two faces are the same. If those leaves moved on a stiff vertical axis they might be north and south, like the Compass Plant, if they were of firm texture. When I first made known to the scientific world the existence of the polarity of the Compass Plant, in a letter of August, 1842, to the National Institute, Washington, I soon received letters stating that other plants on the prairies showed the property. Of course, under like conditions under the action of light the same phenomena should re-appear. Thus Dr. Engelmann, of St. Louis, in his letter published in the *Gardeners' Chronicle* of February 26, 1881, refers to the Lactuca Scariola as having similar properties to the Compass Plant. By similar 'anatomical structure' I understand Dr. Engelmann to refer to the equality in the number of the stomata on each face of the leaf. He wrote me three years since of his observation on the Lactuca Scariola, and I am pleased to see this recent confirmation of his conclusion. In 1843 in St. Louis I invited the attention of this indefatigable botanist to the curious property of the Compass Plant, and he has since made it the subject of his observations. *Benjamin Alvord, Brigadier-General U.S.A. (Retired), Washington, D.C., May 5.*"

**The Lantana in Ceylon.**—The Lantana has spread over Ceylon as widely as over New Caledonia; but the Coffee planters consider it renews worn-out plantations. In South Australia it is known as Bushman's Tea, but is not widely distributed. The Ageratum is become an abominable weed in Ceylon, and is a great nuisance in the plantations. It may appear strange, but the fact is that introduced weeds have nearly supplanted the native flora on the main lines of traffic in Ceylon. *R. J.*

**Centaurea ragusina.**—This fine-foliaged plant, whose properties for bedding-out purposes cannot be too highly acknowledged and recommended, is rightly deserving of a most important and prominent situation in the flower garden. Its attractive white silver-like foliage ever commands the attention and admiration of visitors, and the leaves are extremely useful for fringing or putting round the outer edge of bouquets in some cases. To have a yearly succession of cuttings for bedding-out purposes in the spring of the year, it is well to grow on a sufficient quantity of plants in large pots for that purpose, and by occasionally retaining and growing on a number of these plants or of cuttings in pots to supply the place of the old plants—which are likely, owing to the repeated removal of cuttings, to die out—there need be no difficulty experienced in having a plentiful supply of cuttings at all times. Whilst removing the cuttings a good long rough heel should be attached to these, for if such be not the case success in striking them will not be attained. This is a most important and indispensable point in their cultivation, and more depends upon this matter than upon any other part of their treatment, at least as regards their propagation. Having taken the cuttings off the old plants as prescribed, next get a sufficient quantity of 3-inch clean pots, crocking them by simply putting one crock over the drainage-hole, and then a layer of rough or half decayed leaves or moss above it. Fill the pots up to a suitable distance with soil composed of equal parts of loam, sand, and leaf-mould, having been put through a half-inch riddle previous to using. Insert the cuttings carefully into this, and observe, while doing so, the absolute necessity of having the cuttings firmly established in the soil. After having done so, have the cuttings removed to a nice genial atmosphere and bottom-heat, and in a fortnight or so, after having been subjected to these influences, you will find upon examination that the cuttings are all more or less nicely and well rooted round the edge of the pots. It is a common practice with some, when once the cuttings become well-rooted in the cutting pots, to have them shifted into 6-inch pots, planting them out in the beds in this form; but it is very questionable as regards some flower gardens, if they succeed as well as when planted out of the cutting pots. They will indeed succeed well either way; but there can be no doubt when they are planted out of the cutting pots they make a more rapid, stronger, and satisfactory growth, and the beds become thereby filled up in a shorter space of time. Of course by retaining the plants in the 6-inch pots they may be lifted out of the flower beds much better in the autumn, and the results are that they keep much better during the winter. Plants that have been planted out of the pots in the spring of the year, and which are supposed to be lifted and potted in the autumn, in the generality of cases never repay the trouble that may have been devoted to them. It is advisable where the plants are to be retained to have them bedded out in the 6-inch pots, and with a favourable season they will form nice, bushy, compact plants by autumn, when, at this time, they can be removed indoors and devoted to decorative and other useful purposes, until they are required the season following for bedding out. *G. Drummond, Broxmouth Gardens, N.B.*

**Viburnum plicatum.**—Permit me to endorse your high opinion of this plant. We have not yet a sufficient stock of it for out-of-doors, but for the greenhouse or for forcing it is most valuable; the flowers also last well when cut, and we have nothing whatever in flower nor at all like it in form or general effect. The plants flower freely; we have them a yard high. When better known this plant is likely to be as popular as the Deutzia gracilis, white Spiræa, Lilacs, Ghent Azalea, Rhododendrons, &c., for forcing or forwarding for the conservatory. *D. T. Fish.*

**Halesia tetraptera.**—Halesia tetraptera (the Snowdrop Tree), so called because of the striking resemblance of its flowers to the common Snowdrop, is one of the most conspicuous ornaments that can be employed for breaking the monotonous look of clumps or banks of evergreens during the present month. The tree attains a good size, and its branches, which are rather thinly set upon the stem, are at the present time clothed with clusters of its snow-white flowers, which have a remarkably pleasing effect among evergreen trees and shrubs. *W. Hinds.* [It does not usually flower so freely as it is doing this year. Eds.]

**The Cuckoo and the Gooseberry Caterpillar.**—Your correspondent, W. Crump, Blenheim, May 21, p. 669, is right in his surmises as to the cuckoo eating the Gooseberry caterpillar. Three years ago, being annoyed with fieldfares making free with my Strawberries, I one day happened to shoot a cuckoo, thinking it was a fieldfare; and on finding my mistake curiosity led me to have the bird opened to see what it had been eating, and I was surprised to find that it contained nothing but caterpillars, with a small portion of the Gooseberry leaves, which I suppose it had picked with them. I trust this may meet the eye of those who may be curious to test the matter themselves and save the bird. *John Farquharson, Wrexham.*

**Show Auriculas.**—An impression seems largely to exist that these fine plants are not adapted for outdoors culture. Why not? Either on banks or rockwork, in strong rich soil mixed with a little peat or leaf-mould and broken limestone, and in positions giving partial shade, they grow most luxuriantly; enduring the severest and stormiest winters (like the past two) with no symptom of damage. We have plants in the open ground of fine show varieties (*e.g.*, Lady Sheffield and Petronella) which, without the slightest shelter or protection, rival, if they do not exceed in vigour, any of the hundreds which we cultivate in pots. As ornaments of the rock garden all idea of "unfitness" ought surely to be abolished for ever. *Jas. Backhouse & Son, York Nurseries.*

**Trollius japonicus.**—I see this plant, also called, I believe, napelliflorus and Fortunei, praised as the finest of the genus. So it may be in the warm and sunny South, but here it is far from hardy, as this is the third year in succession in which the flower has been completely destroyed by spring frost—in fact, it is like most other Japanese plants in this respect. But some of them, as Dielytra spectabilis, recover, and flower again pretty well; but the Trollius is spoilt for the season. The three Trollius, europæus, asiaticus, and americanus, flourish well, and are grand ornaments to my long borders in spring. *C. Wolley Dod, Edge Hall, Malpas.*

**Collinsia bicolor self-sown.**—One of the prettiest features in the herbaceous garden here at the present time are several patches or colonies of this lovely hardy annual in full flower. A few seeds were sown last year, and the plants now in flower are the spontaneous offsprings of last season's plants, which shed their seeds abundantly, and these, germinating in due course, made nice stocky plants before the winter. With the exception of thinning out the plants to give them room to grow they have had no attention, and have stood the past bitter winter without a singed leaf, and are now, as I have said, one of the most charming features in the whole garden. The flowers are beautiful for cutting, and, unlike most annuals, last well in water, and will bear favourable comparison with any flowers of the season, not even excepting many Orchids. *W. Hinds.*

**Primula luteola.**—In answer to Mr. C. Wolley Dod's inquiry respecting Primula luteola, I write to say that in a most exposed garden on a moist rockwork mine is growing very vigorously. I believe the secret of success with all such plants is that of keeping the roots well protected; this I manage by setting two or three good-sized stones around such plants, thus protecting in winter, and keeping them cool and moist in summer. *O. C.*

—— Two plants of Primula luteola (divided last autumn) were amongst the very few Primulas killed here last winter. A small bed of P. japonica is now in blossom; the large Lettuce-like heads of leaves of last autumn were killed to the ground, but the plants seem now none the worse for it. Last year's seedling plants of Meconopsis Wallichii were wintered in a cold frame, but equally young plants of M. nepalensis on the rockery were uninjured. *C. M. Owen, Knockmullen, Gorey.*

**Notable Trees in Perthshire.**—Two trees, which many a traveller must have very much admired, grow on the banks of the Tay below Dunkeld. One of them is an Oak, the other a Sycamore, and they are said to be the last remaining trees of Birnam Wood. The Oak stands 25 yards from the stream into which its roots dip and feed. The trunk is 18 feet in circumference at 5 feet in height, and a great head of numerous branches rises from the crown at 14 feet from the ground. The Sycamore is 18 feet 10 inches in circumference, and its trunk is 72 feet high. It has a grand head. Some years since, when the present generation were boys, there was a hole in the trunk of this tree under the crown, and leading into the hollow part of the tree within. "When we were boys," said my informant, "we amused ourselves pitching stones into that hole, and we used to try who could pitch in the biggest. Then we would listen to hear them roll down the hollow trunk to the bottom." He thought there must be a ton of stones in the cavity, all tossed through the hole in the trunk by boys "for fun." The orifice has since been closed, having been healed over by the natural growth of the wood, and three branches spring from the edges. *Cor.*

**Pugilistic Toads.**—I have never seen them fight, but often threaten each other by standing up full height and assuming a sort of swaying, swaggering, and threatening motion. After thus showing preparation for war, one or both have generally receded a step or two, and both have, as a rule, subsided into their normal positions. Occasionally one of these has again assumed a threatening attitude, and advanced a step or two to meet the other, puffing itself out to its utmost width, as well as strutting at tiptoe height. These renewed threats have been met by a sudden reassumption of war-like swagger. But I have never seen a real attack such as is so vividly described by Dr. Paterson, at p. 671, nor yet one toad retreating from the other when attacked. These displays of combativeness have only been seen in artificial heat, and have generally occurred over a fat woodlouse approached from opposite directions by two toads, and jerked at almost simultaneously by both. The effect of a high temperature and a genial atmosphere on toads is very striking, and, among other effects, it wonderfully accelerates their somewhat sluggish movements, wheels and enlarges their appetite, and increases and adds new features to their combativeness. In a state of Nature their contests, so far as I have observed them, are confined to the water, and consist rather of bearish hugs than of such buttings and threatenings as those referred to by Dr. Paterson and in this note. *D. T. Fish.*

**Meconopsis Wallichii.**—Allow me to correct a slip of the pen made in writing my note which appeared last week under the head Primula luteola. I wrote M. Wallichii by mistake for M. nepalensis; the former is a plant I have never possessed, though I have sown seed of it in vain. Of the latter I have about a dozen in different situations, which have wintered out; two of these rotted away at the crown after the April frosts. The forwardest of the others on a flat rock border, is just coming into flower. The seed from which these were raised was sown in March last year. *C. Wolley Dod, Edge Hall, Malpas.*

**Unheated Vineries.**—I perceive I must be a little more careful in writing my articles, or the public will not understand them. The structure I alluded to in the article last week on "unheated vineries" is used entirely for Peaches, Nectarines, and a few Figs. As the consumption of fruit in my special calling is very large, and it is only one structure out of many, I think I ought to give some further explanation of the "short rod system" of pruning Vines. I will first correct an error in the last sentence of the article of last week before alluded to. It is stated "use the main root"—for "root" substitute "stem or rod." This system of pruning is most important, for certainly since I adopted it the crops of Grapes have been one-fourth more, and the bunches larger, and the whole growth more vigorous. If from four to five short rods be grown, instead of depending on the spurs you will have from five to six nut-like buds to select from; by this means you can always get two or three fine bunches, and the laterals, growing from this short rod as large as your little finger; and in consequence of the great vigour the thinning is reduced to a minimum. As regards thinning, I always pay extra; it commences at 4 o'clock in the morning. I do not allow it to be carried on during the heat of the day. As I have introduced many original plans here, some thoroughly practical and successful growers might, if he felt inclined, make his report on the different systems. I introduced these wedge-shaped structures to cut out a former idea, *i.e.*, the ground vineries, the iron original of which is in my garden still, offshoots from which I see advertised in all the horticultural papers. So much for an original idea. I condemned the so-called "ground vinery" from the first, as the thinning was so difficult and the mildew so easy. The improved form has all the good qualities, *i.e.*, of bottling up the heat and electricity from the earth, and none of the bad qualities. *Philodendron.*

—— I quite agree with your correspondent, "Dorset," at p. 571, as regards unheated vineries, and think with him that it is a pity for any one to be at the expense of building glasshouses and making expensive fruit borders, without having also the means of keeping frost out of them. I also know by experience that in exposed span-roofed houses the temperature is apt to fall very low, even to within 2° or 3° of that of the external atmosphere. More particularly is this likely to be the case when the wind blows fiercely from the east or north-east. Very little, however, is necessary, in the form of a simple heating apparatus, to prevent this result; it may be accomplished by a single flow and return 4-inch hot-water pipe, or even by one length of fire-flue, which need only be used when found really

necessary. A good deal may also be done in the way of mitigating an injurious depression of temperature, by shutting up the structure early in the afternoon when frost is expected, and thus enclosing a considerable amount of solar heat, which will be likely to have the effect of preventing to some extent the depression which might otherwise occur. And it would be interesting to know if advantage was taken of this in the case your correspondent alludes to. I was also rather surprised to hear of so great a depression as 19° on the night of the 20th ult., in Dorsetshire—as I suppose the locality to have been. Here, in Bury St. Edmund's, exposed to the bitter eastern gales which almost invariably prevail here at this season of the year, the minimum temperature on the night of the 20th was 35°, with wind from N.E; on the 21st it was 32°, and on the 22d it did not fall under 40°; and Vines here, considerably advanced, merely under a glass-roof, without being enclosed, are quite uninjured. As to the Pear bloom, as far as I can ascertain, it is yet unscathed; so it is to be hoped that the prospects as regards the fruit crops are not quite so gloomy as "Dorset" apprehends them to be. *P. Grieve.*

**Variegated Heracleum.**—A noble specimen of this magnificent hardy foliage plant is now fast pushing into flower at Messrs. Hooper's nursery, Twickenham. There are upon it gigantic leaves, some 3 feet by 2 feet in size, and of a rich creamy hue. It is undoubtedly one of the noblest of hardy foliage plants, and would make a handsome specimen for a lawn, where its fine leaves were not swept by the wind. It does not propagate freely, but it is hoped seed may reproduce it. *A. D.*

**Broccoli Model.**—I can honestly recommend this to any one wishing to grow a really good hardy variety of the "fourth party"—beg pardon, fourth section of Broccoli. With us it is now turning in, and beautiful heads they are too, such as would create a smile on the countenance of the man who has to send his two or three hampers of vegetables up to town every week and hardly knows what to do to fill them up, but is more pleased than otherwise when there is a good stock of leverets and young rabbits to put at the bottom. Out of ten varieties that we planted out last year Model was the only one which in our damp situation stood through the winter. We shall plant it largely this year. *J. Horsefield, Heytesbury.*

**The Bamboo in Brazil.**—In your paper of Saturday, in an article upon British Guiana, is a reference to the extreme beauty of the foliage of the Bamboo. Three years ago I was in Brazil, and I am tempted to send you an extract from some notes made on that occasion, and of a ride from Petropolis to Theresopolis, and some of another excursion in the neighbourhood of Petropolis, which your correspondent's remarks brought to my recollection. *Alfred Wills, Esher.*

"The path cannot be much used, for it was half overgrown with Bamboo, and we had to cut our way at times through the thick overhanging scrub. Bamboo of one sort or another was the predominant feature in the picture, and the Bamboo, whether large or small, is like the Cocoa-nut tree, always beautiful, and never palls upon the sight. No one can ever gaze upon a great primeval forest, where among the lower trees every bough is hung with Bamboo, and every rough outline is broken down and rounded into grace and beauty, so that the eye wanders over a cataract of graceful foliage, out of the heights and depressions in which rise the lofty stems of the great fathers of the forest, without owning that until he has seen the vast thickets of Bamboo in which Brazilian scenery rejoices his experiences of the beauty and grace of Nature are incomplete. . . . In one part the road itself and the forest glades above and below were thickly studded with long rods of Bamboo, decked with a ruffle of foliage at every joint, and hanging over in curves in which the line of beauty seems to be typified. In many cases the fine end of the rod had, when young, been swayed by the wind till it had caught in a neighbouring thicket and was there held prisoner. The Bamboo growing to its full size, and the end being still held down, it had grown into something very nearly approaching a complete circle, large enough for us to ride through it without lowering our heads; and the frequency with which this happened gave a quaint and novel aspect to this part of our ride. . . . The great beauty here consists, not in the distant scenery, but in the masses of tangled foliage of every description. The trailing Bamboo grows as the Thunbergia does in the Peradenyia Gardens at Kandy, in Ceylon, and transforms tree stems into columns, and thickets into masses of leafy architecture, giving you walls, roofs, colonnades, arches, buttresses and architectural fancies of every kind. Then there are great masses of the Bambusa gigantea—not attaining at this height above the sea and in this latitude anything like its true stoutness and size, but still running up 40 or 50 feet, throwing out its huge leaves, and hanging gracefully over the path." The following few lines were written of a ride in a different direction, but still in the neighbourhood of Petropolis:—"Perhaps the feature of the scenery was the presence everywhere of the giant Bamboo trailing and hanging over everything, just as the small creeper does elsewhere. It must be seen for it to be believed how wonderful, how fantastic, and how full of grace and beauty it all was. In one place a narrow gorge was filled up with this kind of beauty, the Bamboos hanging on every stem and branch, and transforming them into houses and church spires, and steeples and Gothic arches, and I know not what; and then countless specimens stood singly, drooping gracefully as they rose, and looking like gigantic fishing-rods hanging over the ravine, save only that every joint of the fishing-rod was decked by a beautiful fringe or collar of bright green leaves."

**Hardy Varieties of Broccoli.**—Will "H. W. W.," who writes on this subject (p. 572) kindly state the county he hails from? [Wiltshire.] Without such information, the facts he records of the safety of such Broccolis as Wilcove's Late White, Richmond Late White, Cooling's Matchless, and Carter's Matchless, are of little general interest. Of the four Broccolis named I know two—Wilcove's Late White as a specially hardy variety, Cooling's Matchless as a capital Broccoli, but not specially hardy. The crowbar planting on cleared ground was also good, and likely to make the plants sturdy. It does not appear that "H. W. W." laid his Broccoli so that the four sorts withstood zero without protection. The fact is so extraordinary that I trust "H. W. W." will kindly tell us about where this happened, and also state if he grew any other varieties of Broccoli in the same way and place, and with what result. It is pleasing to hear that four varieties were saved; it would prove almost equally instructive to know how many sorts were lost. Not one of ours that reached beyond the snow-line and felt the force of zero escaped. Crowbar planting after Peas is all very well, but were that sufficient to enable these four or any other Broccolis to withstand direct contact with zero, and such piercing winds as we were frozen with last winter, not all the foundries in England could make horticulturists crowbars enough between now and the next Broccoli planting season. *D. T. Fish.*

**A Button-hole Flower Bottle.**—I beg to call your attention to a little invention of mine for keeping cut flowers fresh when used for buttom-hole flowers for gentlemen, or for ladies to wear in the hair. The "button-hole flower water bottle" is made of vulcanised india-rubber, and is held between the fore-finger and thumb, is collapsed while held over a tumbler of water, and thus filled; it is then placed on the end of the flower. It is also very useful for cut flowers at shows or for sending a flower through the post. I have much pleasure in sending you a few for trial. *James Mackenzie, Cork.* [Very useful if properly manipulated. Eds.]

Fig. 127.—A MINIATURE WATER BOTTLE: NAT. SIZE.

**Gooseberry Caterpillar.**—The most expeditious, effectual, and cheapest remedy for destroying these that I am acquainted with is quicklime, a dusting of which they should receive when the foliage is wet. Evening is the best time to do it, and the following morning the whole should receive a thorough good washing with the garden engine. *J. Horsefield.*

**Production of Double Flowers.**—Like your correspondent "Paul," at p. 573, I was much pleased and interested with what was said on this subject in the leader in the *Gardeners' Chronicle* for April 16. In the vegetable as well as in the animal kingdom peculiarities or eccentricities are found to be readily transmitted by the parents to the offspring. In the vegetable kingdom this is exemplified by the form and shade of colour in the flowers, as well as in the habit and form of the plants, such as the dwarfing, or diminishing the vigour, or increasing the same, and also in the production of variegation or other peculiarities in the foliage, &c. I believe I was the first to originate the double form in the Petunia, and this was accomplished by merely selecting as parents two varieties, the flowers of which showed each a slight inclination as it were in that direction, by having a portion of the stamens developed into something like small petals, to which the anthers adhered and apparently ripened their pollen. This peculiarity in the two parents became so intensified in the offspring that the first generation of plants included many whose flowers were as double as a Rose; and the flowers of one of the parents being pure white, while the other was dark purple, it followed that among many plants whose flowers were intermediate in colour, a portion of them came with double white, while others had double purple flowers. And I may also mention, as a somewhat curious instance of the effect produced by using the pollen of one family of plants upon the flowers of another family very dissimilar to each other, although belonging to the same natural order, viz., Geraniaceæ, I repeatedly succeeded in producing the condition of marginal variegation on seedling plants of the common blue indigenous Geranium pratense, by applying the pollen of various varieties of the variegated Zonal Pelargonium. This process also effected a change in the colour of the blooms, in fact, produced the shade of colour which might have been expected to be the result of mixing the scarlet of the flowers of the pollen parent with the light blue colour of the flowers of the seed-bearing plant. In all other respects, however, no material change was effected, as the seedlings were in all respects "Geraniums," without any apparent approach to the characteristics of the Pelargonium. Whether the repeated fertilising of the blooms of such seedlings with Zonal Pelargonium pollen, might, in the course of generations, give a decided result remains yet to be proved. But all attempts, however, to fertilise the blooms of the Zonals with the pollen of the blue Geranium, has as yet, as far as I know, proved to be failures. *P. Grieve.*

**Bible Revision.**—Those who understand what the word certainly means in its relation to the fact of the Fig will be much more ready than the New Testament revisers have proved to admit that it exactly expresses or conveys the nature of that portion of the fruit which, produced out of season, fails to come to maturity. Few readers of the Psalms are probably unfamiliar with the reference in the 58th to the "untimely birth of a woman," altered in the Prayer Book version to the "untimely fruit of a woman." In this case whilst the term unripe might be employed it would be shockingly coarse, and by no means so exact an expression. It will therefore be of interest to see how the Old Testament revisers treat this passage. It is very possible the result may show considerable divergences between the revision of the two learned bodies. In a bibilical marginal note to the reference to the fruit of the Fig, I find it added "or green Figs," thus showing that the opinion of the revisionists has had previous existence, but the scholars seem to be unaware that a Fig tree shaken by a mighty wind is in less danger for its unripe or green fruit than for its ripe fruit, the former being specially tenacious in adhering to the branches. Perhaps John meant to convey that when the Fig trees were shaken by mighty winds fruit was unseasonable and therefore untimely. *A. D.*

**Papaver umbrosum.**—This magnificent biennial Poppy, of which Mr. Harpur-Crewe gave me seed at the end of last June, came into flower in my backward garden on May 20, being far ahead of the large perennial P. orientale and its kindred. My seedlings were planted out in November in threes, a foot apart, making the corners of an equilateral triangle. They not only defied the frost, but seemed to grow all through the winter. They now form clumps a yard across and 2 feet high, showing nearly a hundred buds. They like an open rich soil, a sunny situation, and plenty of room. Their habit is graceful. Will some one tell us the history of the species? *C. Wolley Dod, Edge Hall, Malpas, Cheshire, May 22.*

**Gardening on the Grass.**—I have recently had the satisfaction of seeing a garden, or, rather, pleasure ground, that is quite a departure from what is usually met with, as instead of the whole of the lawn being subjected to the mowing-machine and closely shorn, wide rides or paths only are cut, and as these take the course of shrubbery borders and beds in which Rhododendrons are planted, the curves and lines are easy and natural, the mown sward with its sides or banks of taller green looking most inviting for a stroll, and feeling far more pleasant to the feet than the hard gravel one generally finds in such places. Not only do the shrubs show to much better advantage with a broad belt of uncut grass, but it is just the situation for wild flowers, as in it Blue Bells, Primroses, Orchis, Narcissus, Snowdrops, and other plants of that kind are just at home, and can be left undisturbed to ripen their foliage and bulbs, which they rarely get a chance to do in any other positions. To a lover of Nature there is much to admire even in grasses alone, for when blooming or seeding the heads are very light and beautiful in their formation and colour, and always elegant and pleasing to look on. Besides the enjoyment such a garden affords, what a saving of labour it is, as instead of the men being occupied with the roller and machine those implements may in a great measure be laid aside, and the strength concentrated in other parts where it can be made to yield a far better and more satisfactory return. Even if no other portion of the grass is left, that under deciduous trees might always be, and the ground held sacred to the many things that should be planted therein. To show them off to the best advantage,

the surface should be raised above the general level, which ought to be done by degrees, so as not to injure the roots, and the periodical dressings of light, rich soil would then not only benefit these, but would be highly serviceable to the plants by giving them fresh material to feed on. What disfigures and spoils the quiet repose of pleasure-grounds which should be almost entirely devoted to the culture of trees and shrubs, is the cutting out of stiff formal beds on the turf, and filling them with bedding stuff, which gives a glare of colour quite out of harmony with all the surroundings. If anything besides the Snowdrops, Daffodils, Primroses, Crocus, &c., adverted to above, are admissible here, it is only herbaceous plants in borders jutting out in front of evergreens that do not root far about to rob them of the food they require. In such positions stately Lilies may be planted and grown to perfection in sheltered walks, and in moist, shady spots the Spiræas of different kinds in groups, and in others Hollyhocks and other plants that associate well with the shrubs. *J. S.*

Clerodendron fragrans.—I was much pleased to observe your note about the single variety of the above, and as the more common double variety has long been a favourite of mine, I trust I may be favoured with a cutting of the single one by the accomplished and obliging curator, Mr. Lynch. It will doubtless prove valuable for hybridising with such species as squamatum, Balfourianum, splendens, &c. It will be something to give perfume, albeit not one of the sweetest—for I always think the scent of C. fragrans something like that of fresh pea-meal, known as the "Glasgow" when I was a boy—to such species as squamatum, Balfourianum, &c. Possibly, too, the crossing of C. fragrans with such species as these would give us a hardier race of Clerodendrons, for fragrans is a greeenhouse plant, and never does well in the open air in summer. On the other hand it is hoped that its tendency to become double will not be extended to its hybrids or crossbreds, as that would mar the chasteness and simple beauty of our present species of tropical Clerodendrons. It would also be a great acquisition could we get a pure white Clerodendron. From what you say of the single variety of fragrans, it is probably whiter than the double, a flower much injured by being double, and almost more by having so much pink in it as to be suffused over the greater part of the white. A pure white and really sweet Clerodendron might prove a formidable rival to the Stephanotis itself. *D. T. Fish.*

## Reports of Societies.

Royal Horticultural: *May* 24.—The Rev. G. Henslow took the Pelargonium as the subject of some remarks, as a fine series of old forms and modern productions of this genus was exhibited from the Society's Gardens at Chiswick. The species first introduced from the Cape and figured in Johnson's *Gerard* was P. triste, then called Geranium indicum, and was introduced by Tradescant; a plant "very near triste" was exhibited. Before 1732 six species were cultivated at Eltham. Linnæus, who named three Geraniums, was aware of twenty-five species cultivated in Europe. In 1812 there were 102 species in England. Shortly after this date crossing the species began, and the number of hybrids and other "forms" rapidly increased, and were regularly figured by Sweet from 1820 to 1830. The genus was called Pelargonium by L'Héritier, as the form of the flower is irregular, and so differs from Geranium, which has a regular corolla. Moreover, as the lecturer pointed out, the stamens are ten and free in the latter genus, while they are (usually) seven only with fertile anthers, and coherent, in Pelargonium. The honey-glands are spherical knobs between the stamens in Geraniums, but there is a long tube adnate to the pedicel of Pelargoniums. This last feature separates this genus from Tropæolum, or the garden Nasturtium, as the honey-tube or "spur" in this genus is free.

The change of form produced under cultivation was a more or less regular corolla, the narrow petals of the wild state become rounded, so that the five make together a circle with no interspace, the petals being like Rose petals, with an even surface, and with no wrinkles of any kind. The veins of colour should disappear while the blotch of colour on the two upper petals in one group, or on all the petals of another group, should be uniform, clear, and rich, and running to the base of the petals. Several types were illustrated. Thus, P. inquinans was the origin of the common nosegay scarlets; several small-flowered species with scented foliage gave rise to the Oak-leaved, crisped, lemon-scented, &c.; though it is difficult to say what species gave rise to the large white-flowered kinds.

Mr. Henslow made further remarks upon the irregularity of corollas, and observed that it was his belief that it was produced by the visits of insects, for when they could only enter a flower one way, as in axillary flowers, or when the corolla was placed vertically, such flowers were mostly, if not always, irregular; but when flowers stood erect, with the corolla horizontal, and could be visited by insects from all sides, they were regular. Moreover, the fact that under cultivation Pelargoniums, Gloxinias, Pansies, &c., had a strong tendency to become regular and more or less erect—and it was the object of the florist to aid Nature in this respect—the flowers were reverting to the ancestral and regular form, since (as the lecturer presumed) the insects were not forthcoming to visit the flowers, which had produced the irregularity found in these flowers in their wild state.

He next described the process of fertilisation of Geraniums and Pelargoniums, showing how flowers with conspicuous corollas were obliged to be crossed, since their stamens mature before the stigmas—a state called "proterandry" by botanists; when flowers had inconspicuous corollas they were self-fertilised. Our wild species of Geranium illustrated this fact. G. pratense, with very large flowers, matures its two whorls of stamens before the stigmas are ready at all; G. pyrenaicum maturing only one set in that way, so that the other set were ready to shed their pollen simultaneously with the stigmas; while in G. pusillum, the smallest-flowering kind, the pistil is mature before either set of stamens. Mr. Henslow explained this by the fact that when the corolla is large and the stamens have much pollen, so much nourishment is required as to cause a delay in the development of the pistil; but if the corolla be minute then the pistil is matured rapidly. In the Oak-leaved Pelargonium the stamens lie horizontally and mature their anthers, while the style and stigmas are quite immature below them. When, however, the pollen is shed the anthers fall off, the filaments bend down so as to be out of the way, and the five stigmas, now mature, rise up and occupy the position formerly held by the anthers. Hence the flower is strongly proterandrous. On the other hand in pale-flowered scarlet Pelargoniums the anthers are on the same height and mature together with the stigmas, so that they set seed abundantly, as is the case with Christine. A new pink variegated-leaved variety, called Marian Harper, exhibited by Mr. Parker, of Winkfield, had the unusual property of great tenacity in the petals. The cause was apparently one to which the lecturer had more than once alluded—namely, a "compensation" between the corolla and stamens; for the pollen is found to be very poor, involving great difficulties in getting it to seed; but the petals gained an advantage in being firmer and more tenacious.

Mr. Henslow, lastly, alluded to the fruits of Pelargonium and Erodium, and showed how the screw-like summit aids them in burying their seeds. As in the Feather-grass, Stipa pinnata, the upper part catches amongst grass or leaves, &c., and thus furnishes a *point d'appui*, while moisture causes the screw-like awn to uncoil, thus lengthening the axis which screws the seed into the ground.

Scientific Committee.—Sir J. D. Hooker, K.C.S.I., in the chair.

*Sarracenia Popei.*—Mr. W. G. Smith showed a drawing of this hybrid variety raised at Glasnevin between S. flava and S. rubra, and alluded to elsewhere. In this flower the petals and the lobes of the style entirely prevented access to the stamens till the petals are raised in the manner lately figured in these columns.

*Lilium Martagon in Surrey.*—Dr. Masters showed specimens of this plant gathered in Surrey, and read the following communication on the subject from Dr. Paul Henry Stokoe:—

"I met with the specimens submitted to you at the edge of a small wood of Pinus Pinaster at Woodmansterne, an out-of-the-way village amid the Surrey hills, some four miles south-west of Croydon. It is true that so far as appears the distribution of the species is very local, it being restricted to a space of ground which may be roughly estimated (so far as my memory serves me) at some 30 yards by 7 or 8, but the plants have all the appearance of a flourishing colony, and exhibit remarkable adaptability to their surroundings, having succeeded in the struggle for existence (which must have been pretty severe) against such species as Mercurialis perennis, Scilla nutans, Urtica dioica, and various Umbelliferæ, which hem it in on every side, but have been completely supplanted over the extent of ground mentioned, where the Turk's-cap literally carpets the earth, while it is still, so far as I observed, pushing its outposts in all directions. The correlative inference, that the plant has occupied the above site for some years, renders the date of its procural at Box Hill important, as also its abundance in that locality.

"On the first blush it seems to me not improbable that a feathered wanderer from mid-Europe brought it over, and it is to be remembered that the Surrey hills are among the early resting-places for the soles of the feet of such belated visitors; and in further support of this hypothesis is the fact that the 'bed' occurs among shrubs skirting the east side of the wood, in just such a retreat as a worn-out bird would plump down into; while it is the last spot an unfeathered biped would think adapted for depositing seed or bulbs in, as he would expect them to be lost or smothered amongst the underwood.

"When it is intended to make fools of the *savans*, are not conspicuous-flowered plants or garden specimens preferred no less than likely spots? Barring its handsome foliar pseudo-whorls, Lilium Martagon is insignificant, and the small wood I speak of is remote, unfriended, and solitary, and is not approached by public footpaths, although farm roads abut upon it."

In the judgment of the committee the association of the plant with the Pinaster and the Nettle (Urtica dioica) told against its introduction in the manner suggested by Dr. Stokoe, and suggested the idea that it might have been introduced with soil from some nursery.

*Prolonged Vitality of Seed.*—Dr. Masters exhibited a portion of the fruit spike of a Banksia, probably B. serrata, from Mr. Cousens, which had been hanging up in a dwelling house for fifteen years. Last November the seeds were removed which have now produced thirteen robust plants. The prolonged vitality of the seed was much commented on, and it was remarked that many of the hard wood seed-vessels of the Banksias and allied plants remained closed till they were burst open by the heat of forest fires. Col. Clarke stated that seeds of the garden Pea kept in their pods for ten years had subsequently germinated with him.

*Cryptomeria elegans.*—Dr. Masters showed cones of this plant grown at Redleaf. The cones appeared to be exactly similar to those of C. japonica, of which C. elegans was a form, retaining to adult life the characteristics of the foliage usually confined to the young state only.

*Irises.*—Dr. Michael Foster exhibited flowers of various Irises, including I. Statella from Palermo, a white flowered species allied to I. Pseudo-pumila and conjectured to be a natural hybrid; I. longipetala, I. erratica, a small form of I. lutescens, and others. The exhibition of these specimens gave rise to a conversation on the adaptations of structure these plants present to secure cross-fertilisation. Self-fertilisation, however, was by no means excluded, in illustration of which Dr. Foster exhibited a flower of I. tectorum artificially set by him with its own pollen. The advisability of using the pollen from the anther next adjacent to a particular stigma in preference to one further removed was also commented on. The geographical relation of the species, especially of those of North-east America and Japan respectively, were also commented on.

*Eremurus.*—Rev. Harpur-Crewe exhibited a specimen of Eremurus himalaica, with thong-like leaves and erect stalk, bearing dense flowered racemes of white star-shaped flowers. It was stated to come from Kashmir, and will, in all probability, prove hardy.

*Tulips.*—Rev. H. Crewe also exhibited flowers of various Tulips, such as T. oculis-solis, T. Didieri, T. spathulata, T. scabriscapa, T. viridiflora, carinata, &c. It was remarked that it was now considered that many of the supposed wild species found in the neighbourhood of Florence were really of garden origin. Dr. Hogg commented on the fact that florists' Tulips allowed to remain in the borders revert to self-coloured forms. The remarks of Mr. Elwes at a previous meeting were also alluded to, and in which he pointed out the great variation, not only in size and colour, but even in the form of the parts of the flower, which occurred when wild bulbs were subjected to cultivation.

*The Florence Herbarium.*—The subject of the removal of this herbarium from its present splendid site to one infinitely inferior and very unsuitable, was commented on by some of the members familiar with the existing herbarium, and a strong wish expressed that such a needless and preposterous step should not be carried out.

Floral Committee.—James McIntosh, Esq., in the chair. First-class Certificates were awarded at this meeting to Mr. Charles Noble, Bagshot, for three very fine new Clematises of the patens section—William Ewart Gladstone, the largest-flowered variety of first-class form that has yet been exhibited, the eight-petalled blossoms measuring 9 inches in diameter, of good substance, and a lilac shaded mauve in colour. The next most distinct was George Eliot, a very neat dark lavender-coloured flower, deliciously scented with the odour of Violets, quite a new feature in the genus. The other certificated variety was Lady Constance Kennedy, a very beautiful semi-double pure white flower with two or three rows of broader petals than are usually possessed by double Clematises. Messrs. James Veitch & Sons received the committee's stamp of approval for three new erect-flowering Gloxinias — Brantome, a pretty reticulated deep violet flower, with a clear margin of pale lilac on the segments; Fabiola, crimson, with white edge; and Lady Marriott, crimson, laced with white, and beautifully reticulated. Mr. Rapley, gr. to J. Brand, Esq., Bedford Hill House, Balham, received a First-class Certificate for herbaceous Calceolaria Cloth of Gold, a pure canary-yellow of good form, and remarkable for its great size, the blooms measuring quite 3 inches in breadth. Messrs. Charles Lee & Son received a similar award for the beautiful white-flowered Rubus deliciosus,

figured at p. 537. Reseda odorata flore-pleno prolifera alba, a more than sufficiently long name for a double-flowered Mignonette, shown by Mr. W. Balchin, Hassock's Gate, also received the highest honours. Amongst other subjects submitted for the committee's judgment were a long arching green-leaved Yucca, named elegans, from Messrs. Charles Lee & Son; flowering shoots of the old but seldom seen Snowdrop Tree, Halesia tetraptera, from Mr. Maurice Young, Milford Nursery, Godalming; a fine set of cut blooms of Narcissus from Messrs. Barr & Sugden, mainly consisting of varieties of N. poeticus and N. incomparabilis; the most striking of all being the grand double white form of N. poeticus; a set of four well-grown decorative varieties of Pelargoniums, from Mr. W. Brown, of Hendon, the best of which was Robert Green, a fine soft rose, with a small dark blotch, good in form, and very pretty; a good stand of twelve florist's Tulips from an old grower of this fine flower, Mr. P. Wallace, of Winkfield; a fine form of Lælia majalis from Sir Charles Strickland, Bart.; a double pink-flowered white variegated Zonal Pelargonium, named Lady Betty, from Mr. J. Hugh Hawley, Ranelagh Gardens, Leamington; specimens of Trichopilia suavis alba, and Calanthe vestita major, a strong growing form, from J. S. Bockett, Esq., The Hall, Stamford Hill (Mr. Ebbage, gr.); a double-flowered variety of the old dwarf Japanese Serissa fœtida; the fine white Astilbe Thunbergii; and the striking Pothos celatocaulis, from the Messrs. Veitch; a good double-flowered Tropæolum, named Hermann Grasshoff, being neat and compact in habit, and producing an abundance of double scarlet flowers, the best of which come like a good Zinnia; also T. "canariense improved," a large bold flower, with bright blood-red spots, shown by Messrs. Cannell & Son, but which had nothing to do with the Canary Creeper; Begonia Thomas Moore, a dull crimson-red flower of fine size and shape, and welcome for its stiff erect flowering habit, from Messrs. John Laing & Co.; and Pteris tremula var. crispa, a great improvement on the normal form; Pteris serrulata cristata compacta, a dwarf close-growing variety; and Rivinia humilis variegata, shown by the General Horticultural Co. (John Wills), Limited.

In the Conservatory the General Horticultural Company staged a large and varied assortment of well grown fine-foliaged stove and greenhouse plants, and Mr. Rapley, gr. to J. Brand, Esq., put up a grand group of herbaceous Calceolarias, well grown plants, superbly flowered. Mr. Rapley's strain is of the very best description as regards size and rich and varied colouring, but a little wanting in smoothness, a defect that will no doubt be gradually obliterated by selection. Mr. W. Brown, of Hendon, had, in addition to a showy group of decorative Pelargoniums, a dozen plants of Kalosanthes jasminea, with superb heads of white star-like, long-tubed flowers. Gardeners who have much decorating to do should make a note of thisp lant. Mr. J. R. Bird, gr. to J. H. Causton, Esq., Lodgemore, Alleyn Park, West Dulwich, sent a large collection of Gloxinias and Calceolarias; and the usual Chiswick contribution consisted of an exceedingly interesting mixed group of Cape Pelargoniums, annuals, &c. Mr. Charles Noble staged a very remarkable group of two dozen Clematises, all of his own raising, and all belonging to the patens type. Very conspicuous were the three varieties previously named; and Pirate King, a first-rate new break, in its stiffer, more wiry flower-stalk; Proteus, a very singular double flower, with the resemblance to a Pæony, and of the colour of dark apple-blossom, but becoming more and more tinged with red as the flowers age; Margaret Dunbar, a very fine violet; and Aurora, double, rose-coloured with a strong tinge of red. Mr. Guyett, gr. to Mrs. J. Parrott, Lynton House, Clapham Common, sent a capital group of fine-foliaged plants, including some nicely grown Ferns, Dracænas, &c.

Fruit Committee.—H. J. Veitch, Esq., in the chair. Mr. Henderson, gr. to Earl Manvers, sent a dozen fine fruits of the Adam Fig, a variety much resembling, if not identical with the variety Grosse Monstreuse de Lipari, a handsome early Fig, but not remarkable for high flavour. A Cultural Commendation was awarded. From Mr. John Miller, Clumber, came an excellent sample of James Veitch Strawberries; and from Mr. Bethell, gr. to Sir R. Wallace, Bart., came a good dish of Sudbourn Hall Perfection Tomato, a variety somewhat like Hathaway's Excelsior, but not better as shown. Bethell's Conqueror Melon, an oval-shaped scarlet-fleshed variety, not equal to others already grown as regards flavour, was shown by the same exhibitor. Mr. Stevens, Trentham, sent examples of the Trentham Early Fill-basket Tomato, which was deficient in flavour, owing to being scarcely ripe enough, but which was considered of some value for market work on account of its earliness and free-bearing qualities. It is the result of a cross between Vick's Criterion and Trophy.

Royal Botanic: *May* 25.—The first summer show was in all respects, except perhaps as regards the weather, a complete success. The beautiful show-ground was well filled, as also the long corridor leading to the conservatory, with as fine a collection of flowering and fine-foliaged plants as could perhaps be got together at this time. Unlike the Kensington displays, which, owing to a want of encouragement, are deficient in flowering plants, this was indeed a flower show, superbly bloomed plants most largely predominating, and giving to the large marquee that brilliant appearance that is equalled in no other place. The classes for stove and greenhouse flowering plants were well contested, especially those reserved for amateurs, in which Mr. Chapman, gr. to J. Spode, Esq., Hawkesyard Park, Rugeley, and Mr. Tudgey, gr. to J. F. Greswolde Williams, Esq., Henwick Grange, Worcester, bid high for the pride of place. For ten Mr. Chapman won the 1st prize, with a group of somewhat rough but vigorous and healthy plants, the best of which were Ixora Dixiana, Erica ventricosa magnifica, Tremandra ericifolia, Erica depressa major, &c. Mr. Tudgey, who was a close 2d, had a fine Anthurium Scherzerianum, quite 4 feet through, a pretty plant of Erica ventricosa magnifica, Clerodendron Balfourianum, &c. Mr. C. Rann, gr. to J. Warren, Esq., Handcross Park, Sussex, was 3d. For six, Mr. Tudgey was again beaten by Mr. Chapman, who had strong, healthy and well-flowered specimens of Ixora Williamsii, and I. coccinea, Darwinia tulipifera, Dracophyllum gracile, Erica Cavendishiana, and last, but not least in importance, a remarkably well flowered example of Erica odorata, a very difficult Heath to grow, but with which Mr. Chapman seems to succeed admirably. Mr. Tudgey had a fine Clerodendron Balfourianum, Aphelexis macrantha rosea, and Erica Cavendishiana, &c., Mr. James Child, gr. to Mrs. Torr, Garbrand Hall, Ewell, came in 3d, his best specimen being a superbly bloomed Azalea Criterion—the best Azalea on the ground. An extra prize was awarded to Mr. Hinnell, gr. to F. A. Davies, Esq., Anglesea House, Surbiton, who had in his group an Erica tricolor dumosa, quite 4 feet through, and magnificently flowered. In the trade classes for twelve and six the competitors were Messrs. Jackson & Son, of Kingston, and Messrs. B. Peed & Son—the first-named firm in both cases coming in 1st, with a fresh and well flowered lot of plants of the usual character.

The amateur class for six fine-foliaged plants introduced us to a new exhibitor at these shows, and who also proved to be a very successful one—Mr. G. H. Cole, gr. to J. Lawless, Esq., Topham, Exeter, who beat Mr. C. Rann with a grand lot of plants, consisting of Gleichenia rupestris glaucescens, 7 feet through, rather squatty, but a magnificent specimen for all that; a very handsome Alocasia intermedia, and fine specimens of Livistona altissima, Areca lutescens, and Crotons Disraeli and undulatus. Mr. Rann had Pritchardia pacifica, Thrinax elegans, Cycas circinalis, Croton Andreanus, C. Hendersoni, and Dasylirion acrotrichum—all large, and in good form. Mr. Tudgey was 3d with, amongst others, a magnificent young Pritchardia pacifica. Mr. G. Wheeler took an extra prize. Mr. B. S. Williams was 1st amongst nurserymen with a capital group, including a very handsome Geonoma Seemanni.

Mr. G. H. Cole also came in 1st for six exotic Ferns, showing a grand Davallia Mooreana between 7 and 8 feet in diameter; Nephrolepis davallioides furcans, 5 feet through; Gleichenia Mendelii, Pteris scaberula, 3 feet in diameter; and Davallia bullata of similar dimensions. Mr. James Douglas came in 2d with a smaller group, and Mr. G. Wheeler was 3d. Mr. Douglas had a handsome young plant of Dicksonia fibrosa, which we do not remember to have seen in a competing group before. Azaleas were in strong force, and fairly good. Mr. Ratty, gr. to R. Thornton, Esq., The Hoo, Sydenham, was 1st in the open class for twelve; and Mr. Turner, Slough, 2d. Mr. Ratty was also awarded the 1st prize in the amateurs' class for six, but we think it should have been given to Mr. James Child, who most certainly had the best flowered lot. Messrs. Jackson & Son had the best six amongst nurserymen. Messrs. Paul & Son had it all their own way with specimen Roses, taking the 1st prize for nine with a grand group, and also showing a large group of full-sized and medium specimens, all of high quality. The Heath classes were not so well contested as usual, and call for little comment. Mr. Tudgey was 1st among amateurs, and Messrs. Jackson & Son, Kingston, amongst nurserymen. Show Pelargoniums, that used to be the glory of the May show, were sadly below par, and we need only say that Mr. Turner occupied his old position at the head of the trade class, and that Mr. J. Wiggins, gr. to H. Little, Esq., was 1st among amateurs.

The Orchid bank was closely packed with beautifully flowered specimens, which formed a striking mass of dazzling colour. The amateurs' class for twelve brought the finest lot of plants, and the highest honours fell to Mr. Spyers, gr. to Sir Trevor Lawrence, Bart., M.P., who put up a really grand lot, consisting of a strong plant of Aerides Houlletianum, with six spikes; Calanthe veratrifolia, with sixteen strong spikes; Cattleya Mossiæ, a fine variety, nearly 3 feet over, and splendidly bloomed; Dendrobium Bensoniæ, a well-flowered mass; Cattleya Mendelii, with nine superb spikes; Masdevallia Veitchii, Cattleya Warneri, with seven spikes; Cattleya Wagneri, with three spikes of white flowers; Saccolabium retusum, Aerides crassifolium, and Cypripedium niveum, quite 2 feet over. Mr. James Douglas, gr. to F. Whitbourn, Esq., came in 2d, his most striking specimen being a splendidly bloomed Dendrobium nobile, nearly 4 feet through. Included in the group were also healthy and well-flowered medium-sized plants of Cypripedium caudatum, C. villosum, Vanda suavis Veitchii, Masdevallia Harryana, and Dendrobium Wardianum. Mr. H. Heims, gr. to F. A. Philbrick, Esq., Q.C., Bickley Park, was 3d, showing, amongst others, a good mass of Sobralia macrantha, the pretty Epidendrum prismatocarpum, with five good spikes; Vanda cœrulescens Boxallii, Dendrobium tortile, and Cattleya Mossiæ, &c. In the nurserymen's class, Mr. B. S. Williams was an easy 1st, showing a fine mass of Oncidium concolor, a handsome variety of Lælia purpurata, well-flowered; a splendid mass of Epidendrum vitellinum majus, a good Cattleya Mossiæ, Cypripedium barbatum superbum, C. caudatum, and Odontoglossum Alexandræ, &c. The 2d prize went to Mr. H. James, Castle Nursery, Norwood, who had Masdevallia Veitchiana with over three dozen splendid blooms, a well-flowered Odontoglossum citrosmum roseum, Oncidium concolor, &c. Messrs. Jackson & Son, Kingston, were 3d.

The Clematis was never so well represented at a competitive exhibition as on this occasion, groups being shown by Messrs. Jackman & Son, of Woking, Messrs. Richard Smith & Co., of Worcester, and Mr. Noble, of Bagshot. The Messrs. Jackman eclipsed all previous efforts with a group of twenty specimens of great magnificence, large, fresh, and abundantly furnished with foliage and flowers. The leading varieties were Impératice Eugènie, Excelsior, Countess of Lovelace, Blue Gem, lanuginosa candida, William Kennett, Duke of Norfolk, Duchess of Edinburgh, pure double white; Gem, Mrs. Hope, and Mrs. Moore; the Silver-gilt Medal was awarded. Messrs. Richard Smith & Co. received a Silver Medal for their group of a dozen plants, which were very good, but not equal to what we have seen from St. John's, the plants being thin, and the flowers pale in colour by comparison—say with the grand lot shown last year at Manchester. Mr. Charles Noble staged in the long corridor the interesting group shown at South Kensington on the previous day, and received a Bronze Medal.

New plants were largely shown by Mr. B. S. Williams, the General Horticultural Company, Messrs. Veitch & Sons, Mr. Bull and others, and Botanical Certificates were awarded as follows:—To Messrs. Veitch & Sons for Aralia Chabrieri, Croton Princess of Wales, a striking variety with long, narrow, arching leaves, rich golden-yellow mottled with green: Heliconia aurea striata, a handsome dwarf Canna-like plant, with pale green leaves striated with yellow; Pleopeltis albo-squamata, a Javanese pinnate evergreen Fern, dotted over with white spots; Schismatoglottis crispata, a pretty fine-foliaged plant, dwarf in habit, and having dark sage-green leaves, variegated with silvery bronze; and Astilbe Thunbergii. To Mr. B. S. Williams for Lastrea membranifolia, a stove evergreen Fern, of bold habit; Croton Austinianum, a distinct form, with erect-growing orange-yellow-coloured leaves margined with green; Kentia costata, a handsome new pinnate Palm; Odontoglossum polyxanthum, a new species with greenish-lemon-coloured flowers, marked with large brown spots. Heliconia nigra punctata, a strong-growing species with broad, very dark bronze-green leaves; Asplenium contiguum fissum, and Asplenium apicidens, described at p. 267; Anguloa Turneri, a very welcome addition to this genus, having blooms of a pink ground colour, the inside of the side petals rose-tinted and reticulated, and the centre of the flower surrounding the base of the lip distinctly marked with a number of brown concentric rings; and for Odontoglossum Alexandræ giganteum, a large flowered variety, with rose-tinted blossoms and a spotted labellum. To Messrs. Osborn & Son for Hedera Helix madeirensis variegata, the handsome new Ivy illustrated in our columns last week; and for the dwarf golden-leaved Ribes alpinum pumilum aureum. To the General Horticultural Company for Pteris tremula var. crispa, a new decorative Fern with crispy fronds; Dracæna majestica, a tall erect-growing variety, with bronze-green leaves, variegated with salmon-red; Dracæna salmonea, a fine variety sent out about three years ago, with bright salmon-red variegated leaves, erect growing, in the way of terminalis; Dracæna Leopoldii, a bold and effective plant, with broad, arching, bronze-green leaves margined with rose; and Nepenthes superba, a new form, with long green pitchers heavily spotted with bright blood-red. To Mr. William Bull for Microsty-

lis metallica, a low-growing plant with very dark glossy foliage; Dieffenbachia insignis, a handsome species with broad green-yellow mottled or spotted leaves; Odontoglossum polyxanthum, and Aralia Chabrieri. And to Mr. Croucher, gr. to J. T. Peacock, Esq., for Cattleya Mendelii superba, with pink-tinted sepals and petals, the point of the lip rosy-purple and the basal half richly tinted with orange.

Floral Certificates of Merit were awarded to Mr. Isaac Davies, Brook Lane, Ormskirk, for Rhododendron Daviesii, with trusses of small, pendent, lustrous orange-red blossoms. To Mr. Turner for Tree Carnations Mrs. George Hawtrey, a pure sulphur-yellow; and Mrs. Maclaren, a pink and purple bizarre. To Messrs. Veitch & Sons for Begonia Davisii flore-pleno superba, a variety which does not seem to be the same as the one shown by Messrs. John Laing & Co., and figured at p. 669 under the same name; Begonia Mrs. Sheppard, a tuberous-rooted variety with large white flowers; Gloxinia Brantome, and Gloxinia Cristophe Colomb, a remarkably pretty reticulated flower, rose shaded with deep violet-purple. To Mr. J. Wiggins, gr. to H. Little, Esq., for Azalea Phœbus, a large semi-double dark salmon-red flower of good substance; and for Pelargonium (decorative) Bridesmaid, a white ground crisp-petalled flower, with crimson-maroon blotch. To Mr. W. Balchin, for his white proliferous Mignonette; and to Mr. Charles Noble, for Clematises William E. Gladstone and George Eliot.

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Alexandra Park: *May* 20 *and* 21.—This was the first of several exhibitions which are to be held here during the season. On this occasion the competition was for pot Roses, large and medium-sized table decorations, vases and baskets of plants and flowers, bouquets, button-hole flowers, &c., which collectively made a moderately good show, nicely arranged by Mr. J. F. Johnson. The competition in the various classes for cut flowers in their several forms of arrangement was well sustained, the bouquets and stands of flowers being very good. Messrs. Paul & Son, of the Old Nursery, Cheshunt, were the only exhibitors in the classes for nine large pot Roses, and also in that for ten in 10-inch pots, the prizes offered in the former being £18, £9, and £4; and in the latter £6, £3, and £1. Several of the specimens in the large group were of enormous size; they consisted of the following:—Madame de St. Joseph, a grandly flowered bush, some 7 feet through, literally covered with its delicate flesh-coloured blossoms; Victor Verdier, still larger and finely flowered; Anna Alexieff, 8 feet through; Céline Forestier, equally big; Souvenir d'un Ami, well-bloomed; Dr. André, Charles Lawson, Edward Morren, and Madame Victor Verdier. The group of smaller plants was very well done; amongst them the most effective was the beautiful straw-coloured Perfection de Monplaisir, in fine order; Duchesse de Vallombrosa, equally well done; Madame Lambard, in the way of Catherine Mermet, beautiful; Alba rosea, Jean Ducher, and Madame Lacharme.

As regards the dinner-table competitions that now take place in the immediate neighbourhood of London, the least that can be said is that the displays are neither as good as they used to be, nor equal to what take place in other districts. Those there are who can make as beautiful arrangements as it is possible to produce by the combination of elegant foliage with chaste flowers, but most of them avoid the metropolitan exhibitions. Still visitors never seem tired of looking at these displays, although they have not the novelty they once had. There were four exhibitors in the class of tables laid for twelve persons. Messrs. Dick Radclyffe & Co., Holborn, were 1st; Mrs. S. Abbot, Nightingale Lane, Wanstead, 2d; Mr. Chard, The Floral Depot, Clapham Common, 3d. For a table laid to seat six Mr. W. L. Buster took 1st, Messrs. Radclyffe 2d, Mr. J. R. Medland 3d. With a rustic basket of plants Miss Williams easily came in 1st, the plants suitable, and their arrangement well done; Mrs. Medland 2d, showing a small but neatly filled basket; 3d, Messrs. Radclyffe. In the class for a bride's bouquet Miss Williams occupied the post of honour, with a beautiful example principally composed of Gardenias, Stephanotis, white Rosebuds, Tabernæmontana, and Lily of the Valley, its only fault being that which the fashion requires—it was too large; Mr. W. Brown, St. Mary's Grove Nursery, Richmond, was 2d; and Messrs. Jones & Son, Shrewsbury, 3d. For three bridesmaids' bouquets Messrs. Jones were 1st, with charming exhibits, suitable flowers well put together, having just the right amount of colour; 2d, Mr. Brown. For three ball bouquets Messrs. Jones were 1st again, showing very handsome examples; 2d, Mr. Stuart, whose productions were meritorious; 3d, Mr. Brown. Mr. Stuart had a well-merited 1st for a stand of flowers for drawing-room, Mr. Buster 2d, Miss Williams 3d. Six buttonhole flowers: 1st, Mr. Brown; 2d, Miss Williams.

Messrs. Jackman's fine exhibition of Clematis formed an effective group in the central hall; the most attractive kinds were Robert Hanbury (lilac), Princess of Wales, Patens floribunda (white), Blue Gem (bluish-purple); Lady Caroline Nevill (pale lilac), Lucy Lemoine (double white).

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Publications Received. — *New Commercial Plants and Drugs*, by Thomas Christy, F.L.S.—*The Scientific Roll and Magazine of Systematised Notes* (Bradbury, Agnew & Co.)

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, May 25, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| May | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 19 | 29.51 | −0.23 | 61.0 | 47.3 | 13.7 | 52.9 | − 0.7 | 43.6 | 71 | S.W. | 0.07 |
| 20 | 29.82 | +0.09 | 59.5 | 47.0 | 12.5 | 53.2 | − 1.5 | 43.7 | 73 | S.W. | 0.09 |
| 21 | 30.16 | +0.42 | 66.1 | 43.5 | 22.6 | 52.3 | − 1.6 | 42.4 | 65 | W.S.W. | 0.00 |
| 22 | 30.19 | +0.45 | 71.0 | 44.8 | 26.2 | 57.0 | + 2.9 | 45.5 | 65 | N.E.: E.N.E. | 0.00 |
| 23 | 30.04 | +0.30 | 73.4 | 49.5 | 23.9 | 59.8 | + 5.5 | 47.8 | 64 | E.N.E. | 0.00 |
| 24 | 29.85 | +0.11 | 70.5 | 50.0 | 20.5 | 59.2 | + 4.6 | 47.9 | 66 | E.N.E. | 0.00 |
| 25 | 29.66 | −0.10 | 70.0 | 50.8 | 19.2 | 58.5 | + 3.5 | 52.1 | 79 | N.E. | 0.05 |
| Mean | 29.89 | +0.15 | 67.4 | 47.6 | 19.8 | 56.1 | + 1.8 | 46.1 | 69 | S.W.: N.E. | 0.21 |

May 19.—A fine day; sky clear and cloudy alternately, no upper cloud. Fine clear night.
— 20.—A fine day, slight shower of rain at 1.30 P.M. Warm in sun. Fine night.
— 21.—A fine day and night.
— 22.—A fine warm day; clear night.
— 23.—A fine warm day, strong wind during the day. A fine night.
— 24.—A fine and bright day, strong wind. Fine night.
— 25.—A fine morning, from 2 P.M. the sky was overcast; air close during the afternoon. Some rain fell between 4 and 5 P.M. A partially clear night, with rain clouds about.

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London: *Atmospheric Pressure.*—During the week ending Saturday, May 21, the readings of the barometer at the level of the sea in the neighbourhood of London decreased from 29.96 inches at the beginning of the week to 29.47 inches by the morning of the 16th (the lowest in the week); increased to 30.01 inches by the morning of the 17th; decreased to 29.54 inches by the afternoon of the 18th; and at the end of the week was 30.42 inches (the highest in the week). The mean reading at the level of the sea was 29.81 inches, being 0.39 inch lower than last week, and 0.11 inch below the average for the week.

*Temperature.*—The highest temperatures were 66°.1 on the 21st, 64°.1 on the 18th, and 62°.5 on the 15th. The lowest of the seven high day temperatures was 56°.5 on the 16th, and 59° on the 17th. The mean of the seven high day temperatures was 61°.2. The lowest temperatures in the week were 40° on the 17th, and 43°.5 on the 21st. The highest of the seven low night temperatures were 49°.5 on the 18th, and 48°.5 on the 15th. The mean of the seven low night temperatures was 46°.

The greatest range of temperature in one day was 22°.6, on the 21st; the next in order being 19° on the 17th. The least ranges were 10°.5 on the 16th, and 12°.5 on the 20th. The mean of the seven daily ranges was 15°.3.

The mean daily temperatures were 53°.7 on the 15th, 49°.6 on the 16th, 49°.7 on the 17th, 53°.7 on the 18th, 52°.9 on the 19th, 52°.2 on the 20th, and 52°.3 on the 21st; on the 15th and 18th the mean temperatures were respectively 2° and 0°.5 above the average; on the 16th, 17th, 19th, 20th, and 21st they were respectively 2°.7, 3°.1, 0°.7, 1°.5, and 1°.6 below their averages.

The mean temperature for the week was 52°, being 1°.1 higher than that of last week, and 1° below the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb placed in the full rays of the sun, were 132° on the 21st, 126°.5 on the 20th, and 119° on the 19th. The lowest readings were 72° on the 17th, 89° on the 15th, and 93° on the 16th. The mean of the seven daily readings was 106°.4.

The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 34° on the 17th, 37° on the 21st, and 39° on the 16th and 20th. The highest readings were 43° on the 15th, and 41° on the 18th and 19th. The mean of the seven readings was 39°.1.

*Rain.*—Some fell on four days, the greatest amounts being 0.24 inch on the 18th, and 0.07 on the 17th and 19th. The total fall for the week was 0.44 inch.

England: *Temperature.*—During the week ending Saturday, May 21, the highest temperatures were—Sunderland, 74°; Cambridge, 71°.7; Leicester, 68°.2; and Birmingham, 68°. The lowest of the high temperatures were—Bradford, 60°.4; Wrottesley, 61°.2; Brighton and Leeds, 62°; and Liverpool, 62°.2. The mean from all stations was 65°.5.

The lowest temperatures were—Nottingham, 32°.2; Wrottesley, 32°.6; and Cambridge and Leicester, 35°. The highest of the low temperatures were Norwich, 43°; Bradford, 40°.9; Plymouth, 40°.8; Brighton, 40°.7; and Blackheath and Liverpool, 40°. The mean from all stations was 38°.3.

The greatest ranges of temperature in the week were—Cambridge, 36°.7; Nottingham, 35°.8; and Sunderland, 35°. The least ranges were—Bradford, 19°.5; Plymouth, 21°.1; and Brighton, 21°.3. The mean from all stations was 27°.2.

The mean of the seven high day temperatures was highest at Sunderland, 65°.2; the next in order being Cambridge, 64°.8, Norwich, 62°.4, and Nottingham, 62°.2; the least means were Bradford, 57°.3, Liverpool, 57°.6, Bristol, 58°, Wrottesley, 58°.3, and Leeds, 58°.9. The mean from all stations was 60°.5.

The mean of the seven low night temperatures was least at Wrottesley, 40°.9, the next in order being Nottingham, 42°.8, Sunderland, 43°.8, and Leicester, 44°.4. The highest means were Plymouth, 47°.6, Norwich, 46°.9, Sheffield, 46°.2, and Blackheath, 46°. The mean from all stations was 45°.2.

The mean daily range was greatest at Sunderland, 21°.4, the next in order being Cambridge, 19°.6, and Leicester and Wrottesley, 17°.4. The least mean daily ranges were—Plymouth, 11°.6; and Bradford, 11°.7. The mean from all stations was 15°.3.

The mean temperature for the week was greatest at Cambridge, 53°.3, the next in order being Norwich, 53°, Sunderland, 52°.8, and Blackheath, 52°. The least means were Wrottesley, 47°.9, Liverpool, 49°.6, and Bradford, 49°.7. The mean from all stations was 51°.2.

*Rain.*—Rain fell at all stations, the greatest quantities being 1.19 inch at Bristol, 0.76 inch at Plymouth, 0.69 inch at Sheffield, 0.66 inch at Birmingham, and 0.65 inch at Liverpool. The smallest quantities were 0.18 inch at Sunderland, 0.26 inch at Hull, and 0.44 inch at Blackheath. The mean from all stations was 0.57 inch. The greatest number of days on which rain fell at any place was six, the least number being four. The average number of days on which rain fell was five.

Scotland: *Temperature.*—During the week ending Saturday, May 21, the highest temperatures were 64° at Glasgow and 63° at Dundee. The lowest of the high temperatures was 60°, at Leith. The general mean was 61°.3.

The lowest temperatures were 33° at Aberdeen, 34° at Edinburgh, and 34°.1 at Aberdeen. The highest of the low temperatures were 38° at Greenock and 37° at Paisley. The general mean was 35°.2.

The mean temperature for the week was highest at Glasgow, 51°.2, the next highest being Paisley, 49°.8. The mean temperature was least at Aberdeen, 45°.3. The general mean was 49°.

*Rain.*—The largest quantities were Greenock, 1.93 inch; Aberdeen, 1.86 inch; and Paisley, 1.45 inch. The smallest quantity was 0.77 inch, at Leith. The general mean was 1.24 inch.

JAMES GLAISHER, F.R.S.

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# Obituary.

We regret to record the death on May 19 of Mr. John Grigor, of the Forres Nurseries. Mr. Grigor was brought up to the occupation of his father, that of a nurseryman. After a course of sound tuition at home, he widened his experience by going to the Fulham Nurseries, near London, but soon returned to the sunny land of Morayshire, where, in 1826, when only twenty years of age, he started the Forres Nurseries on his own account. "Born among trees," says the *Elgin Courant*, "love for them grew into his very nature. He became an enthusiast in arboriculture, and his clear, active, and powerful intellect led him to take a wider view of his mission as a nurseryman than to settle down on the fertile plains around Forres, and grow plants merely for the neighbouring proprietors, who might come to him as buyers of them. The whole range of forestry he sought acquaintance with, taking up the study of it as a science, and proving everything by careful experiment." Mr. Grigor wrote freely for many years in the *Transactions* of the Highland Society, and obtained its highest premiums and medals. These essays made his name familiar in all parts of the world, and he was induced to sum up in a volume the wide experience and observation he acquired in the pursuit of his profession. It appeared in 1868, and was entitled "*Arboriculture; or, a Practical Treatise on Raising and Managing Forest Trees, and on the Profitable Extension of the Woods and Forests of Great Britain.* By John Grigor, The

Nurseries, Forres, N.B." The book attracted much more than local notice, and has been looked upon ever since its publication as one of the best works ever written on the subject. A second edition has just been, or is about to be, published. His good name for honest nursery-work, coupled with his reputation as a scientific forester, and a fluent writer, all combined to build up for Mr. Grigor a healthy and lucrative business, the fruits of which he dispensed with liberality to public institutions, and in generous hospitality. *Inverness Courier.*

## Enquiries.

*He that questioneth much shall learn much.*—BACON.

PEACHES ON THE ALMOND: *R. F.* asks if any of our readers can give their experience of the growth of Peach trees worked on the Almond, as used in France?

## Answers to Correspondents.

ALPINE AURICULAS: *G. M.* Yours is not a good type of Alpine Auriculas, but you seem to be working up to the new group of laced varieties, but generally the individual flowers are inferior. The best is a maroon ground, with yellow paste, and a well-defined lacing of lilac. The notched flowers are of no merit, except so far as may lead up to new colours.

AMARYLLIS VITTATA: *J. F.* The flowers of this Amaryllis are scarlet and white. There are many seedlings from the original form.

APHIDES: *J. W. S.* We have not seen the statement you refer to. No doubt immersion in water of the ordinary temperature for some hours would kill such insects as the green-fly, but why not dust with tobacco powder, or syringe with tobacco water?

AQUILEGIA: *J. Ewing.* Too dull in colour to be effective, and of no value except for the home borders.

CINERARIA: *R. Wilson.* The flowers were dried up when they reached us, but appeared to be of fair quality.

NAMES OF PLANTS: *Camjee.* Appears to be Celsia Arcturus, but the specimen was too poor for actual determination.—*Billy.* 1, Coronilla Emerus; 2, Spiræa prunifolia; 3, Forsythia viridissima; 4, Viburnum plicatum; 5, a Viburnum which we do not recognise; 6, Pyrus pinnatifida.—*S. Hartsbourne.* Spiræa hypericifolia.—*S. M. & A.* Veronica repens.—*F. Webber.* Rhamnus alaternus.—*H. V. Z.* Celsia Arcturus.—*F. P. G.* 1, Retinospora ericoides; 2, Retinospora pisifera; 3, insufficient; 4, Barbarea vulgaris; 5, Carex acuta; 6, Carex paniculata.

POPLAR: *Camjee.* The specimen sent had been barked previously to the attack of the insect. There was nothing in the specimen to show what the insect was.

SHADING GREENHOUSE: *L. Mostyn.* There should be no trouble in getting a roller blind to work on the outside of a lean-to greenhouse. They of course wear out in time, but to assist in preserving them they may be drawn up under some slight shelter when not in use in summer, and in winter should be taken down and stored in a dry shed.

SLUGS AND AMMONIA: *J. F. D.* We have no particular experience, but should think the remedy you enquire about likely to be a very good one. It will be better to experiment a little, so as not to get it too strong for any neighbouring plants.

TREE PLANTING: *M. J. T.* The turf is much better removed, so that air and moisture may get the more freely to the roots of the trees.

WATER MELONS: *M. J. T.* They may be grown in pots or frames, like other Melons.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

## CATALOGUES RECEIVED.

E. G. HENDERSON & SON, Pine-apple Nursery, Maida Vale, W.—Soft-wooded Flowering Plants, &c.

JOHN LAING & CO., Forest Hill, S.E.—Stove and Greenhouse Plants, Begonias, and Florists' Flowers.

THOMAS KENNEDY & CO., Dumfries—Select Florists' Flowers, Greenhouse Plants, &c.

GEORGE NEIGHBOUR & SONS, 127, High Holborn—Improved Bee-hives, &c.

COMMUNICATIONS RECEIVED:—A. G.—J. W.—J. B. C.—W. P.—J. J.—W. Barron.—R. B.—Morris & Griffin.—G. L. P.—H. E.—S. & S.—R. P.—E. S.

DIED, at Forres, on the 14th inst., JOHN GRIGOR, nurseryman, Forres, aged seventy-five years.

# Markets.

*COVENT GARDEN, May 26.*

A steady trade doing, with prices firmer. Good Peaches in demand. Large importations of Apricots and Cherries during the week. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apricots, per box | 1 3– 2 0 | Lemons, per 100 | 4 0– 6 0 |
| Cherries, per box | 1 3– 2 0 | Melons, each | 7 0– 8 0 |
| Figs, per dozen | 9 0–12 0 | Peaches, per dozen | 15 0–25 0 |
| Gooseberries, ½-bush | 7 0– 7 6 | Pine-apples, per lb. | 1 0– 2 0 |
| Grapes, per lb. | 3 0– 8 0 | Strawberries, per lb. | 4 0– 8 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Garlic, per lb. | 1 0– .. |
| Asparag., Fr., bndl. | 2 0–15 0 | Herbs, per bunch | 2– 0 4 |
| — English, bund. | 6 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Beans, French, p. lb. | 1 0– .. | — Cos, each | 0 4– 0 6 |
| — Broad, per lb. | 1 0– .. | Mint, green, bunch | 0 4– 0 6 |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 11 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 9– .. |
| — New Fr., bund. | 1 6– .. | Parsley, per bunch | 0 4– .. |
| Cauliflowers, English, each | 0 3– 0 6 | Radishes, per bun. | 0 2– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Rhubarb, per bund. | 0 4– 0 6 |
| Cucumbers, each | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 2 0– 2 6 |
| | | Tomatos, per lb. | 0 9– 1 0 |

POTATOS:—Kent Regents, 80*s.* to 100*s.*; Champions, 60*s.* to 85*s.*; Best Regents, 120*s.* per ton; German Reds, 4*s.* 6*d.* to 8*s.* 6*d.*; Belgian Kidneys, 3*s.* 9*d.* to 4*s.* per bag.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 bunches | 4 0– 9 0 |
| Anemone 12 bunches | 2 0– 4 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 0 6– 1 0 | Narcissus, in variety, 12 bunches | 4 0– 9 0 |
| Bouvardias, per bun. | 1 0– 2 0 | Pelargoniums, 12 sprays | 0 9– 1 0 |
| Calceolaria, 12 bun. | 9 0–12 0 | — zonal, 12 sprays | 0 4– 0 9 |
| Carnations, 12 blms. | 1 0– 2 0 | Pæony, 12 bunches | 9 0–24 0 |
| Cornflower, 12 bun. | 4 0– 6 0 | Primula, double, per bunch | 0 9– 1 6 |
| Daisies, 12 bunches | 2 0– 6 0 | Ranunculus, 12 bun. | 6 0–12 0 |
| Eucharis, per doz. | 4 0– 6 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Forget-me-not, 12 bunches | 3 0– 6 0 | Stephanotis, 12 spr. | 3 0– 4 0 |
| Gardenias, 12 blms. | 1 6– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Tuberoses, per dozen | 2 0– 3 0 |
| Iris, 12 bunches | 9 0–18 0 | Tulips, 12 bunches | 3 0– 6 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Wallflowers, 12 bun. | 6 0– 9 0 |
| — red, 12 blooms | 1 0– 3 0 | Woodroffe, 12 bun. | 3 0– 6 0 |
| Lily of the Valley, 12 sprays | 0 9– 1 6 | | |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Genista, per doz. | 9 0–18 0 |
| Begonias, per doz. | 6 0–12 0 | Ivy Geranium, doz. | 4 0– 6 0 |
| Calceolaria, per doz. | 9 0–12 0 | Lilium longifl., doz. | 24 0–42 0 |
| Creeping Jenny, doz. | 3 0– 4 0 | Lily of the Valley, per pot | 1 6– 2 0 |
| Cyperus, per dozen | 6 0–12 0 | Lobelia, per dozen | 4 0– 6 0 |
| Dracæna terminalis | 30 0–60 0 | Marguerite, white, per dozen | 18 0–24 0 |
| — viridis, per doz. | 12 0–24 0 | — Yellow, per doz. | 12 0–30 0 |
| Erica, in variety, doz. | 18 0–30 0 | Mignonette, per doz. | 5 0– 8 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Myrtles, per doz. | 6 0–12 0 |
| Evergreens, in var., per dozen | 6 0–24 0 | Palms in var., each | 2 6–21 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | Pelargoniums, doz. | 9 0–30 0 |
| Ficus elasticus, each | 1 6– 7 6 | — tricolor, per doz. | 3 0–12 0 |
| Foliage Plants, various, each | 2 0–10 6 | — scarlet, per doz. | 4 0– 9 0 |
| Fuchsias, per dozen | 6 0–12 0 | Roses, various, doz. | 12 0–30 0 |
| | | Spiræa japonica, doz. | 9 0–18 0 |
| | | Stocks, per dozen | 4 0– 6 0 |

## SEEDS.

LONDON: *May* 25.—Owing to the present season being an unusually late one, there is still a small sowing demand for field seeds. Very little red Clover seed remains on hand. Tares are now remarkably cheap. In Mustard and Rape seed the tendency of quotations is upwards: of both kinds the supply is in narrow compass. For Canary and Hemp seed the sale is meagre. A good downfall of rain is now much needed. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## POTATOS.

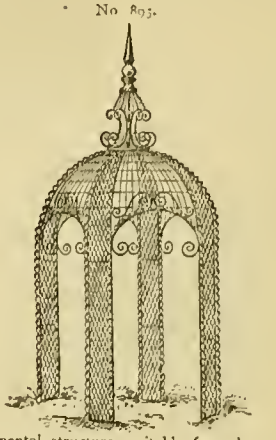
The Borough and Spitalfields Markets reports state that moderate supplies of old, consisting principally of Scotch Champions, sell at £3 10*s.* to £4 10*s.*; English, £5 to £6 per ton; German red, 4*s.* 6*d.* to 5*s.* 6*d.*; Belgian kidneys, 4*s.* to 5*s.* per bag. New Potatos are arriving in moderate quantity, and sell at the following figures:—Lisbon, 12*s.* to 14*s.*; spring Maltese, 14*s.* to 16*s.*; winter ditto, 10*s.* to 12*s.* per cwt.; Jersey rounds, 3*d.* to 4*d.*; ditto kidneys, 4*d.* to 6*d.* per pound.—The arrivals at London last week were as follows:—10,889 bags Hamburg, 3422 bags Antwerp, 7331 bags Stettin, 1536 bags Brussels, 250 bags Boulogne, 803 bags Ghent, 1510 baskets St. Nazaire, 440 boxes Valencia, 10,304 packages Malta.

## HAY.

Tuesday's Whitechapel Market report states that supplies were very large, and the demand dull. Prices of Clover declined 4*s.* per load. Prime, 95*s.* to 120*s.*; inferior, 90*s.* to 85*s.*; prime meadow hay, 80*s.* to 112*s.*; inferior, 30*s.* to 70*s.*; straw, 30*s.* to 45*s.* per load.—On Thursday there was a fair supply of fodder on offer. Trade was dull on former terms.—Cumberland Market quotations:—Superior meadow hay, 108*s.* to 115*s.*; inferior, 60*s.* to 84*s.*; superior Clover, 115*s.* to 126*s.*; inferior, 84*s.* to 95*s.*; and straw, 42*s.* to 48*s.* per load.


THOMAS'S NEW PATTERN PORTABLE ROSE TEMPLE,

No. 895.



A very ornamental structure, suitable for a lawn, or to be placed over a gravel walk where four paths meet.

PRICES (Galvanised or Painted):—

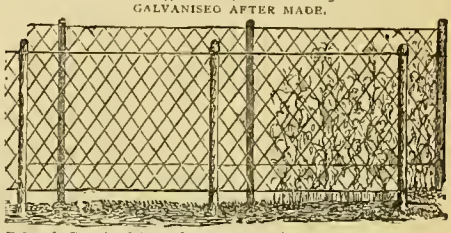
| Height. | Diameter. | To suit Pathways. | Width of Trellis. | £. s. d. |
|---|---|---|---|---|
| 9 feet. | 6 feet 3 in. | 4 feet wide. | 9 inches. | 4 4 0 |
| 10 feet. | 8 feet. | 5 feet. | 1 foot. | 5 5 0 |
| 11 feet. | 9 feet 9 in. | 6 feet. | 1 foot 3 in. | 6 6 0 |

Any size made to order.

IMPROVED PEA TRELLISES,

*For Training Peas, instead of Sticks.*

GALVANISED AFTER MADE.



Prices in Panels of the undermentioned sizes only, without Stakes.

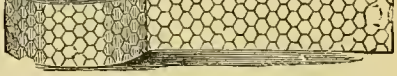
6 feet wide, 3 feet high .. .. .. 2*s.* 6*d.* each panel.
6 " 4 " .. .. .. 3*s.* 6*d.* "
6 " 5 " .. .. .. 4*s.* 6*d.* "

The above engraving shows the arrangement of the panels tied to ordinary wood stakes. Improved Framed Standards for ditto galvanised, 2*s.* 6*d.*, 2*s.* 9*d.*, and 3*s.* each.

GALVANISED WIRE NETTING,

REDUCED PRICES.

*Best Quality. Equal to any in the Market.*



Prices per lineal yard, 24 inches wide:—

| Mesh. | Light. s. d. | Medium. s. d. | Strong. s. d. | Extra strong. s. d. |
|---|---|---|---|---|
| 2 in. | 0 2½ | 0 2¾ | 0 3¾ | 0 4½ |
| 1⅝ in. | 0 2¾ | 0 3½ | 0 4 | 0 5¼ |
| 1½ in. | 0 3½ | 0 4 | 0 5¼ | 0 6¼ |
| 1¼ in. | 0 5½ | 0 7 | 0 9 | 1 0 |
| 1 in. | 0 7 | 0 8½ | 0 11 | 1 3 |
| ¾ in. | 0 9 | 0 11 | 1 2 | 1 0 |

Usual widths kept in stock, 12, 18, 24, 30, 36, 48 inches. 2-inch Mesh kept in stock 72 inches wide. This will be found very convenient for erecting Poultry Yards. All widths charged at proportionate prices. SOFT GALVANISED TYING WIRE, 6*s.* per lb. CUTTING NIPPERS, 1*s.* 3*d.* per pair, very useful for cutting wire netting, &c.

GARDEN SEATS, £1 1*s.* each. GARDEN CHAIRS, 7*s.* 6*d.* each. FOLDING GARDEN TABLES, 10*s.* each.

IMPROVED LAWN MOWERS.

| Makers. | 6 in. | 8 in. | 10 in. | 12 in. | 14 in. | 16 in. | 18 in. |
|---|---|---|---|---|---|---|---|
| | s. | s. | s. | s. | s. | s. | s. |
| American | — | 35 | 40 | 50 | 60 | 70 | — |
| Archimedean | 25 | 42 | 63 | 84 | 105 | 126 | 147 |
| Green | 35 | 50 | 70 | 90 | 110 | 130 | 150 |
| Shanks | 25 | 50 | 70 | 90 | 110 | 130 | — |
| Ransome | — | 55 | 70 | 90 | 110 | 130 | 150 |

GARDEN ROLLERS.

| Single Cylinders. Inches. | s. d. | Double Cylinders. Inches. | s. d. |
|---|---|---|---|
| 18 × 18 | 37 6 | 18 × 16 | 45 0 |
| 20 × 20 | 45 0 | 20 × 18 | 52 6 |
| 22 × 22 | 52 6 | 22 × 20 | 65 0 |
| 24 × 24 | 65 0 | 24 × 22 | 75 0 |
| — | — | 26 × 24 | 85 0 |

Illustrated Catalogue on application. A large variety of Garden requisites will be exhibited on our Stand at the Royal Horticultural Society's Flower Show, South Kensington, June 3, 4, 6 and 7.

Discounts for Prompt Cash:—

LAWN-MOWERS, 20 per cent.; WIRE NETTING (in 50-yard rolls), 15 per cent.; GARDEN SEATS and TABLES, PEA TRELLISES, 10 per cent.; NEW ROSE TEMPLE and GARDEN ROLLERS, 5 per cent.

J. J. THOMAS & CO.,

Show Rooms { 87, Queen Victoria Street, E.C.
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Manufactory—362, Edgware Road, London, W.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 2d. per yard; 100 yards, 16s. 4 yards wide, 4d. per yard; 50 yards, 16s.
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TIFFANY, 5s. and 6s. per piece of 20 yards.
EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

FARRER'S GARDEN NETTING, the cheapest and most durable, 1d. per square yard, and in quantities of 250, 500, and 1000 yards, carriage free.
FARRER'S CRICKET and GARDEN TENTS are the prettiest.
FARRER'S RICK COVERS are made from the best Navy Canvas by experienced workmen.
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TIFFANY, SCRIM CANVAS, and every kind of NETTING.
Several good Second-hand GOVERNMENT TENTS for SALE Cheap. Sample of material free on application.
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(21 years Managing Partner with FREDK. EDGINGTON & Co.,) 52, Old Kent Road, and "Ceres" Works, London, S.E.

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WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers,
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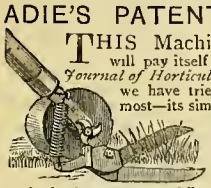
The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

ADIE'S PATENT LAWN EDGER.



THIS Machine constantly employed will pay itself in two days. Dr. Hogg, in the *Journal of Horticulture*, says—"This Edge Clipper we have tried, and know not which to admire most—its simplicity or efficiency." Mr. Moore, in the *Florist*—"This new machine does its work rapidly and admirably, the grass being cut with precision, and" he further adds, "the use of it willl, we have no doubt, become general." Prices 25s. and 30s.
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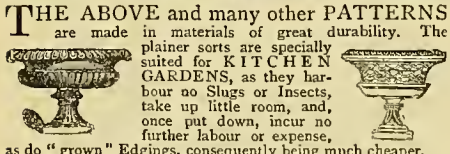
Geometrical Mosaic and Encaustic
TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
MAW AND CO., Benthall Works, Broseley, Shropshire.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
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Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
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ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., rom 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
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SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
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KENT PEATS or LOAM supplied at lowest rates in any quantities.
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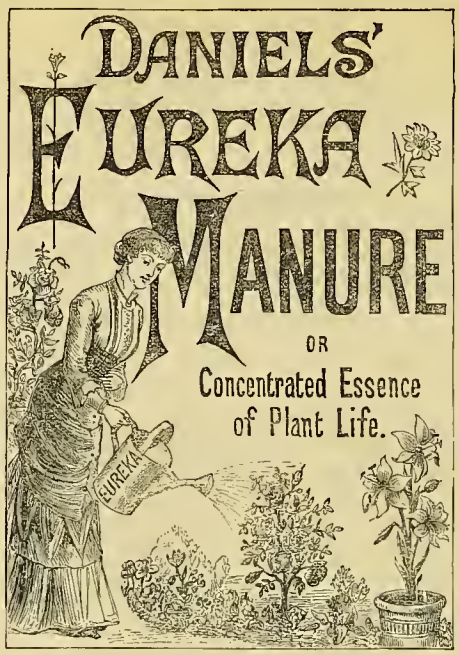
A liberal Discount to the Trade.




(NEW FERTILISER.)

WE have, during past years, refrained from manufacturing any Artificial Fertiliser for Floriculture or General Gardening purposes, mainly for the reason that the successful composition of such an article requires years of experimental trial under a variety of conditions, such as temperature, climate, soil, &c.

The preparations generally offered to the gardening public are commonly made simply to act as stimulants, by which a marvellous activity of growth and bloom can be effected, but which generally is of very short duration, and often fatal in the end to the real prosperity of the plant.

Experience has convinced us that, under average conditions of floral or vegetable growth, true and lasting success is best obtained by the use of properly balanced Plant Food, by means of which soil which may have become poor and exhausted shall be so renovated as to be again generous and fruitful, so as to furnish at any time the necessary conditions of fertility and ensure the vigorous and healthy growth not only of leaves, flowers, and fruit, but of every part of the plant. These conditions we claim to have effected in our EUREKA MANURE, or ESSENCE OF PLANT LIFE, a highly concentrated Manure, adapted for every kind of Flower, Fruit, or Vegetable, and useful alike to the Horticulturist and Farmer; a true friend to the Gardener; and not only a Stimulant but a Genuine Food for Plants; *perfectly efficient, odourless, and economical*, and is destined to take the place of all other Manures.

Report of Mr. Francis Sutton, F.C.S., Chemist to the Norfolk Chamber of Agriculture, &c.
[COPY.]
"NORFOLK COUNTY LABORATORY,
"*November 22*, 1880.
"Messrs. DANIELS BROTHERS,
"GENTLEMEN,—I have acquainted myself by experiment and analysis with the entire nature of your Eureka Manure, and I am satisfied that it is admirably adapted to the purposes for which you recommend it. I have had a long and varied experience in the examination of soils and fertilisers and their effects, and may say at once that you have carried out practically the ideas which I myself would advocate, and have produced a Concentrated Manure which is safe, odourless, and adapted to the healthy growth of every variety of plant.
(Signed) "FRANCIS SUTTON."

*SOLD BY ALL CHEMISTS AND SEEDSMEN,*
*In Packages, with Complete Directions for Use,*
1 lb., 1s.; 2 lb., 1s. 8d.; 4 lb., 3s.; 7 lb., 4s. 6d.
14 lb., 7s. 6d.; 28 lb., 12s. 6d.
Much cheaper by the Cwt.

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ROYAL NORFOLK SEED ESTABLISHMENT,
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DOULTON & CO.,
LAMBETH POTTERY, LONDON, S.E.
VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,
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ART POTTERY, including JARDINIERES AND OTHER
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43, Commercial Street, E.
*PLATE, SHEET, CROWN GLASS.*
SHEET GLASS, IN CASES, FOR CUTTING UP.

| | | | | | |
|---|---|---|---|---|---|
| Common .. | 15-oz., | 300 feet, | 30s. 0d., | if 21-oz., 200 feet, | 30s. 0d. |
| Fourths .. | ,, | ,, | 34s. 6d. | ,, ,, | 34s. 6d. |
| Thirds .. | ,, | ,, | 42s. 6d. | ,, ,, | 42s. 6d. |
| Seconds .. | ,, | 200 feet, | 42s. 6d. | ,, ,, | 48s. 6d. |
| Best .. | ,, | ,, | 51s. 0d. | ,, ,, | 61s. 0d. |

Also 26-oz., 28-oz., and 32-oz. Glass.
SMALL SIZES, IN 16-OZ., PER 100 FEET.

| | | | |
|---|---|---|---|
| 6 × 4 to 7½ × 5½ | .. 9s. 0d., | 10s. 0d., | 11s. 0d., 12s. 0d. |
| 8 × 6 to 10½ × 8½ | .. 9s. 6d., | 10s. 6d., | 11s. 6d., 12s. 6d. |
| 11 × 9 to 14 × 10 | .. 10s. 0d., | 11s. 0d., | 12s. 6d., 14s. 0d. |
| 15 × 10 to 18 × 12 | .. 11s. 0d., | 12s. 0d., | 13s. 3d., 14s. 6d. |
| 20 × 12 to 20 × 18 | .. 11s. 6d., | 12s. 6d., | 13s. 9d., 15s.; if 21-oz. 13s. 9d., 15s., 17s. 6d., 19s. 6d. |

SHEET LEAD, WHITE LEAD, OILS, TURPENTINE, and COLOURS.

HORTICULTURAL WINDOW GLASS,
15-oz. and 21-oz., in Boxes containing 200 feet,
Carriage Paid to any Railway Station in England.
*Price Lists on application.*
ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

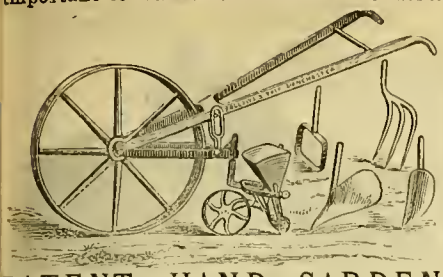
BELGIAN GLASS for GREENHOUSES, &c.,
Can be obtained in all sizes and qualities of
BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.
B. & Son have always a large stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. and 21-oz.; and also large sizes in all qualities for cutting-up purposes, in 200-ft. and 300-ft. cases.

PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., 2½d. per lb.—all colours. Improved Zinc White Paint, 4½d. per lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

Oil Paint No Longer Necessary.
HILL AND SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone.
(*Registered Trade Mark.*)

This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.
Sold in Casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.
UNSOLICITED TESTIMONIAL.
"*Piercefield Park, June* 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Piercefield Park, Chepstow.—I am, Sirs, yours respectfully, WM. COX."
*CAUTION.*—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.
H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.
Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to
HILL AND SMITH, Brierley Hill Ironworks, Staffordshire; 118, Queen Victoria Street, London, E.C.; and 180, Buchanan Street, Glasgow.

**Important to Market Gardeners and Others.**



## PATENT HAND GARDEN PLOUGH and CULTIVATOR.

This capital little Implement is now coming into general use. It consists of one light but strong Steel Shovel for marking out rows to plant, or for loosening up the ground after the plants are up. Also a small Steel Plough to be used for hilling-up the rows when desired, and a Cutter for exterminating weeds, and a Rake for pulverising the ground. These pieces are made separate, and attached or detached in a moment by means of a simple fastening. Its construction enables the user to push it readily and easily through the ground, stirring the earth, if required, to a depth of 6 inches. It is exceedingly light, strong and tasty, and fully adapted to the purpose designed.

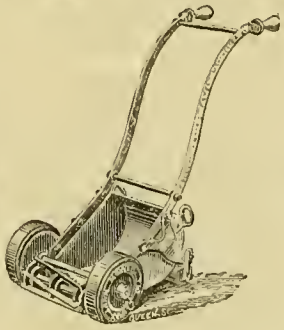
*Price complete, with Shovel, Plough, Weed-cutter and Rake,* £2 2s. *If with Seed Drill attachment, extra,* 13s.; *if with Pony attachment, extra,* 10s. 6d.—Illustrated CATALOGUE, containing numerous Testimonials, post-free on application.

**Address, FOLLOWS & BATE, Patentees and Manufacturers, Manchester.**

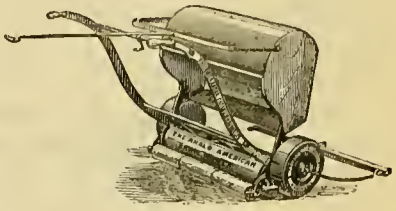
WITH LATEST IMPROVEMENTS.

"CLIMAX," "CROQUET," NEW "MANCHESTER," "ROLLER," and ROYAL PRIZE MEDAL "ANGLO-AMERICAN"

# LAWN MOWERS



Are the best Lawn Mowers made, the simplest, and by far the easiest to work. Between 40,000 and 50,000 of these justly celebrated Machines have been sold during the past eight years. They have been submitted to numerous practical tests in public competition, and in all cases have carried off every **1st prize** that has been given. They were awarded the Medal for Merit and Diploma at Vienna Exhibition, 1873, and at other places many 1st Prizes and Silver Medals, the latest being at Paris Exhibition, in 1878, and Melbourne Exhibition, 1881.



The Patentees direct particular attention to their "**Croquet**" **Machines**, specially designed for Ladies' use, and also to their new **Pony Machines**, which have the simplest tipping arrangement extant.

**Address, FOLLOWS & BATE, Patentees and Manufacturers, MANCHESTER.**

N.B.—F. & B. are the Sole Makers of the well-known **25s. Climax Lawn Mower**, the only effective Machine of its class; New Patent **Lawn Edge Cutter**, which entirely supersedes the Scythe; Garden Rollers, &c.

*Fourth Edition. Price* 1s.

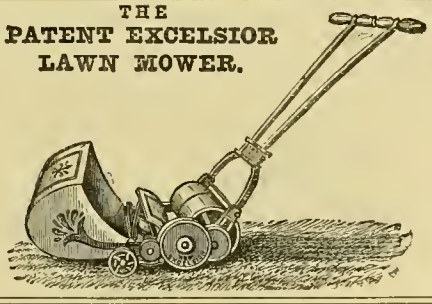
# ON GROWING ROSES OUT-OF-DOORS.

BY REV. O. FISHER.

**London: BRADBURY, AGNEW & CO., Bouverie Street, E.C.**

# EXCELSIOR LAWN MOWER

**THE PATENT EXCELSIOR LAWN MOWER.**



**The Original and Best American Lawn Mower.**

ALL OTHERS ARE IMITATIONS.

*Adapted for the requirements of Amateurs and Gardeners.*

Awarded the SILVER BANKSIAN MEDAL of the Royal Horticultural Society, June, 1880, for Special Merit.

CANNOT CLOG.
CUTS THE BORDERS.
DOES NOT RIB THE GRASS.
THE LIGHTEST IN DRAUGHT.
THE LOWEST CUTTING.
IS A PERFECT MOWER.

**Used in the Royal Parks and Gardens.**

HAS NEVER BEEN BEATEN IN COMPETITION.

*Prices and particulars of any respectable Ironmonger or Florist, and of the Manufacturers,*

**Chadborn & Coldwell Manufacturing Co.,**
223, UPPER THAMES STREET,
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FACTORY, Newburgh, N.Y. T. CLARKE, Manager.

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## HYDRAULIC ENGINEERS,

### WHITEFRIARS STREET, LONDON, E.C.

**THE IMPROVED SELF-ACTING HYDRAULIC RAM.**

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance without cost for labour or motive-power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

No. 37. DEEP WELL PUMPS for Horse, Hand, Steam, or other Power.
No. 63. PORTABLE IRRIGATORS, with Double or Treble Barrels for Horse or Steam Power.
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No. 49*a*. GALVANISED SWING WATER CARRIERS, for Garden use.
No. 50 and 54*a*. FARM and MANSION FIRE ENGINES of every description.
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S. OWENS AND CO. Manufacture and Erect every description of Hydraulic and General Engineers' Work for Mansions, Farms, &c., comprising PUMPS, TURBINES, WATER WHEELS, WARMING APPARATUS, BATHS, DRYING CLOSETS, GASWORKS, Apparatus for LIQUID MANURE distribution, FIRE MAINS, HYDRANTS, HOSE PIPES, &c., &c. *Particulars taken in any part of the Country. Plans and Estimates furnished.*

ILLUSTRATED CATALOGUES CAN BE HAD ON APPLICATION.

# THOS. W. ROBINSON,

*DENNIS PARK IRONWORKS, STOURBRIDGE,*

MANUFACTURER OF

## HOT-WATER PIPES,

IMPROVED "EXPANSION JOINT" PIPES,

**BOILERS,**

SPOUTING, PUMPS, TANKS, WROUGHT-IRON TUBING,

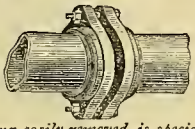
And every description of Ironwork for Horticultural and Building Purposes.

**SOCKET HOT-WATER PIPES.**

| | s. d. | s. d. | s. d. |
|---|---|---|---|
| Pipes (6 ft. long)—2-in., | 1 6 .. | 3-in., 2 8 .. | 4-in., 3 4 each. |
| ,, (9 ft. long)— ,, | — .. | ,, 3 9 .. | ,, 4 6 ,, |
| Elbows (No. 12)— ,, | 1 1 .. | ,, 1 8 .. | ,, 2 0 ,, |
| Tees (No. 33)— ,, | 1 5 .. | ,, 2 4 .. | ,, 3 3 ,, |
| Syphons (No. 23)— ,, | 1 3 .. | ,, 2 0 .. | ,, 3 0 ,, |

**"Expansion Joint" Hot-water Pipes.**

The "Expansion Joint."



The Best and Quickest Made.

*This Joint, being easily removed, is specially adapted for Tenants.*

| | s. d. | s. d. | s. d. |
|---|---|---|---|
| Pipes (6 ft. long)—2-in., | 1 5 .. | 3-in., 2 3 .. | 4-in., 2 11 each. |
| ,, (9 ft. long)— ,, | — .. | ,, 3 4 .. | ,, 4 3 ,, |
| Elbows (No. 3)— ,, | 0 8 .. | ,, 0 10 .. | ,, 1 0 ,, |
| Tees (No. 13)— ,, | 0 11 .. | ,, 1 2 .. | ,, 1 4 ,, |
| Syphons (No. 16)— ,, | 1 0 .. | ,, 1 4 .. | ,, 1 6 ,, |

Joint complete, with Rubbers and Pins, 2-in., 10*d.* each; 3-in., 1*s.* 2*d.*; 4-in., 1*s.* 4*d.*

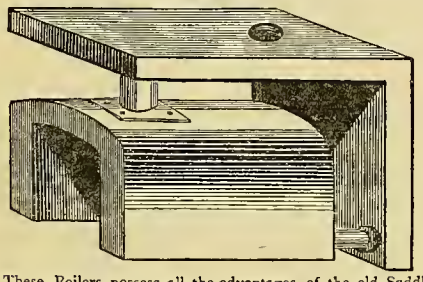
Delivered into Trucks or Boats. Illustrations and Price Lists free.

*Terms—Cash against Invoice less 2½ per Cent. Discount.*

Estimates for Heating given from Plans.

ALL CASTINGS SUPPLIED OF FIRST QUALITY ONLY.

# JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. | | | To heat of 4-in. Pipe. | Price. |
|---|---|---|---|---|
| High. | Wide. | Long. | Feet. | £ s. d. |
| 20 in. | 18 in. | 18 in. | 300 | 7 0 0 |
| 20 ,, | 18 ,, | 24 ,, | 400 | 8 0 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 0 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 0 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 0 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 0 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 0 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 0 0 |

Larger sizes if required.

*From* Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement

THE

# PRESIDENT,

LATEST

**American Lawn-Mower,**

Awarded twenty-four First-class Gold, Silver, and Bronze Medals at the Principal Exhibitions and Trials in America and Europe.

**New Pony and Horse Mowers,** Carriage paid to any Station. Hand sizes—8-in., 42*s.*; 10-in., 63*s.*; 12-in. 84*s*; 14-in., 105*s.*; 16-in., 126*s.*; 18-in., 147*s.*; 22 in., 189*s.*

is, without question, the best in the world, and its sale exceeds any other. The makers challenge competition on the following points: Mechanical Construction, Excellence of Material, Workmanship, Finish, Simplicity, Durability, and Lightness of Draught when Cutting Long or Short, Wet or Dry Grass. See it and try it before you buy any other. Every Machine is unconditionally warranted.

**THOMAS M'KENZIE & SONS, Limited,**

16, Holborn Viaduct, London, E.C.;
Dawson Street, Dublin; and Victoria Street, Belfast.

# ECONOMY IN FUEL.

## Toope's Asbetos Covering Company

(LIMITED)

Manufacture an easily fitted and removable Patent Covering for Hot-water Pipes of any diameter, which effectually prevents any loss of heat in pipes passing from the boiler to the Glass-houses, no matter what the distance.

*It will be found invaluable where used.*

**Price 10d. per superficial foot.**

NUMEROUS TESTIMONIALS.

Send circumference of pipe, and length required, to the Factory,

1, BEN JONSON'S ROAD, STEPNEY, LONDON, E.

**No Greenhouse Perfect without one.**

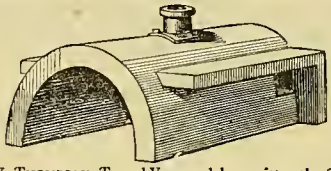
REGISTERED JULY 2, 1877

TEBBS' UNIVERSAL FUMIGATOR, for Greenhouses, Conservatories, &c., will last for years, and is fast superseding all other apparatus or contrivance for the purpose; requires no attention when once lit; no fear of flaming, no waste of material, every particle being given off in dense smoke. Price 3*s.*, 4*s.* 6*d.*; large size, 7*s.* 6*d.* each; packing extra.

FLANAGAN AND SON, Seedsmen, 98, Cheapside, London, E.C., and of all the principal Nurserymen and Seedsmen. Wholesale of CORRY, SOPER, FOWLER, AND CO. (Limited), 18, Finsbury Street, E.C.

**Silver Medal, 1874. First-class Certificate, 1867.**

Highly Commended, 1873. First-class Certificate, 1875.



Mr. W. THOMPSON, Tweed Vineyard, has written the following letter to a gentleman who inquired respecting this Boiler:—

"Galashiels, February 4, 1881.

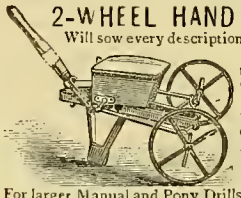
"The Terminal Saddle Boiler is BY FAR the best one we have here, and we have had all sorts. It does its work well, and with less fuel than most Boilers. It is the most economical and efficient Boiler we have, and has not cost sixpence since we fixed it some eight years ago."

Illustrated Prospectus Post-free.

**THOS. JONES, Temple Street, Manchester.**

## 2-WHEEL HAND GAPPING DRILLS.

Will sow every description of Farm and Garden Seeds.



There is no spring and slide to get out of order and damage the seed, being worked by a brush. The rows can also be put in at equal distances without a line.

Price, with 2 wheels, 20*s.* each.
,, with 1 wheel, 16*s.* each.
,, to sow 2 rows, 34*s.* each.

For larger Manual and Pony Drills, see Illustrated List free from F. BIRD & CO., 11, Great Castle St., Regent St., London, W.

## PIPES and FITTINGS,

FOR HEATING APPARATUSES.

The largest stock in the Kingdom. 4-inch pipes, 1*s.* 7*d.* per yard.

**SILVESTER & SAINSBURY,**

Castle Hill Foundry, Newcastle, Staffordshire.

## PARISIAN GREENHOUSE BLINDS

Made of Wood and Iron only.

Sole Agents for Great Britain—

W. RICHARDSON & CO.,

NORTH OF ENGLAND HORTICULTURAL WORKS, DARLINGTON.

## "ART WITH ECONOMY."

Applied to Conservatories and Greenhouses.

With Illustrations, Prices, &c.

**Part I., now ready. Post-free, twelve stamps.**

**HORTICULTURAL BUILDINGS**

Of every description Made, Erected, Fitted and Heated.

*ESTIMATES and PLANS GRATIS.*

## CHEAP ART SUMMER-HOUSES.

Illustrations and Prices Gratis.

# T. H. P. DENNIS & CO.,

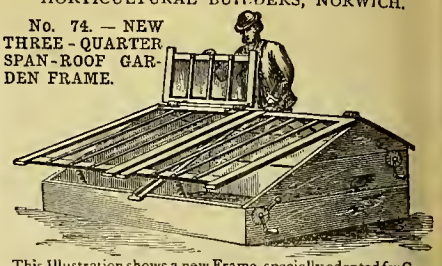
**MANSION HOUSE BUILDINGS, LONDON, E.C.**

WORKS: CHELMSFORD.

# BOULTON & PAUL,

HORTICULTURAL BUILDERS, NORWICH.

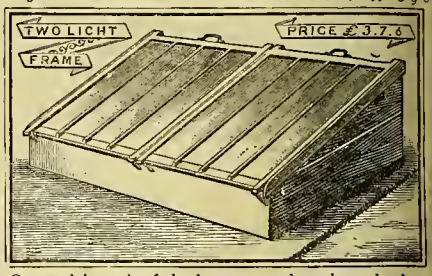
No. 74. — NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.



This Illustration shows a new Frame, specially adapted for Growing Cucumbers, Melons, &c., and for Storing Plants, giving greater height, more convenience, and better access to all the plants inside than our ordinary Melon and Cucumber Frame, No. 75.

PRICES—CARRIAGE PAID.

| Size. | Long. | From front to back. | Gearing extra to 8 ft. size and upwards. | Packing Cases. |
|---|---|---|---|---|
| No. 1 .. | 4 feet .. | 6 feet .. | £3 0 0 .. | — .. £0 4 0 |
| No. 2 .. | 8 feet .. | 6 feet .. | 4 15 0 .. | £0 15 0 .. 0 5 0 |
| No. 3 .. | 12 feet .. | 6 feet .. | 6 10 0 .. | 1 2 0 .. 0 6 6 |
| No. 4 .. | 16 feet .. | 6 feet .. | 8 5 0 .. | 1 10 0 .. 0 8 6 |
| No. 5 .. | 20 feet .. | 6 feet .. | 10 0 0 .. | 1 16 0 .. 0 9 6 |




Our stock is made of the best seasoned wood, ready glazed with 21-oz. English glass, painted three coats of best colour and easily put together in a few minutes.

PRICES—CARRIAGE PAID.

| | | | Packing Cases |
|---|---|---|---|
| 2-light Frame | .. 8 feet by 6 feet.. | £3 7 6 .. | 4*s.* 0*d.* |
| 3-light ,, | .. 12 feet by 6 feet.. | 4 17 6 .. | 4*s.* 6*d.* |
| 4-light ,, | .. 16 feet by 6 feet.. | 6 7 6 .. | 5*s.* 0*d.* |
| 5-light ,, | .. 20 feet by 6 feet.. | 7 17 6 .. | 6*s.* 0*d* |
| 6-light ,, | .. 24 feet by 6 feet.. | 9 7 6 .. | 6*s.* 6*d* |

Lights only, 6 feet by 4 feet, unglazed and unpainted, 6*s.* each. Glazed with 21-oz. sheet glass and painted three coats, 16*s.* each.

All Orders amounting to 40*s.* Carriage paid to any Railway Station in England and Wales; also to Edinburgh and Glasgow, Dublin and Belfast.

Any damage in transit made good if advised immediately.

## PORTABLE POULTRY HOUSES.

Movable Poultry Fencing, New Coops and Chicken Houses, Pheasantries, Aviaries, Dog Houses and Yards, Improved Kennel Railing, Portable Kennels, Travelling Boxes for Dogs, Rabbit Hutches, Portable Piggeries, &c. Manufactured by BOULTON AND PAUL, Norwich. Illustrated Catalogue sent free by post. **BOULTON & PAUL, Norwich.**

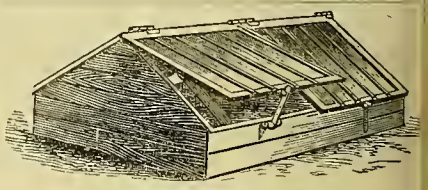
# W. H. LASCELLES,

HORTICULTURAL BUILDER,

121, BUNHILL ROW, LONDON, E.C.

W. H. LASCELLES will prepare Special DRAWINGS and ESTIMATES for GREENHOUSES, if desired, without charge, and send his Illustrated Sheets, post-free, and also Sketches of Wooden Buildings for Tool-houses, Store-houses, &c.

Horticultural Work of every description executed in the very best manner.



**Portable Plant Frames.**

R. HALLIDAY AND CO. desire to draw special attention to their Plant Frames, of which they always have a large stock, ready glazed and painted. They are made of the best materials, and can be put together and taken apart in a few minutes by any one.

Prices, delivered to any station in England, also Dublin and Belfast:—

| | £ s. d. |
|---|---|
| 6 feet long, 4 feet wide .. .. .. .. | 2 15 0 |
| 12 feet long, 4 feet wide .. .. .. .. | 4 15 0 |
| 6 feet long, 5 feet wide .. .. .. .. | 3 15 0 |
| 12 feet long, 5 feet wide .. .. .. .. | 6 10 0 |

The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.

R. HALLIDAY AND CO., Hothouse Builders and Engineers, Royal Horticultural Works, Middleton, Manchester

# RANSOMES' LAWN MOWERS
## ARE THE BEST.

MELBOURNE EXHIBITION, 1881, THE HIGHEST AWARD.

The "GLOBE" Lawn Mowers are intended to meet the demand for machines specially adapted for cutting long grass; and which, whilst similar to the Lawn Mowers imported from America, have the special advantages of the more accurate fitting and general durability of English manufacture and perfect adjustment.

PRICES, without Grass Box.

| | | |
|---|---|---|
| 8-in. for Small Lawns and Edgings | £2 | 2 0 |
| 10 in. ,, use by a Lady or a Boy | 3 | 3 0 |
| 12-in. ,, ,, ,, | 4 | 4 0 |
| 14-in. ,, ,, Man | 5 | 5 0 |
| 16-in. ,, ,, on Level Lawns | 6 | 6 0 |

Grass Boxes extra if required.
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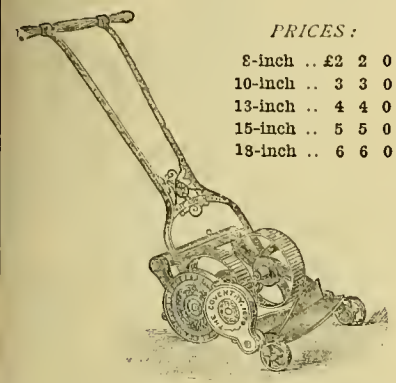

*PRICES:*

| | | | |
|---|---|---|---|
| 8-inch | £2 | 2 | 0 |
| 10-inch | 3 | 3 | 0 |
| 13-inch | 4 | 4 | 0 |
| 15-inch | 5 | 5 | 0 |
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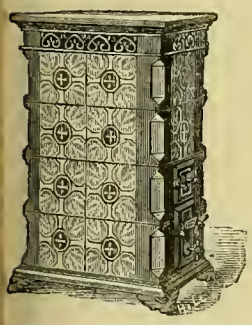

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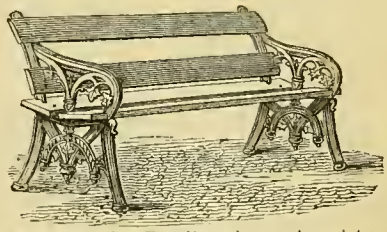

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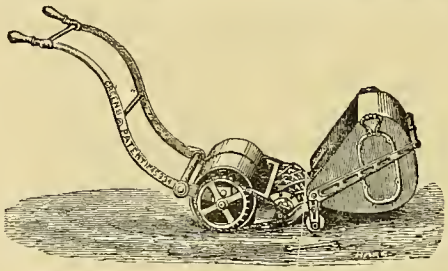

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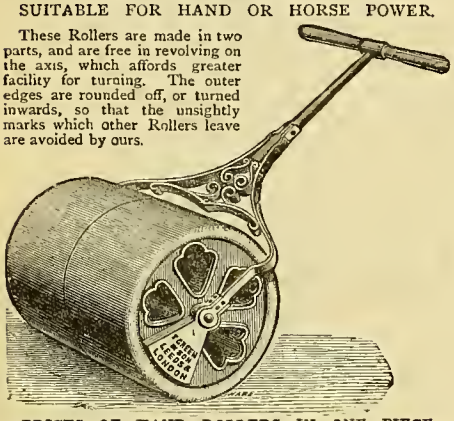

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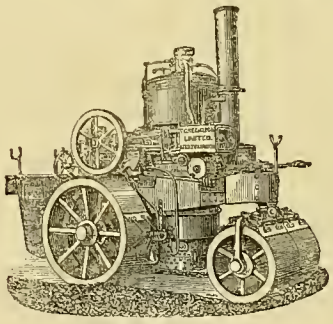

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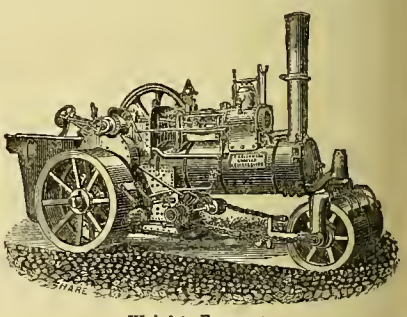

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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, May 28, 1881.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 388.—Vol. XV. { New Series. } SATURDAY, JUNE 4, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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## SPECIAL NOTICE.

THE GARDENERS' CHRONICLE *for NEXT SATURDAY, June 11, will contain full Reports of the GREAT SUMMER SHOW at SOUTH KENSINGTON, the GREAT WHITSUNTIDE FLOWER SHOW at MANCHESTER, and of the BATH and WEST of ENGLAND EXHIBITION at TUNBRIDGE WELLS (Horticultural Department), together with an Account of the GARDENS at LAMORRAN, Illustrated with a Full Page Engraving.*

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CARTER'S ILLUSTRATED CATALOGUE of NEW and CHOICE PLANTS. Price 6d., post-free; gratis to Customers.
The Queen's Seedsmen, and by Royal Warrant Seedsmen to His Royal Highness the Prince of Wales, 237 and 238, High Holborn, London, W.C.

WILLIAMS' for NEW PLANTS of all descriptions, including those sent out by B. S. Williams and others worthy of cultivation.

WILLIAMS' for CAMELLIAS and AZALEAS. The largest assortment of Specimens and young plants, suitable for exhibition and other purposes in the Trade. The Collection of Azaleas and Camellias is exceptionally fine this year, being well set with buds.

WILLIAMS' for all kinds of WINTER FLOWERING PLANTS, including Cyclamen (for which these Nurseries have for many years been noted), Primulas, Ericas, Epacris, Tree Carnations, &c.

WILLIAMS' for ORCHIDS either for the Cool-house, Mexican, or East India-house, either in Specimens or small plants. The largest Collection of Specimens suitable for Exhibition in the Trade.

WILLIAMS' for CHEAP ORCHIDS.—B. S. W. having recently purchased several Collections of Orchids in this country, in addition to the large consignments he is constantly receiving from his collectors abroad, is thus enabled to offer a large assortment of these plants, at exceptionally low prices. Price List upon application.

WILLIAMS' for TREE and other FERNS, PALMS, FOLIAGE PLANTS, of all sizes. The largest stock in the country.

FOR PARTICULARS and PRICES of any of the above, see B. S. WILLIAMS' Illustrated CATALOGUES, post-free upon application.

B. S. WILLIAMS, Nurseryman and Seed Merchant, Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.—New Roses for 1881.
LIST of NEW ROSES, TEA ROSES, CLEMATIS, &c.,
Gratis and post-free on application to
CRANSTON'S NURSERY and SEED CO. (Limited), King's Acre, near Hereford.

POT ROSES and CLEMATIS.—A large and very extensive collection of the above, including the finest varieties, now ready. Orders respectfully solicited.
W. B. ROWE and CO. (Limited), Barbourne Nurseries, Worcester.

NEW FUCHSIAS.—Miss Lizzie Vidler and Trumpeter; these lovely varieties are now ready, 2s. 6d., 3s. 6d. and 5s. each. Full particulars and testimonials free on application to
Messrs. JONES and NORTH, Hope Nursery, Lewisham, Kent.

PRIMULAS and CINERARIAS.—Fine, strong plants of the good Covent Garden Strains, of first-class quality, 1s. 6d. per dozen; 10s. per 100.
WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

KELWAY AND SON offer:—
50,000 DAHLIAS, in 400 varieties.
Langport, Somerset.

VARIEGATED GERANIUMS.—Extra strong Plants of all the best varieties, for Bedding or Pot Culture. List free.
E. COOLING, Mill Ash Nurseries, Derby.

LAKE DISTRICT FERNS.—Allosorus crispus, 3s. per 100; A. nigrum, 3s. per 100; Oak and Beech, 3s. 6d. per 100: virida, 7s. per 100; strong roots of Osmunda regalis at 5s. per 100; Lastrea spinulosa, at 3s. 6d. per 100. Terms, cash with order. LISTS free.
JAMES STEPHENSON, 43, Fell Croft, Dalton-in-Furness.

To the Trade.
CHRYSANTHEMUMS, best sorts, large-flowered Japanese and Pompon, in thumb-pots, 25s. per 100.
DAHLIAS, best varieties, in small thumbs, 20s. per 100.
DELPHINIUMS, best named, single and double, good plants, 5s. per dozen.
Garaway & Co. offer the above: their own selection.
GARAWAY & CO., Durdham Down Nurseries, Clifton, Bristol.

6000 Grape Vines.
THE LIVERPOOL HORTICULTURAL COMPANY (John Cowan), Limited, The Vineyard and Nurseries, Garston, near Liverpool, have a splendid stock of VINES grown from eyes this year, suitable for present planting. CATALOGUES free. Trade supplied.

FRANCIS & ARTHUR DICKSON & SONS offer strong, transplanted plants of OX CABBAGE and CAULIFLOWER. Price on application.
The "Upton" Nurseries, Chester.

Mangel Wurzel Seed.
JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.
Bardney Manor, Lincoln.

## SALES BY AUCTION.

**Thursday Next.**
ODONTOGLOSSUM ALEXANDRÆ, O'REILLY'S VARIETIES.

Mr. G. B. O'Reilly has arrived in England with a well selected assortment of rare Orchids, collected personally in New Granada, the same district with which his name has been so long associated.

MR. J. C. STEVENS has received instructions to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, on THURSDAY NEXT, June 9, at half-past 12 o'Clock precisely, ODONTOGLOSSUM ALEXANDRÆ, MASDEVALLIA HARRYANA, COMPARETTIA ROSEA, in fine condition; also several lots of ORCHIDS in a semi-established state, as imported.

May be viewed the morning of Sale, and Catalogues had.

**Imported and Established Orchids.**

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Company to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 15, at half-past 12 o'Clock precisely, an Importation of ORCHIDS from New Granada, in an unusually fine condition. Also many valuable Established ORCHIDS.

Full particulars next week.

**Lælia autumnalis.**

MR. J. C. STEVENS will SELL by AUCTION, by order of Mr. F. Sander, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 16, at half-past 12 o'Clock precisely, a grand Importation of this splendid LÆLIA: the consignment consists of largest masses.

May be viewed the morning of Sale, and Catalogues had.

**Imported Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, by order of Mr. F. Sander, St. Alban's, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 16, at half-past 12 o'Clock precisely, a fine Importation of CATTLEYA IMPERIALIS, the fine form of GIGAS, CYPRIPEDIUM SCHLIMII, a large lot of ODONTOGLOSSUM ALEXANDRÆ, LUTEO-PURPUREUM, SCEPTRUM, and other Orchids.

May be viewed the morning of Sale, and Catalogues had.

**Established Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, by order of Mr. F. Sander, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 16, at half-past 12 o'Clock precisely, a small Collection of Rare Established ORCHIDS from the Continent, including Lælia elegans alba, the rarest Lælia in commerce; Lycaste Skinneri alba, Cœlogyne Massangeana, Lælia purpurata alba, Cattleya bogotensis alba, Odontoglossum Andersonianum lobatum, Masdevallia trochilus, Cattleya Eldorado, and Eldorado alba, Cattleya labiata, autumn flowering variety, &c.

On view the morning of Sale, and Catalogues had.

**Established Orchids, partly in Flower or Bud.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY June 13, Established and Imported ORCHIDS, many of them in flower or bud.

Catalogues at the Mart, and 8, New Broad Street, E.C.

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FOR SALE, the LEASE of a small NURSERY and SEED BUSINESS, in a rapidly increasing neighbourhood, a few miles south-west of London.—For particulars apply to W. ABRAHAM, Auctioneer, Woking, Surrey.

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FOR SALE, a FLORIST and JOBBING BUSINESS, in one of the best suburbs. Comprises Seven-roomed House, Seed Shop, Large Show-house, Six Span-roof Greenhouses, about 40 feet long each. Lease fifty-three years unexpired; rent £6 per annum. Price for house, glass erections, and lease, £1150: £500 can remain.

D. J., 305, Deacon's Advertising Offices, 154, Leadenhall Street, London, E.C.

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TO BE SOLD, with Immediate Possession, a First-class Old-established NURSERY and SEED BUSINESS, in thorough working order, in the leading thoroughfare, five miles south of London; owing to failing health of proprietor. Any one with a fair amount of capital will find this a profitable investment. Apply, in first instance by letter only, to

B. F. S., Messrs. Nutting & Sons, Seed Merchants, 60, Barbican, London, E.C.

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**A Rare Opportunity.**

TO BE DISPOSED OF, a small NURSERY (in consequence of the continued failing health of the present Proprietor), situated in one of the best parts of the Midland Counties, and has been established upwards of 50 years.

For further particulars, &c., address T. M., Robert Cooper, Esq., Seed Merchant, 97, Southwark Street, London, S.E.

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FOR DISPOSAL, on the South Coast, a NURSERY, SEED, and FLORIST BUSINESS, comprising 2 Acres of Land, Two Vineries, Cucumber, Propagating, and two Span-roofed Greenhouses, Show House, and Seed Shop, Pits, Frames, Potting Sheds, &c. Rent only £25 per annum. Goodwill, Stock, Greenhouses, and all Erections.

Price and particulars on application to
FLORIST, 96, Alexandra Street, St. Leonards-on-Sea.

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**Freehold Land for Sale.**
To FLORISTS, NURSERYMEN, and OTHERS.

FOR SALE, in One or more Lots, a Quantity of LAND, well adapted for the above, having good frontages to good roads, and will ultimately become valuable for Building Purposes. To be Sold a Bargain. Apply to
J. EMBLETON, Suffolk House, New Hampton.

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TO BE SOLD (through ill-health), the STOCK and BUSINESS of a SMALL NURSERY of about 2 Acres, 4½ miles from Covent Garden Market, consisting of Fruit Trees, Deciduous and Ornamental Trees, General Collections of Shrubs, Herbaceous Plants, Pansies, Pinks, Ferns, Phloxes, Pyrethrums, Ornamental Grasses, variety of Roots (Strawberry, Gooseberry, and Currant), Wooden Seed Shop, Stable and Cart-house, and all the plant used for the business. First-class Jobbing Trade done. This is a good opportunity for a young energetic man. By valuation or reasonable offer. Immediate possession and remunerative Stock to go on with (Flowers and Strawberries now ready).

Particulars and terms of Messrs. W. L. GOMME, SONS AND HATTON, Imperial Buildings, Ludgate Circus, E.C.

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SEED BUSINESS for SALE.—A compact and easily worked Seed Business, in one of the leading thoroughfares in Bristol. Shop and Warehouse together. Rent moderate. Apply to
R. G. FORTT, Seed Merchant, Bristol.

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TO BE DISPOSED OF, the Old-established NURSERY and SEED TRADE of the late Mr. Henry Baker, Atherstone. The Nursery (about 8 Acres) is in an excellent neighbourhood, and close to a Market Town, in full working order, and every facility for doing a large trade. For particulars apply to
Mrs. BAKER, The Nurseries, Atherstone.

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TO BE LET, an old-established NURSERY, FLORIST, and SEEDSMAN'S BUSINESS, with immediate possession, on account of the death of the late proprietor, who has carried on a successful business for the last thirty years. The Premises comprise a convenient Dwelling-house, Seed Shop, and good Storage. There are 8½ Acres of deep rich Soil, and all the necessary Glass-houses, &c., for carrying on a large business. For particulars apply to
J. WATSON, 38, Crown Street, Bury St. Edmund's.

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HOUSE, with LAND, to LET, on long LEASE, or for SALE. Well adapted for Nurserymen, Florists, &c. Within one mile of two good railway stations. Apply to
J EMBLETON, Suffolk House, New Hampton.

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**Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.**

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 8, New Broad Street, E.C.

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ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.

GREAT ROSE SHOW and EXHIBITION by the Pelargonium Society, TUESDAY, June 28, and WEDNESDAY, June 29.

Band of the Royal Horse Guards each day.

Admission:—TUESDAY, June 28, from 1 o'Clock, 2s. 6d.; WEDNESDAY, from 10 o'Clock, 1s.; or, by Tickets purchased before the day by Fellows, for the first day, 2s. Tickets at the usual Agents, and at the Office and Entrances to the Garden.

N.B.—The SPECIAL PRIZES offered by the General Horticultural Company (John Wills), Limited, for GROUPS of PLANTS; Messrs. Laing & Co., for BEGONIAS; Messrs. Webber & Co. and Rivers & Son for FRUIT; and Messrs Carter & Co, Sutton & Sons, and Webb & Sons for VEGETABLES, will be competed for at this Show.

ENTRIES CLOSE June 23.

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ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.

EVENING FETE and ROSE and PELARGONIUM SOCIETY'S SHOW, June 28, from 8 to 12 o'Clock P.M.

Bands of the 2d Life Guards and Royal Horse Guards.

Tickets, to be purchased only by Fellows or their Orders, at the Office, on or before June 21, 5s.; after that date, 7s. 6d.; and on the Evening of the Fête holders of Fellows' Orders will be admitted on payment at the gates of 10s. each person.

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GRAND FLOWER SHOW.—WORCESTERSHIRE AGRICULTURAL SOCIETY. STOURBRIDGE MEETING, JULY 5, 6, and 7 next. TWO HUNDRED and FORTY POUNDS in PRIZES for PLANTS, FLOWERS, FRUIT, and VEGETABLES, open free to all comers; also a COTTAGERS' SHOW. Entries close June 28. For Schedules of Prizes, apply to

J. S. HAYWOOD, Hon. Sec. Hort. Department,
Seed Merchant, Worcester.

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WEST of ENGLAND ROSE SHOW.

The FIFTEENTH ANNUAL EXHIBITION of ROSES, open to the United Kingdom, will be held in the Shire Hall, Hereford, on WEDNESDAY, July 6. Grapes and Strawberries will also be exhibited. All communications to be addressed to
The Rev. G. M. METCALFE, Hon. Sec.
Lyde Vicarage, Hereford.

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TIVERTON (Devon) HORTICULTURAL SOCIETY.

ELEVENTH EXHIBITION, JULY 7, 1881. Liberal PRIZES for CUT ROSES, open to all England, and to Subscribers for STOVE and GREENHOUSE PLANTS, FRUIT and VEGETABLES. Schedules on application to

Messrs. PAINE AND MILLS, Hon. Secs.

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THE ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.

GRAND SUMMER SHOW, July 30 and August 1.

TWELVE PLANTS, Six in Flower and Six Foliage, £20, £15, £10. EIGHT DISHES of FRUIT, £5, £3, £2, £1. And various other PRIZES, amounting to THREE HUNDRED POUNDS in value.

A Subscription of 5s., paid before July 1, enables the Exhibitor to Compete Free of Entry Fee.

C. S. FUIDGE, Secretary.
39, York Street, Lower Avenue.

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BRADFORD FLORAL and HORTICULTURAL SOCIETY.

The THIRD ANNUAL EXHIBITION will take place on AUGUST 19 and 20. Schedules of Prizes and all particulars may be obtained on application to
JOSH. WEST, Secretary,
27, Heath Road, Bradford, Yorks.

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RHODODENDRONS.

The AMERICAN PLANTS at KNAP HILL will be in their greatest beauty during the ensuing fortnight, and may be seen daily, Sundays excepted.

The EXHIBITION of RHODODENDRONS in the GARDENS of the ROYAL BOTANIC SOCIETY, Regent's Park, W., will be ON VIEW DAILY, from June 1. Orders of Admission may be obtained from Fellows of the Society, or from the Exhibitor,
ANTHONY WATERER,
Knap Hill Nursery, Woking, Surrey.

☞ The RHODODENDRONS and AZALEAS in ROTTEN ROW, Hyde Park, W., are supplied by ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.—May 28.

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BATH and WEST of ENGLAND SOCIETY
(Established 1777) and
SOUTHERN COUNTIES ASSOCIATION.

*Patron*—His Royal Highness the PRINCE OF WALES, K.G.
*President*—The Right Hon. the Marquess of Abergavenny.

TUNBRIDGE WELLS MEETING,
June 6, 7, 8, 9 and 10.

GREAT EXHIBITION of HORSES, LIVE STOCK, HOPS, POULTRY, MACHINERY, IMPLEMENTS, WORKS of ART and HORTICULTURAL SPECIMENS, WORKING DAIRY, EXPOSITION of BEES. Management and Appliances; COMPETITION of SHOEING SMITHS, &c.

JOSIAH GOODWIN, Sec.

4, Terrace Walk, Bath, May, 1881.

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NEW DOUBLE WHITE BOUVARDIA, "ALFRED NEUNER."

*The following is the Raiser's Description*:—"This is a gem of the first water, equal, if not superior, in profuse blooming quality and vigorous healthy growth to the valuable single white variety, Davidsonii, of which this double white one is a sport. The flowers are rather larger than those of the single-flowering, and composed of three perfect rows of petals of the purest waxy-white colour, each floret resembling a miniature Tuberose. The trusses are large and perfect, and are freely and without interruption produced, even on the small side shoots, which generally make no flowers on the single one, and, according to our observation and experience for the last two years it will bloom more freely and constantly than the single variety. This double Bouvardia will prove a standard flower, indispensable in all fine cut-flower work."

Orders now being Booked for Execution in strict Rotation, on arrival of our Supplies from America. Stock very limited. Price, in 3½-inch pots, 21s. each; in 2-inch pots, 15s. each. Trade price on application.

Sole Agents in Great Britain:—JAMES CARTER AND CO., The Queen's Seedsmen, 237 and 238, High Holborn, W.C.

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TEA ROSES.—Well established, strong, healthy plants, of the finest TEA ROSES, 12s. to 18s. per dozen, £4 and £5 per 100. Lists on application.
J. HOUSE, Eastgate Nurseries, Peterborough.

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BIJOU GERANIUMS.—Wanted best Cash Offers for Fifty Dozen extra strong Bijou Geraniums, in large 60's, on London and North-Western Railway, to
G. P. DARBY, Florist, &c., Watford.

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BEDDING GERANIUMS.—Ten dozen, in ten of the most popular Bedding kinds, strong plants from single pots, for 15s.
HUSSEY AND SON, Mile End Nursery, Norwich.

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VERBENAS.—Strong Spring-struck plants of Purple, White, Scarlet, Pink, and other colours, 6s. per 100. Package free for cash.

DAHLIAS, strong plants in good variety, 25s. per 100.
S. BIDE, Alma Nursery, Farnham, Surrey.

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FOR SALE, FLOWER of SPRING GERANIUMS, the best Silver-edged variety; strong autumn-struck plants, 12s. per 100 for cash, package free.
S. BIDE, Alma Nursery, Farnham, Surrey.

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**British and Hardy Exotic Ferns.**

HUSSEY AND SON, having a large stock, offer a collection of fifty distinct species and varieties of the above, good plants, and true to name, for 25s.
Mile End Nursery, Norwich.

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POT ROSES and CLEMATIS.—A large and very extensive Collection of the above, including the finest varieties, ready for delivery in June. Early orders solicited.
W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

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**Gardenia intermedia.**

MESSRS. JOHN STANDISH AND CO. have to offer a very extensive stock of GARDENIA INTERMEDIA of all sizes, every plant being in the most robust health, and guaranteed perfectly clean. Nice plants in 6-inch pots at 2s. 6d. each; larger, 3s. 6d. to 10s. 6d. each. Specimens, fine bushy plants, with plenty of bloom-bud on them, 1, 1½, 2 and 3 guineas each.
Royal Nurseries, Ascot, Berks.

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**Cheap Plants.—Special Offer.**

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—

VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.

LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.

PELARGONIUMS—Yesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.

" TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.

" SILVER VARIEGATED—May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.

" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.

" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.

" BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.

" Forcing, Show and French vars., 30s. per 100.

CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.

COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.

AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s per 1000.

TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.

Packing included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

# EXHIBITION OF ORCHIDS.

## The Private View of Orchids at Mr. William Bull's Establishment

## Is a sight at present unequalled in Europe.

It will be open during the week, June 6 to 11, to those having received Invitations, and to Patrons of the Establishment.

## WILLIAM BULL, F.L.S.,

NEW PLANT MERCHANT,

536, KING'S ROAD, CHELSEA, LONDON, S.W.

## NEW DOUBLE FLOWERED BOUVARDIA,

### "ALFRED NEUNER."

## MR. WILLIAM BULL

Is now sending out this charming Double Flowered White Bouvardia, as announced by him last January,

*And described at p. 26 of his Illustrated Catalogue of New Plants.*

**Price, 10s. 6d. each.**

## ESTABLISHMENT FOR NEW AND RARE PLANTS,

536, KING'S ROAD, CHELSEA, LONDON, S.W.

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# PAUL & SON,

## THE OLD NURSERIES, CHESHUNT, N.,

will have ready June 1st, for distribution, the following

## NEW CHESHUNT-RAISED SEEDLING ROSES:

**H.P. GEORGE BAKER (Paul & Son).**—A pure lake shaded with cerise, a beautiful round incurved ball-like flower, full and of perfect form. Very free and with neat, compact, upright habit. Quite new in Roses. Foliage almost mildew-proof. 10*s.* 6*d.* each. Named, with his permission, after the respected President of the Reigate Rose Association.

**H.P. BRIGHTNESS OF CHESHUNT (Paul & Son).**—Peculiarly vivid bright red. A medium sized flower of open imbricated form. Very free, and fine autumnal. A promising garden Rose, and neat front-row exhibition Rose. As a march in colour, even more showy than Duke of Teck. We recommend it. Strong plants in pots, 10*s.* 6*d.* each.

**THE NEW CHESHUNT ROSES of 1880.**—DUKE OF TECK, GLORY OF CHESHUNT, EARL OF BEACONSFIELD, and Dr. HOGG. Strong plants in pots, 3*s.* 6*d.* each.

**THE NEW FRENCH ROSES of 1881.**—3*s.* each; 30*s.* per dozen.

*PRICED LISTS ON APPLICATION.*

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**Verbenas.**

VERBENAS.—Extra strong and well-rooted Plants of Purple, White, Crimson, and Pink, 6*s.* per 100, 50*s.* per 1000; ten choice Exhibition varieties, beautifully clean and healthy, 8*s.* per 100, 70*s.* per 1000; Cuttings, 3*s.* and 4*s.* per 100, 25*s.* and 35*s.* per 1000. All securely packed. Terms cash.

FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

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**To the Trade.**

MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers to the Trade of their selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS of 1880 growth, and of the finest quality.

Seed Growing Establishment, Wisbech.

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**Roses for 1881.**

WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, beg to offer strong plants of the undermentioned first-rate English raised novelties, 7*s.* 6*d.* to 10*s.* 6*d.* each:—

PRIDE OF WALTHAM (H.P.), delicate flesh colour; Two First-class Certificates.
LADY SHEFFIELD (H.P.), brilliant rosy-cerise; First-class Certificate.
RED GAUNTLET (H.P.), bright scarlety-crimson.

English raised ROSES of 1879 and 1880.

COUNTESS OF ROSEBERY (H.P.), brilliant carmine-rose; Three First-class Certificates; price, 2*s.* 6*d.* each.
CROWN PRINCE (H.P.), bright purple-crimson, 3*s.* 6*d.* each.
DUCHESS OF BEDFORD (H.P.), dazzling scarlet-crimson; First-class Certificate, 2*s.* 6*d.* each.
LITTLE GEM (Moss), crimson, beautifully mossed, 3*s.* 6*d.* each.
MASTERPIECE (H.P.), rich rosy-crimson, 3*s.* 6*d.* each.

A large general stock of ROSES for all purposes.

ROSES, in pots, for Outdoor Planting, 10*s.* 6*d.* to 30*s.* per dozen.
" " Climbing, 10*s.* 6*d.* to 30*s.* per dozen.
" " Pot Culture, 12*s.* to 30*s.* per dozen.
Half Specimen and Specimen ROSES, in pots, 5*s.* to £5 5*s.* each.

Priced Descriptive CATALOGUES free by post on application. Paul's Nurseries, Waltham Cross, Herts.

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NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.

Prices and plants need only be compared with those of other firms, to prove that in no instance can buyers of plants who study both price and quality be supplied more advantageously than by ourselves.

The Collections are all of the finest sorts, and as varied in colour as possible, fine for exhibition or home decoration, and as certain to be satisfactory to purchasers as collections can be. All are our selection.

| | Per doz.—*s.* | *d.* |
|---|---|---|
| Abutilons, in variety .. | 3 | 0 |
| Achimenes, in variety .. | 3 | 0 |
| Ageratums, small plants, per 100, 5*s.* .. .. | 1 | 0 |
| Ageratums, in pots, per 100, 15*s.* .. .. | 2 | 6 |
| Antirrhinums .. .. | 3 | 6 |
| Begonias, Ornamental.. | 4 | 0 |
| Caladiums .. .. | 9 | 0 |
| Carpet Bedding Plants (see Catalogue). | | |
| Chrysanthemums, in great variety, per 100, 15*s.* .. .. | 3 | 0 |
| Coleus .. .. .. | 2 | 6 |
| Dactylis elegantissima, per 100, 6*s.* .. .. | 1 | 0 |
| Dahlias, per 100, 20*s.* .. | 3 | 6 |
| Epiphyllum .. .. | 9 | 0 |
| Ferns, Stove and Greenhouse, 6*s.* to .. .. | 9 | 0 |
| Fuschias, per 100, 15*s.* .. | 3 | 0 |
| Gardenia florida .. | 6 | 0 |
| Greenhouse Plants .. | 9 | 0 |
| Geraniums, Double .. | 3 | 0 |
| Geraniums for Bedding | 3 | 0 |
| Geraniums for pot culture, 3*s.* to .. .. | 6 | 0 |
| Gloxinias, 6*s.* and .. | 9 | 0 |
| Hardy Climbing Plants, in great variety, 6*s.* .. | 9 | 0 |

| | Per doz.—*s.* | *d.* |
|---|---|---|
| Hollyhocks, Seedlings.. | 4 | 0 |
| Helianthemums.. .. | 2 | 6 |
| Herbaceous Plants, per 100, 20*s.* .. .. | 3 | 0 |
| Heliotropes .. .. | 2 | 6 |
| Iresine Lindeni, per 100, 10*s.* .. .. .. | 2 | 0 |
| Lantanas.. .. .. | 2 | 6 |
| Lobelias, small, per 100, 4*s.* .. .. .. | 1 | 0 |
| Lobelias, in pots .. | 2 | 6 |
| Mesembryanthemum fol. var., per 100, 10*s.* | 2 | 0 |
| Myosotis, per 100, 6*s.* .. | 1 | 6 |
| Pæonies, white, blush, crimson, and other shades .. .. .. | 6 | 0 |
| Phloxes, per 100, 25*s.* .. | 3 | 6 |
| Pelargoniums, Show, Fancy, and French, 6*s.* to .. .. .. | 9 | 0 |
| Potentillas, Double .. | 6 | 0 |
| Rock Plants, per 100, 15*s.* | 3 | 0 |
| Salvias .. .. .. | 3 | 0 |
| Saxifrages .. .. | 3 | 0 |
| Sedums .. .. .. | 3 | 0 |
| Stove Plants, 6*s.* to .. | 9 | 0 |
| Tropæolums .. .. | 3 | 0 |
| Violas (immense stock of best sorts), per 100, 8*s.* to 12*s.* .. .. .. | 2 | 0 |

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

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**Verbenas—Verbenas.**

WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff, 6*s.* per 100, 50*s.* per 1000; strong plants from single pots, full of cuttings, 12*s.* per 100; 100 rooted cuttings, in twelve best show kinds, 8*s* packing included. Terms cash.

Cemetery Nursery, Gravesend, S.E.

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**50,000 Pelargonium Vesuvius.**

WILLIAM BADMAN is sending out VESUVIUS, from store pots, 8*s.* per 100, 75*s.* per 1000, packing included. Send cash with order.

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**Drumhead Cabbage Plants.**

ROBINSON'S CHAMPION DRUMHEAD—strong Plants, 3*s.* per 1000.

JOHN PERKINS AND SON, 52, Market Square, Northampton

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PANSIES and VIOLAS, for Bedding or Exhibition.—Many thousands of strong Plants on Sale, at low prices, our selection. CATALOGUE with LISTS of sorts, post-free:—

| | Doz.—*s.* | *d.* | 100.—*s.* | *d.* |
|---|---|---|---|---|
| BEDDING PANSIES, named sorts .. | 2 | 0 | 12 | 0 |
| " VIOLAS, named sorts .. .. .. | 2 | 0 | 12 | 0 |
| " PANSIES and VIOLAS, without names | 1 3 | | 8 | 0 |
| FINE SHOW PANSIES, all named .. | 3 | 0 | 20 | 0 |
| " FANCY PANSIES, all named .. | 3 | 6 | 25 | 0 |

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DOUBLE CINERARIAS, FOR WINTER BLOOMING.

R. H. VERTEGANS is now offering SEED saved from his Superb Collection, at 3*s.* 6*d.* and 5*s.* per packet, post-free. Also Booking Orders for PLANTS, 12 varieties, selected from his large choice and noted strain. Names and Descriptions will shortly be published.

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**IN POTS.**

*Strong Healthy Plants,*

**Fit for Immediate Planting, or Flowering under Glass.**

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(LIMITED),
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OF
## CHOICE FLORISTS' FLOWERS.

**Guaranteed from the Finest Strains only.**
*All carefully Transplanted, Strong and Healthy.*
POST OR CARRIAGE FREE AT PRICES QUOTED.

| Daniels' Prize Cineraria. | Per 100. s. d. | | Per doz. s. d. |
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| *ANTIRRHINUMS, very choice mixed | 7 6 | .. | 1 0 |
| AURICULAS, choicest Alpine | 10 6 | .. | 1 6 |
| CARNATIONS, from named flowers | 10 6 | .. | 1 6 |
| ,, Perpetual or Tree, from named flowers | — | .. | 2 6 |
| ,, Yellow-ground vars., choice | — | .. | 3 6 |
| CALCEOLARIAS, Daniels' Prize | 10 6 | .. | 1 6 |
| CINERARIA, Daniels' Superb Prize | 10 6 | .. | 1 6 |
| *DIANTHUS HEDDEWIGI, flowers large, brilliant and beautiful | 7 6 | .. | 1 0 |
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| *PANSIES, Show and Fancy | 7 6 | .. | 1 0 |
| * ,, Prize Blotched, splendid | 10 6 | .. | 1 6 |
| * ,, New Striped, fine | 7 6 | .. | 1 0 |
| PRIMULAS, Choicest Red, fringed | 10 6 | .. | 1 6 |
| ,, ,, White, fringed | 10 6 | .. | 1 6 |
| ,, ,, Mixed, fringed | 10 6 | .. | 1 6 |
| *PENTSTEMONS, from named flowers | 10 6 | .. | 1 6 |
| *PETUNIA HYBRIDA GRANDIFLORA, magnificent varieties, mixed | — | .. | 2 6 |
| PICOTEES, from Stage Flowers, fine | 10 6 | .. | 1 6 |
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| SWEET WILLIAMS, Daniels' Superb Strain | 7 6 | .. | 1 0 |

Those marked (*) will bloom this year.

*Not less than fifty supplied at the rate per 100, or six at the rate per dozen.*

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**TOWN CLOSE NURSERIES,**
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(ESTABLISHED 1785.)

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for Spring of 1881,

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Various other BEDDING PLANTS at like moderate prices.
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H. I. HARDY, F.R.H.S., offers fine strong and healthy autumn-struck Plants of the following:—
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All well rooted and package free.
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SUPPLY EVERY GARDEN REQUISITE
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WEEDS, HOW TO DESTROY THEM.—Gentlemen can have the Weeds, Moss, &c., destroyed on their Garden Walks and Carriage Drives, without disturbing the gravel, by using SMITH'S WEED KILLER, a liquid preparation, which when mixed with cold water and applied with an ordinary watering-can, will prove thoroughly destructive to all vegetable growth. Full particulars and price on application to
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WANTED, a Quantity of SEEDSMEN'S DRAWERS, COUNTERS, and other SHOP FITTINGS. Address particulars to
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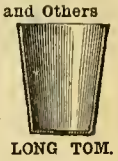
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A new invention for keeping flowers fresh in the button-hole, &c. Six free by post for 1s. 7d.
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21-in. .. 7s.
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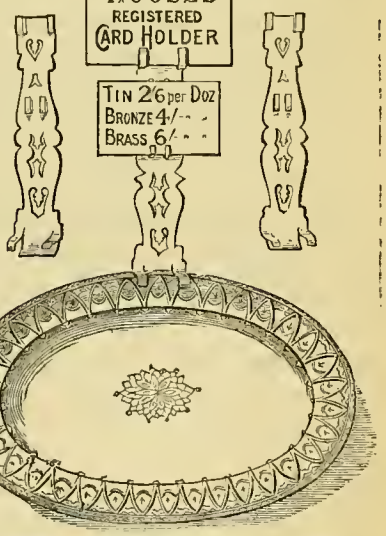


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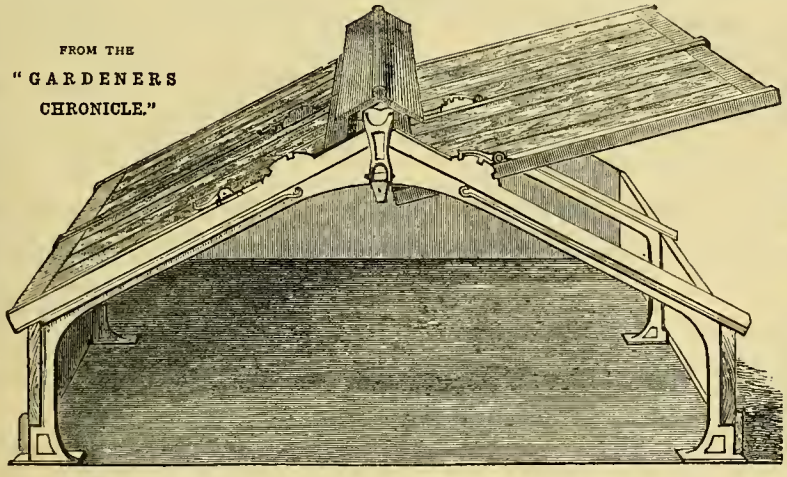

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A fine-habited, stocky-growing variety, having the leaves spreading, of a light bronzy-green, beautifully marked with sectional streaks of a bright rosy-red; some are entirely of that colour—the upper or younger ones are somewhat of a lighter shade. The footstalks are also conspicuous, being of a deep rosy-red. The plant is remarkably free in growth. Cultivated in small pots it will prove one of the very best and highly coloured varieties which can be used for decorative purposes. Price, 31*s.* 6*d.* each.

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A large flower, of fine form and good substance, of a pure white colour, except the base of the throat, which is of a yellowish-white, slightly speckled with violet. A first-class flower, belonging to the erect section. Price, 5*s.* each.

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A very fine, semi-erect flower, of a pale blue colour, broadly edged with greyish white, the lower portion of the throat being beautifully marked with dark blue, and spotted with white. A very distinct flower, of great substance and fine form, very robust and free. Price, 5*s.* each.

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A very fine, semi-erect flower, of great substance and enormous size. The lower portion of the throat is white, speckled with violet-purple; the upper part is marked with the same colour and a ring of dazzling red. The growth is remarkably free and robust. Price, 5*s.* each.

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A very fine, semi-erect flower, of great substance and good form. The outer portion is of a flesh colour, and the top of the throat is marked with an even ring of vivid red. The upper part is of a reddish-violet tinge, the lower part is white, speckled with the same reddish-violet. The growth of the plant is also very free and distinct. Price, 7*s.* 6*d.* each.

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A remarkably handsome, large, erect flower, of fine form and great substance. The lower portion of the throat is white, suffused with violet. The surface of the flower is beautifully marked with a circle of deep pink and a blotch of white on each lobe, broadly edged with pure white. A dwarf and very robust variety, quite distinct. Price, 7*s.* 6*d.* each.

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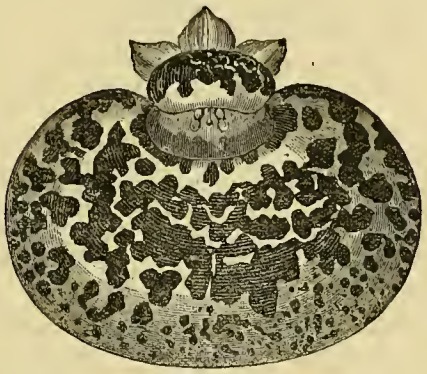

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THE
# Gardeners' Chronicle.
*SATURDAY, JUNE* 4, 1881.

## FLOWER LORE: JUNE.

"LEAFY JUNE" has justly been described as the "month of flowers" for garden and meadow alike are gaily clad with a rich variety of the brightest and sweetest flowers that summer-tide produces. Thus the Lupine, with its stately flower-spikes, is the chief ornament of many a cottage garden—a plant which is of interest as having been extensively cultivated by the Romans. According to a popular notion, when eaten it was supposed to brighten the intellect, and to add to the beauty of the complexion. Its seeds are said to have been used by the ancients in their plays and comedies instead of pieces of money; hence the proverb *Nummus Lupinus*—a piece of money of no value. The Larkspur, which Gerard mentions amongst the flowers cultivated in the reign of Queen Elizabeth, now begins flowering. It derives its Latin name, Delphinium, from the Greek word signifying a dolphin, because its flower-buds, before they are expanded, are thought to resemble that creature. It has several nicknames, such as "Lark's-foot" and "Lark's-heel," so called from the fancied resemblance of its projecting nectary to this bird's foot. By the French it is termed "Knight's Spur," and one of its Italian names is "Kingflower." Again, the "Monk's Hood," or Aconite, which, from its poisonous character was believed by the ancients to be the invention of Hecate, now comes into bloom. It is called "Monk's Hood," or "Friar's Cap," from the shape of its upper sepal, being like the cowl of a monk. It has also been termed "Helmet Flower" for the same reason. Its name, "Wolf's-bane," or "Wolf-poison," originated, says Gerard, from the fact that "hunters which seeke after woolfes put the juice thereof into rawe flesh, which the woolfes devoure, and are killed."

Another plant that now puts forth its graceful flowers is the "yellow Day Lily" (Hemerocallis), known in France as the "Beauty of the Day." From its fragile beauty, it has been made the emblem of coquetry, because its blossom seldom lasts a second day. The St. John's Wort (Hypericum), too, blooms during the present month—a plant which in days gone by was termed "Devil's flight," being supposed not only to drive away evil spirits, but to defend persons from phantoms and spectres. Hence it is still gathered on the Continent with great ceremony on St. John's Day; and hung up by the poor in their windows as a preservative against storms, thunder, and unseen dangers of every kind. In Scotland, it is carried about as a charm against witchcraft and enchantment, and the peasantry suppose it cures ropy milk, which they fancy to be under some malignant influence. One of its popular names is "Terrestrial Sun," from the notion that all the spirits of darkness vanish at the approach of the sun. There is also the Sonchus or "Sow Thistle," which, like the Plantain, in some mysterious manner is said to follow man wherever he goes. In former times it was much valued for its edible sprouts, which Evelyn tells us were eaten by Galen as a Lettuce

It has been popularly called "Hare's Lettuce," because, according to Apuleius, when the hare is fainting with heat she recruits her strength with it. Topsell, in his *Natural History*, tells us that "when hares are overcome with heat, they eat of an herb called Lactuca leporina, that is, the hare's Lettuce, hare's house, hare's palace; and there is no disease in this beast the cure whereof she does not seek for in this herb."

A showy flower that again begins to adorn our hedges is the Foxglove, known also as the "Finger Flower," from the resemblance of its blossom to the finger of a glove. In Norway it goes by the name of "Fox Bell," and by the Saxons it was called "Finger Hut"—a French name for it is "Our Lady's Glove," and the Italians, from its having been much used for healing fresh wounds and sores, made it the subject of a proverb, "Foxglove salveth all sores." Wordsworth, speaking of it, reminds us how bees—

"Will murmur by the hour in Foxglove bells."

The little Pimpernell, popularly known as the "Poor Man's Weather-glass," or "Shepherd's Barometer," now makes its appearance, having derived its popular names from closing its petals before rain, which in fine weather remain open the greater part of the day. It has been supposed to possess various medicina qualities, hence an old proverb informs us that—

"No heart can think, no tongue can tell,
The virtues of the Pimpernell."

It was also said to be an excellent preservative against the influences of witchcraft, and even now-a-days on the Continent it is considered an infallible charm in the case of any epidemic. We may note, too, that the Water Pimpernell, called also "Brookweed," is said to be the plant which the Druids were in the habit of gathering, fasting, with the left hand, and without looking at it, ascribing to it magical virtues in the cure and prevention of diseases in cattle. Again, few flowers have earned for themselves a wider popularity than the little blue flower Forget-me-not (Myosotis palustris), around which so many romantic legends have clustered. One of its well-known names is the "Mouse-ear Scorpion-grass," a term given to it from the form of its leaves; the French for the same reason calling it "Rat's-ear." Formerly, too, the name Forget-me-not was applied to the Speedwell, on account of its corolla falling off and flying away as soon as gathered, "Speedwell" having been a common form of valediction in days gone by, and equivalent to our "farewell" or "goodbye." The juice of the Forget-me-not has been said to possess the peculiar property of hardening steel; and on the Continent its juice when made into a syrup was formerly given as a remedy for consumptive coughs. Another plant that is the subject of an extensive folk-lore is the Clover, having been from time immemorial extensively used in love divinations. Now, according to an old rhyme, young people desirous of ascertaining their lot in matrimony should carry out the following directions:—

"A Clover, a Clover of two,
Put it in your right shoe,
The first young man (woman) you meet,
In field, street, or lane,
You'll get him (her) or one of his (her) name."

Again, in Scotland the possessor of a piece of Clover, it is said, always knows whenever any one is practising witchcraft on him. This plant is not without its weather-lore, contracting its leaves on the approach of a storm; and, according to an old writer, "against stormy and tempestuous weather will seem rough, and the leaves of it stare and rise up, as if it were afraid of an assault." Again, amongst the most ornamental of our flowering plants may be named the Lychnis, which towards the close of the present month sends forth its showy blossoms. According to Pliny it was surnamed "Flammea" from its vivid colour; and some etymologists think the name Lychnis is derived from the Greek word for a lamp, either on account of the flame-colour of its petals, or because the down of the leaves was frequently used to make wicks for lamps. It has several nicknames, such as "Flower of Constantinople," "Cross of Constantinople," and "Bristol Flower." The garden Marigold, another gaudy summer flower, was apparently a very great favourite with our ancestors, although now-a-days seldom seen. Thus Shakespeare, speaking of it in his *Winter's Tale* (act. iv., sc. 3), says—

"The Marigold that goes to bed with the sun,
And with him rises, weeping—these are flowers of middle summer."

There is a popular tradition that the name Marigold arose from the circumstance of the Virgin Mary having worn this flower in her bosom. It is called by the French "*Souci du Jardin*," and by the Germans "Geldblume." In days gone by it was termed "Ruddes," and the author of the *Grete Herball*, in speaking of it says:—"Maydens make garlands of it when they go to feestes and brydeales." In America the Marigold is termed the "Death-flower," from a curious tradition that it sprang up in places where the blood of the unfortunate Mexicans had been shed, who were destroyed by the Spaniards. One of its popular names in our own country is "Goldings." The Ivy-leaved Speedwell is in many places styled the "Mother of Wheat," from a notion that it will only grow freely on soils adapted for the cultivation of Wheat. Its presence, therefore, is generally hailed with joy by farmers. In Wiltshire the larger Bindweed is called the "Lady's Nightcap."

## New Garden Plants.

ONCIDIUM PRÆTEXTUM, *n. sp.**

This fine Oncid was first introduced by Messrs. Veitch in July, 1876. Then it flowered at Mr. W. Bull's. The collector of Messrs. Veitch seems to have been very enthusiastic about it, as many a collector is apt to be about his findings. He said the flowers were most elegantly placed in a very light and feathery-looking inflorescence, and to have at the same time a heavenly smell. As to the last statement, it might be rather difficult to dispute. I can only state that it appears to surpass generally any variety of Odontoglossum crispum in its rose colours coming nearer to O. Gardneri and Forbesii, distinct from the first in the long stalk to the lip, coming near that of O. Marshallianum. The calli distinguish it from O. Forbesii. A very fine dark brown variety was sent from Lion Walk, Colchester (New Bulb Company), by Dr. Wallace, and from the grand collection of M. Massange de Louvrex, Baillonville, *près* Marche, Belgique, by M. Wilcke, *chef des cultures*. Now Mr. Sander sends me a mass of varieties which are highly curious. They include a wonderful variety, with three almost equal lips, and at the same time fully developed normal columns. This is quite contrary to our common experience, that the existence of three labella involves a castration of the male organs, and a style with a terminal stigma. *Dies diem docet. H. G. Rchb. f.*

MASDEVALLIA WAGENERIANA, *Lindl.*

This little gem is once more in Europe. It has just been introduced by Mr. Frederick Sander, of St. Alban's, Hertfordshire. No one can be so well satisfied with this fact as I am, for I have been often asked whether my new M. xanthina was not the old M. Wageneriana. Both have, indeed, yellow flowers, but there are good marks of distinction. Mr. Sander immediately saw that the two differ in their leaves. The one has small, short-stalked, very thick leaves; the xanthina has long flat ones, with long petioles, just as in M. triangularis. Then the neat M. Wageneriana has a rhomboid toothletted lip, while that of M. xanthina is hexagonal, entire, with a black knob at its apex. I am surprised that my wondering correspondents did not consult the works of their own writers. There is a woodcut in Paxton's *Flower Garden*, iii., xyl. 74, which is not remarkable for accuracy. Sir J. Hooker, in *Botanical Magazine*, t. 4921, gives a very satisfactory representation, very well explaining the curious features of the remarkable lip.

My herbarium specimens are from my late friend, Hermann Wagener, Morits Fendler, and from Arnold. Garden specimens have only reached me from Herr Consul Schiller, grown by Mr. F. F. Stange. *H. G. Rchb. f.*

* *Oncidium prætextum* (*crispa*).—Labelli auriculis angulatis angustis, isthmo lato, portione antica reniformi lobulata, carinis in ima basi pronis geminis, carina arguta ancipiti obtusa interjecta alte procurente, callo oblongo parvo utrinque antice, callis ligulatis clavatis pluribus circumjectis; columnæ alis semiovatis, tabula infrastigmatica obtusangula magna. *H. G. Rchb. f.*

## CHIONOGRAPHIS JAPONICA.

THIS is one of the most remarkable of recent introductions among herbaceous plants (see fig. 130, p. 721). It has the habit of a Phyteuma, or of Samolus Valerandi, but it is totally distinct from either, being in fact more nearly related to Helonias among the Melanthaceæ. It is a native of Japan, and was introduced to Messrs. Veitch's nursery by Mr. Maries. It has been exhibited on several occasions by Messrs. Veitch, and is likely to prove a valuable addition to the herbaceous border or for greenhouse culture, flowering as it does in early spring,

FIG. 128.—CHIONOGRAPHIS: SIDE OF FLOWER, AND POLLEN

and will be useful for cutting when sufficiently abundant. The glabrous leaves are in tufts at the bottom of a long spike with scattered leafy bracts. The flowers themselves are pure white, closely packed along a space of 4 to 5 inches, and are remarkable for the variable number of their perianth segments—three to six—and which are long and linear, as shown in the woodcut. The botanical history is summed up

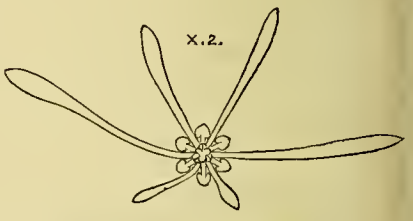


FIG. 129.—CHIONOGRAPHIS: FLOWER SEEN FROM TOP.

in the *Botanical Magazine*, t. 6510, where a coloured figure is given.

## ERIDGE.

IT would be a difficult matter to find a more charming tract of country than that of which Tunbridge Wells is, as it were, the capital, and which next week is to be the headquarters of the Bath and West of England Agricultural Society. Hills and valleys, rocks and woods, richly cultivated tracts and wild moorlands alternate with each other to produce a series of prospects, which for picturesqueness and richness of effect cannot be surpassed. Standing on any of the lofty ridges in the centre of the district, northward may be seen on the horizon the long-sweeping, somewhat barren undulations of the chalk hills forming the backbone of Kent. In the middle distance the steep escarpments of the Greensand, more irregular in outline and more thickly wooded, arrest the eye. Then comes the seeming flat plain of the Weald clay, rich in autumn with the superb clusters of the Hop, and through which the sluggish Medway cuts its devious course, winding in and out and returning on itself, as is the wont of rivers running through a soft bed. From this the ground again rises to form the elevated rocky sandy tract on which the town of Tunbridge Wells is placed. The rocks, which lend such a charm to this district, have not the bold sublimity of similar formations in more mountainous districts, but in picturesque effect—particu

Fig. 130.—CHIONOGRAPHIS JAPONICA: FLOWERS SNOW-WHITE.

larly when carpeted with a coating of rich velvety moss—they may hold their own with any. They form part of the Hastings Sand beds, and were clearly deposited very slowly in the bed of some vast lake or estuary which once covered this district. Southwards these rocky beds extend, forming a lovely country of wooded hill and dale, alternating with stiff clay, till the South Downs are reached, corresponding precisely in character with the backbone of Kent. In fact, the Kentish downs on the north, and the Sussex downs on the south, are supposed originally to have formed one continuous dome-shaped mass of chalk, the top of which has been gradually removed untold ages ago, till now the top of the dome no longer consists of chalk, for that is long since gone, nor of Gault nor of Greensand, which should follow next in order, for they are gone too; but of the Hastings Sand, of which the rocks above alluded to form such conspicuous features.

We leave geologists to settle what it was which peeled off layer after layer as a cook removes the successive coats of an onion, and left the sand and rocks of this district as we now see them. What we have said is sufficient for the purpose of explaining the general character of the scenery around Eridge, while as for the soil its sandy character and consequent dryness may be readily conceived. But although the surface soil may be dry the lower layers of the sand, where not exposed to the air, absorb and retain ample stores of moisture, of which the tree roots greedily avail themselves. Scots Pines abound in the plantations for miles around—nice clean grown "sticks," the richly coloured bark and deep green foliage of which contrast beautifully at this season with the tender green of the Beech leaves. Silver Firs rear their lofty trunks in long unbranched columns till they near the top, where they often divide into two. Mixed in with these are lofty shafts of Weymouth Pine their rounded heads bedecked with tufts and plumes of fine needles, graceful Larch draped with tufts of pale green leaves mingle with dark lofty spires of the Spruce and tower above the thick underwood. The greater part of these plantations was made about seventy years ago by the then Earl of Abergavenny. It may be a question whether earlier thinning might not have been advantageous, but be this as it may there is a wealth of fine, clean, straight-boled timber, which it is a pleasure to behold.

By such surroundings is Eridge Castle begirt. The Castle is approached from Broadwater Down by a drive, some two miles long, through fine woods, and bordered on each side by choice Conifers and Rhododendrons. It stands at an elevation of about 400 feet, and is, as its name implies, a castellated mansion, built in a style which to say the least would not be adopted by a Gothic architect of the present day; but a rich drapery of Ivy clinging close to the turrets and walls is doing its best to tone down and conceal the architectural features of the building. Our purpose, however, is not to dwell on such matters but to indicate briefly and by no means exhaustively some of the features which may interest a gardener in this noble domain. Conifers form one of the special features in the grounds. Wellingtonias, reminding one in form of the old Jacks-in-the-Green, but happily not much hurt by the winters, abound. One of these, planted in 1851, is a magnificent fellow, its ruddy fibrous-barked bole being 13 feet in girth at 1 foot from the ground. Candelabra-like Araucarias spread their gaunt arms on all sides and present a singularly un-English look. More graceful are some huge bushes—we call them so, from their form—of the Hemlock Spruce, and of the nearly allied Tsuga Albertiana, which is even more lovely; young Silver Firs, some hardly recognisable from Nordmann's Fir. Cedrus atlantica here does as well as its brother of Lebanon. Cryptomerias and Yews are also dotted here and there among the deciduous trees and shrubs. As to the Yew, Mr. Rust is of opinion that the female tree is more tender than the male. We do not remember to have heard this remarked on before, and it might be well if our readers would give their experience on this point. A new Pinetum is in course of formation on the slope on the northern side of the Castle. Apart from the interest attaching to the trees themselves additional importance is imparted to them by the circumstances under which they were planted. This Douglas Fir was planted by the Princess Louise, and this Scots Pine by the Marquis of Lorne, when they were residing at Dornden, not far distant. This Lebanon Cedar is similarly associated with the name

of the ill-fated Prince Louis Napoleon, who planted it on Dec. 6, 1878. The Marquess' political proclivities are in like manner manifested by the fact that many of the trees were planted by members of the Conservative Administration. An Abies grandis was planted in 1868 by the Prime Minister, Mr. D'Israeli, as he was at that time; and, when again Prime Minister in 1877, he presided over the implantation of an Abies nobilis, now, too soon, showing cones. Mr. Gathorne Hardy, now Lord Cranbrook, is responsible for a flourishing specimen of Picea ajanensis, the flat-leaved Japanese Spruce, which is so often miscalled P. Alcockiana, which latter has four-sided leaves. A specimen of the many-aliased Abies Parsonsiana (= Lowiana, lasiocarpa, concolor var.) owes its present position to Lord Cairns. It is to be hoped that any future Marquess of different political views will at any rate respect these trees as of historical value, and not dispossess them for the sake of substituting others to be planted by Liberal statesmen. None of the trees we have mentioned have been hurt by the winter, nor has a small plant of Abies concolor (true) suffered. All these are planted on grass richly carpeted when we saw them with Primroses and Orchids.

It must not be supposed, however, that Conifers alone are made use of to adorn the pleasure-grounds. A noble tree of Magnolia conspicua, one sheet of flower, would of itself testify to the contrary. Then there are scattered here and there young trees of Pyrus malus floribunda, exquisitely beautiful, and amply justifying its name. Two clumps of Portugal Laurel, each 240 feet in circumference, deserve also to be mentioned. Japanese Maples, with their richly coloured foliage, have escaped unscathed, but some of the more tender Rhododendrons have, as might have been anticipated, suffered a good deal during the winter. R. Nobleanum is one of those which has shown its tender constitution; but R. Broughtonianum, a derivative from a Himalayan form, with flowers of good form and colour, was in full flower at the time of our visit, and though the present bush is fifty to sixty years old, yet in beauty it can still hold its own against many more modern varieties. It is supposed to be one of the parents of several of Cripps' hybrids.

The Tulip Tree Walk is a special feature of this place. It is a sort of terrace walk on greensward, with a row of thriving Tulip trees, some seventy years old, and overlooking a glorious prospect, over the deer park, of hill and dale, of lake and wood. Here at certain seasons flower-shows are held, and a more lovely spot for the purpose could hardly be imagined. Not far from here is a circular rosery of a quarter of an acre or so in extent, nicely sheltered on the south-west side. Dwarfs are preferred to standards, and much use is also made of Roses pegged down. All these are mulched with long stable manure in autumn, which acts so well as a preservative against frost that deaths are almost unknown.

### The Houses.

Altogether there is about an acre of glass, so that a few general remarks are all that can be expected. The conservatory, close to the Castle, was built by Ormson, and has a depressed curvilinear roof, such as was so often adopted by that builder. The contents are of the usual character; fine bushes of Camellias planted out in a central bed furnish a supply of bloom from November almost till June. The old Waratah was in bloom at the time of our visit. Two beautiful Clematis were also in flower, named after members of the family, viz., Lady Caroline Nevill, mauve, and Lord Nevill, a violet-blue flower of good form. Both these were sent out by Mr. Cripps. Tacsonias and other creepers gracefully entwine themselves around loops and festoons of chains, which give a very pretty effect without unduly obstructing the light.

At some distance from this are the forcing-houses and pits. The first we shall mention is a span-roofed stove-house, 60 feet long, used for furnishing, and fitted with the usual occupants, amongst which we noticed a good plant of Dendrobium densiflorum. Aristolochia ornithocephala was here expanding its remarkable flowers, and in another corner a Bougainvillea was flowering freely. The old but most useful Passiflora racemosa (princeps) is here grown trained to four parallel horizontal strands of wire, from which the crimson flowers hang their beautiful clusters.

Of fruit-houses there are three ranges, each 120 feet in length. Of the five vineries, the first we entered was a hip-roofed structure, furnished with Alicantes, with their long Mignonette-like spikes of bloom. In the Muscat-house Pearson's Golden Queen finds a place. In the next compartment Hamburghs were just ripening a nice even crop. In the late house Mrs. Pince, planted six years, was doing finely. Extending the whole length of the reach of this range is a well ordered convenient potting-shed. In the old vinery, as it is called—a lean-to structure—the Vines are some seventy years old, and have never missed a crop. A Pine-stove is now used as a Cucumber and Melon-house, the favourite Cucumber being Telegraph, the most esteemed Melon Dr. Hogg, a green-fleshed variety of good flavour and a sure setter. In the Peach-house the trees were in splendid health and luxuriance, testifying to the nourishing properties of the liquid-manure employed. The crop was good; Stirling Castle Peach is greatly valued by Mr. Rust for forcing purposes. In the Gardenia-house the bushes are planted out, and yield flower for nine months in the year. The rich deep green foliage testified to the health of the plants. G. Fortunei, which has flowers three times the size of the ordinary varieties, is a special favourite. Should mealy-bug put in an appearance (of which there was no sign), a syringing with water in which paraffin oil is thoroughly mixed in the proportion of a wineglassful of oil to 4 gallons of water, soon suffices to destroy the intruder. In using this mixture it is essential that the oil and water be thoroughly mixed before used. This may be done by means of the syringe.

There are seven rows of pits each 120 feet by 12 feet, and of various heights—the lowest in front, the highest at the back, so that they do not shade one another, and at the same time ample space is left between each row to admit of the passage of a horse and cart. In one of these Pines growing in pots, plunged in 4 feet of tan and leaves, were coming on well. Mr. Rust has devised a system of ventilation without removing the lights, which is worthy of notice. At the base of the front wall of the pit a pipe is passed through the wall, communicating outside with the air, and inside with the evaporating trough, so that, in addition to ventilation, the evaporating troughs can be filled from the outside without opening the lights. Fifty lights were used for Potatos; Beans absorbed a great many, Williams' being the favourite; Strawberries were in profusion close to the glass, and excellent in condition and promise.

The Mushroom-house, a boarded structure, is heated with a flow and return-pipe; the Mushrooms were showing abundantly on the shelves, beneath which blanched Whitloof for salads was kept. This comes in very usefully in winter. The garden office and the rooms for the young men are convenient and well placed, bearing evidence that the welfare of the occupants is duly considered.

### Kitchen Garden, &c.

The kitchen garden, 3 acres in extent, is approached by an avenue of Pear trees trained horizontally overhead so as to form an arcade, reminding one of the *pergolas* over which the Vines are trained in Italy. Except along the walls no fruit trees are to be found here, the quarters are all open, and exclusively devoted to vegetable culture; the advantages of this will become more apparent when we come to speak of the orchard. Neatness, order and perfect cultivation seem the order of the day here. Asparagus is grown on the old system, two old beds being taken up and two new ones formed every year. The green Asparagus is preferred for flavour, and if cut before required for use it is placed in the light to secure the retention of the green colour. Some 2000 roots of white Seakale are used for forcing, and trials are made of various vegetables with a view to ascertain their relative merit. A very early and very dwarf Pea was in full bloom at the time of our visit, of which we shall probably hear more in due course. Of Cabbages, Ellam's Early Dwarf variety was clearly the earliest, and hearting-in satisfactorily.

On the fruit walls the condition of the trees is superb, and the promise of crop magnificent. Previously Peaches were grown, but the shelter of adjacent trees having been removed they died, and Pears were substituted. Before speaking of the Pears, however, it may be of interest to note that one Peach has survived where others were killed on the same wall. This variety, which has thus asserted its hardihood, is Thames Bank, which is now bearing a good crop, as we were assured it usually does. The Pears are horizontally trained, eyes being let into the wall at intervals for the purpose. The trees are very fine examples of skilled labour, symmetrical as can be, and without a scrap of waste wood. On the projecting buttresses upright cordons or columns on the Quince are grown. This year the crop, as we have said, bids fair to be very large. Among the most noteworthy kinds we noticed Jean de Witte, Knight's Monarch, Bergamotte d'Esperen, Forelle, Marie Louise, Louise Bonne, Glou Morceau, Doyenné du Comice. Figs have suffered a little, as might be expected, but not so much as to entirely endanger the hopes of a crop. On the north wall Plums, on the east Cherries, on the west Apricots, and on the south Pears are grown, as we have said: these trees are alone worth a visit to see. Among Strawberries which are allowed to remain three years Loxford Hall Seedling, a late variety, is particularly esteemed. A root-room, with double walls to exclude frost, is a useful feature of the garden. The kitchen garden offices, like the staff, are quite distinct from those of the other portions of the establishment.

Outside the kitchen garden is a small grass orchard, the area of which is about 2 acres. Rows of standard Apples alternate with dwarf bushes on the Paradise stock; the latter were much more full of bloom than the standards. A low wall running by the side of this newly-made orchard is utilised for growing oblique cordons of Grape-currants grown from cuttings as freely as Willows. A little further on we come to another orchard, arranged like a Putney market garden, with standard trees, bush fruits, and Raspberries beneath. The great advantage of removing the fruit trees from the kitchen garden is here seen; the roots of the trees are not disturbed by the cultural operations required in the kitchen garden, and the vegetables are not robbed of food or light by the trees. The standard Pear trees are early kinds, and come into use before those upon the walls. Among the varieties which answer by this mode of culture are Doyenné d'Eté, Lammas, Jargonelle, Williams' Bon Chrétien, Beurré d'Amanlis, Seckle, Pitmaston Duchess, Beurré Bosc, and Dunmore.

These notes, all imperfect as they are, will suffice at least to give some idea of the extent of this establishment, and of the first-rate manner in which it is maintained. It would be like praising a man too plainly in his presence to add our eulogies on Mr. Rust, but we may at least thank him for the courtesy he showed us, and the valuable information he afforded us on our recent visit to Eridge.

## REDLEAF.

Bold indeed must he be who would undertake, after one visit, and in the compass of a few columns, to indite a description of this most charming place, now the seat of F. C. Hills, Esq., but formerly in the possession of W. Wells, Esq., so well known alike to the artistic as to the gardening world. The beauty of its site, the infinite variety of prospect, the still greater variety of plant and tree and shrub, render this a veritable Eden for the lover of scenery and the lover of plants. It would be hard to discover what it lacks that it should have. Hills, valleys, woods, rocks, lakes—all are here, and if it were practicable to alter their disposition, it would hardly be possible to do so to advantage. The landscape gardener has had an easy task, but he has availed himself skilfully of it. Description of such a prospect would be futile; suffice it to say that Redleaf (which is about one mile from the Penshurst station of the South-Eastern Railway) occupies the crest of a hill on the Hastings Sand formation, the characteristic rocks of which jut out in places, and lend an additional charm. The ground slopes down to the valley of the Eden, here dammed up to form a lake, across which the eye travels, over a richly wooded country and a long stretch of meadows, to the Surrey Hills, and beyond them again to the chalk downs. A lovelier prospect it is hard to conceive, and it is thoroughly and characteristically English. How it is made up, and what in brief outline has been its history in past ages, is mentioned in another column under the head of Eridge, which is in the same district,

And the plants! What variety, what interest! Is it Conifers the visitor is interested in? There is a grand collection of noble specimens, but the finest deciduous and flowering trees and shrubs are equally well represented. Do Ferns compel his allegiance? Here they are, in every variety, from every country,

Is it herbaceous plants which occupy his attention? Where will you find a richer collection than here? And so with alpine plants, with Rhododendrons, with any class of hardy plant that can be named. Not one visit, but twenty, would be required to exhaust the riches of this place. We do not know how or where to begin—what sequence to follow. Without a map we cannot retrace in retrospect our own steps. How, then, would it be possible to convey any definite topographical notion to the reader? Perhaps it will be best to deal with the houses first; they are not so astonishing, perhaps, as the outdoor department, but they are very noteworthy, nevertheless.

The first we shall mention is an oblong building with a light iron roof, the glass shaded with a wash of Brunswick green and whitening. This house was at the time of our visit crowded with a profusion of flowering shrubs, yielding a perfect blaze of bloom—Azaleas, Camellias (in pots), Calceolarias, Pelargoniums, and such-like, in abundance. A fine plant of the variegated Phormium tenax was in full flower, its fine straight leaves contrasting remarkably with the feathery foliage of Palms, such as Arecas and Seaforthias. The use which is made here of Schizanthus pinnatus as a basket plant is worthy of imitation. There is a lightness and novelty about the plant so used that should ensure its being employed in similar situations elsewhere. In this house, too, was a plant of Odontoglossum Pescatorei, with a remarkably fine spike of large almost circular flowers of a lovely pink hue. Another stone conservatory, with a ridge-and-furrow roof, adjoins the mansion. It is stocked with Tree Ferns, such as Cyathea dealbata, and Dracænas, and the usual inmates of such a structure. The plants are grown in side beds, the centre being left open and paved with ornamental tiles—the climber most made use of being the pretty and effective Cobæa scandens variegata. Lofty mirrors occupy one side of the structure, and others are cunningly disposed to give illusion to the scene, which when illuminated by the electric lamp must leave fairyland behind. Crossing the terrace from this conservatory we note some of the more ornamental and bright coloured coniferous shrubs, arranged in beds so as to give colour in the dull days of winter. For this purpose Thuya aurea, Cupressus Lawsoniana lutea, Biota elegantissima, and Retinospora plumosa aurea are exceedingly well adapted. The fernery, which we now reach, is filled with greenhouse Ferns of every description. The pillars are draped with Selaginellas, and tufts of Adiantum are thrust out from unsuspected places. Hanging baskets of Nephrolepis tuberosa and davallioides, of Davallias, of Goniophlebium subauriculatum, attract notice overhead, while below is an undulating carpet of Selaginellas and Adiantums, relieved by the bold foliage of Begonia rex and its allies. From this carpet uprise Tree Ferns and others which it would be tedious to enumerate; here, too, the aid of mirrors is invoked, perhaps rather needlessly, but that is a matter of taste. Near this fernery a door in the wall affords the unsuspecting visitor a great surprise; as the eyes, fresh from the light of day, peer into the gloom, two tanks are discerned filled with the strange forms and delicate and varied colours of the Sea Anemones (Actinia). These clothe the submerged rocks and hang in the water from suspended stones like so many basket-plants from the roof of a conservatory.

The pleasure grounds consist of undulating lawns, dells, Rhododendron valleys, rock gardens, ferneries, pinetums, and the like, in bewildering profusion. It would hardly be practicable to give any connected account to the reader without a plan, so that in our remarks we must confine ourselves to a few of the main features without reference to their proper sequence. The rock gardens—for there are several— consist of ramparts of the soft stone of the district artistically arranged in bays and promontories, and forming ledges and deep pockets filled with light rich soil adapted for almost all varieties of dwarf shrubs, alpine, herbaceous, and other like plants. To enumerate a twentieth part of the choice occupants of these rock gardens would take up more space than we can command; it must suffice to mention a few, which at the time of our visit were most conspicuous. Among these were Lithospermum prostratum, with its lovely deep blue flowers; Mediterranean Heath, Primula Sieboldi (quite hardy here), the double Saxifraga granulata, the double Caltha palustris, Anemone alba, Aubrietias, Sedums, Saxifrages, glorious masses of the fragrant Daphne Cneorum, bushes of the bright Genista hispanica, together with golden Thyme, Yuccas, Japan Maples, white Brooms, Ivies of all forms and colours, creeping Junipers, &c. Linnæa borealis occupies a special post of honour over a mass of rock under the shadow of an overhanging tree.

Rhododendrons, of which there are a profusion, were hardly out at the time of our visit, and some have been slightly hurt by the winter, although not so much so as in less sheltered spots in the same neighbourhood. R. Falconeri was just coming into bloom in the open air. Among the Rhododendrons bushes of Azalea amœna (in full flower) and shrubs of Camellias are planted, which also appear to have escaped with impunity.

Among deciduous trees and shrubs the Soulange Magnolia and the Lenné variety were conspicuous, as also Pyrus Malus floribunda. Long lines of the variegated Negundo, alternating with Copper Beech and pyramidal Thuyas, form a fine effect. One of the Negundos was flowering—a rare circumstance so far as we have had the opportunity of observing. Viburnum plicatum, a noble species, was just coming into bloom.

If there is one feature more remarkable than another among the hardy plants here, it is the collection of Conifers. They exist as isolated specimens in various parts of the grounds, or associated in groups and lines, and range from newly introduced varieties of modest proportions to specimens whose height may be measured by scores of feet. We cannot pretend to note them in anything like their proper order. It may be taken for granted, moreover, that all the ordinary varieties are grown, as well as many that are less frequent. Near one of the rock gardens is a glorious mass of the creeping Juniperus (J. procumbens), forming a mass larger than many a dining-room table. Douglas, when he saw this many years ago, said that it recalled to him recollections of what had often been his couch in North-west America. Hard by are three or four huge dome-shaped masses of the Clanbrassil Fir, 10 to 11 feet through, 5 to 6 feet high, the finest plants of the kind we ever met with. Similar cushion-like masses of Picea excelsa pumila and pygmæa also occur, and close by two splendid plants of Glyptostrobus sinensis. Stately Douglas Firs abound, one in particular, overshadowing a dark tarn, is specially impressive. Wellingtonias are equally numerous. Among the true Pines ponderosa is one of the loftiest — a fine specimen reaching as much as 80 feet, while P. Benthamiana is, if possible, finer. P. excelsa, insignis, palustris, hispanica, taurica, contorta, muricata, with cones adhering for years to the trunks—uncinata, with deflexed branches running along the surface of the ground—are all remarkable. Among other specimens are stately examples of Picea Menziesii, Morinda, Abies Pinsapo, cephalonica, and Parsonsiana. Cryptomeria Lobbii looks different in growth from the ordinary C. japonica; C. elegans is bearing cones which are exactly like those of japonica —an interesting case of a plant retaining its juvenile condition of foliage, and yet bearing cones. A Deodar planted in 1847, when about 4 feet high, is now a magnificent tree. Mr. Cox remarks on the similarity in habit and appearance to the Lebanon Cedar which the Deodar assumes as it grows old. Cunninghamia sinensis, of which two or three large specimens exist, has been hurt by the frost, but not so much as might have been anticipated. A Taxodium sempervirens, struck from a cutting in 1848 by Mr. Cox, is now a lofty tree, with a stem between 3 and 4 feet through, which is only one out of many which have become giants under his care from very small beginnings. Thuyas, Libocedrus, Cupressus, Thuyopsis, are all represented here by numerous specimens of all sizes and ages.

One of the most effective features in a few years will be a newly planted, long, straight avenue, consisting of a central path bordered on each side, first by spring flowers—Myosotis dissitiflora, Pansies, &c., succeeded by dwarf Roses, and these again by standards, while the outer row consists of Thuyas, Deodars, Douglas Firs, Silver Firs, and the like, in alternate arrangement.

To the hardy ferneries we can only allude in passing; there are several of them, richly stocked—some on rock banks, others in shady dells, others surrounding pools. To enumerate their contents would be to write a long catalogue of hardy Ferns.

Among the hardy aquatic plants in the various pools special mention should be made of the Aponogeton, which here assumes a size and a beauty of flower such as we never saw elsewhere, even under glass. The leaves measured in some cases 15 inches in length, and many flowers were 4 inches and upwards in length.

After the glories of the outdoor department, the details of the forcing-houses and kitchen garden may seem tame, but every gardener conversant with Mr. Cox's well-earned reputation will judge that these departments, though they naturally present more usual and less striking features than the others, yet are by no means devoid of interest.

The fruit trees promise a good crop; among Apples Frogmore Prolific and Cox's Pomona both promise very well, and the former is one of the varieties that may always be depended on. Strawberries are allowed to remain for three years, but when they are duly surface-dressed and not dug about they may be continued for years on the same spot. Among others grown the old Bath Scarlet, used only for preserving purposes, is remarkably distinct, though now not often met with.

It will be seen that the ancient reputation of Redleaf, which in Mr. Wells' time was such as to cause it to rank in the very front rank of English gardens, has far from degenerated as time has gone on, but on the contrary has established itself on a firmer and wider basis than ever, and constitutes a striking testimony to the great interest taken by the present proprietor, and the spirited manner in which he has carried out so many improvements, which is evidenced by the fact that since his accession upwards of 14,000 valuable trees and shrubs have been planted.

## HENGRAVE HALL.

This is the seat of Lady Rokewode Gage, and is about four miles north from the town of Bury St. Edmund's, and lies to the left of the Mildenhall road. The principal entrance or approach to the mansion is in the little village of Hengrave, by handsome iron gates with a neat lodge or gate-house attached. From this a well-formed drive, or coach road, sweeps gracefully to the front of the fine old mansion, passing on the left close to a lake, or piece of ornamental water, which with its islands is possibly some two acres in extent, and appears to be well stocked by various species of ornamental water-fowls. The manor of Hengrave, Hemegrave, or Hemegreth, as it was anciently written, is of great antiquity, and is in many respects historically interesting. At a period so early as that of the Conqueror's Survey a manor appears to have existed here, together with a church and 30 acres of free land, and the tithe-barn is said to have stood until the middle of the last century. At an early period the manor—like many others in the neighbourhood—appears to have been held by the monks of St. Edmund, but in the early part of the reign of King John it seems to have been in the possession of a family named De Hemegrave, and afterwards in that of another named Hethe, both of which have long been extinct, and the manor by some means came to be possessed by the Dukes of Buckingham: upon the attainder of one of them, about the year 1483, it was granted to Henry Lord Grey, but was again restored to the Buckingham family, from which it was purchased by Sir Thomas Kytson, in 1521.

In the year 1643 the Lady Rivers, on whom, as a descendant of the Kytson family, the possession of the estate of Hengrave had devolved, settled her Suffolk property, including Hengrave, upon her daughter Penelope; and as may be supposed, so rich and so fair a lady as she is proved by her portrait in the picture-gallery to have been, was not long without suitors, and her hand was sought by no less than three, viz., Sir George Trenchard, Sir John Gage, and Sir William Hervey; so that the young lady, apprehensive that the peace might, under the circumstances, be broken, threatened with her perpetual displeasure the first aggressor; and as a singular verification of the adage which says that "the truth is often spoken in jest," she is said to have humorously told them that if they would wait she would have them all in their turn—a promise which she actually performed, marrying first Sir George Trenchard, secondly Sir John Gage, and lastly Sir William Hervey, while her descendants by Sir John Gage have ever since possessed the estate of Hengrave, the present owner being Lady Rokewode Gage, widow of the late greatly regretted Sir Edward R. Gage, the ninth and last baronet of the Gage family. The present mansion was built by Sir Thomas Kytson

during the early part of the sixteenth century—a period in the history of the domestic architecture of this country when a feeling of increased security, together with an improvement in public taste, appears to have begun to replace the moat with its cumbrous drawbridge, and the portcullis, &c., by the park, with its avenue of trees, the parterre with its quaintly clipped trees, and shrubs, and the herb garden with its spring and summer flowers, &c.

The present structure is supposed to occupy the site of the ancient hall of the De Hemegraves, which had been surrounded by a moat, &c. (vestiges of which are still to be seen), and it may now be described as a large embattled manor house of very great beauty, with handsome gate-house, surmounted by armorial bearings and singularly designed turrets, &c. It appears to have undergone little if any important external alterations, and is justly considered to be an excellent example of the domestic architecture of the period of its erection. The only drawback (if such it can be considered) is its somewhat flat situation. The following item, extracted from the account of household expenses for the year 1757, suggests that the grounds surrounding it were originally laid out in the true Dutch style. It runs as follows :—"In rewarde to ye Duchman gardner for clypping ye knotts, altering ye alleys, setting ye grounde, finding herbs, and bordering ye same, xls." The interior of the mansion is in all respects richly and elegantly furnished, containing a fine library, and a large collection of portraits, representing various members of the Kytson and Gage families and others with which they were connected ; while the painted glass windows of the unique old chapel represent various scriptural subjects. The interior of the mansion is also greatly enriched by the works of the present Lady R. Gage, who is an artist of no mean order, and her stone as well as wood carvings are much and deservedly admired. The pretty little Ivy-clad church, which with its round tower is of remote antiquity, stands east from the mansion, and at only a short distance from it, is exceedingly rich in beautiful monuments of great variety, many of them being very old ; and since its consolidation with the church of Flempton, in the year 1589, that of Hengrave has only been used as a place of interment for the family.

The flower garden lies on the west side of the mansion, and occupies some two or more acres, and is partially enclosed by a Yew hedge. It is tastefully laid out in the usual geometrical style ; having been designed by the late Mr. Nesfield. It includes also a very neat and well-formed bowling-green, on the north side of which is a life-sized stone statue of the present Lady R. Gage, surrounded by some of her favourite dogs. This statue is by her ladyship's own hand, and is considered to be a work of very great merit.

Portions of the walls of the mansion which abut upon the flower garden are partially clothed with climbing plants of great beauty, which have a very pretty effect, such as Magnolia grandiflora, M. exoniensis, Wistarias, Virginian Creeper, &c.

The kitchen garden is large, and lies north-east from the mansion, and is only a short distance from it ; while the glass structures occupy a position to the west of the garden, and only separated from it by the garden wall ; while the stables and other offices occupy a position to the west of this, and are effectually screened from view.

A walk from the north side of the mansion leads direct to the greenhouse, and this walk, which crosses a portion of the site of the ancient moat, is shaded by a profusion of climbing Roses, which are neatly trained to wire arches. The greenhouse is a somewhat small polygonal structure, containing, however, a good collection of well-grown healthy plants, such as Cinerarias, Primulas, Cyclamens, Pelargoniums, &c., together with fine Orange trees and Camellias, while the back wall of the house is entirely covered by a fine example of the Maréchal Niel Rose, which annually furnishes an abundance of blooms. A small plant-stove also contains some fine thriving young plants of such species as the Stephanotis floribunda, Bougainvillea glabra, Allamandas, &c., together with two vineries, each 45 feet by 14 feet. The Vines have only been somewhat recently planted, but have made rapid progress, and give great promise of ultimate success. One is intended for early forcing, and the other is planted with the late varieties.

In addition to the structures already mentioned there is an excellent span-roofed Melon-house and a Cucumber-house of similar dimensions, one side of which was occupied by pot Vines swelling off an excellent crop of fruit at the period of our visit, viz., during the last week of March. All the structures are effectually heated by hot-water pipes.

The kitchen garden is some 3 acres in extent, and in form nearly square. It is surrounded by substantial brick walls about 12 feet high, somewhat worn, it is true, but still in fair condition. A portion of the walls is wired, but even where this has not been done the use of shreds has been entirely dispensed with, and the shoots are merely tied with bast or soft string to nails fixed in the walls. This is much neater, and in all respects better than using shreds,

Fig. 131.—Ranunculus Lyallii : flowers porcelain-white.

The south wall is entirely devoted to the Peach and the Nectarine, while the west aspect is furnished with Apricots and a few fine old Pear trees, and the east and the north aspects are planted with Plums and Cherries. Most of the trees are young, and appear to be in a healthy and fruitful condition; and it was satisfactory to see that the gardener (Mr. Tuck) was adopting the sensible plan of protecting the bloom of the Apricot and the Peach by nice fresh branches of the Spruce Fir. And, after all, it is very doubtful if any better method of protection than this can be applied.

The garden still contains a few large and very old Apple trees. The presence of such trees is generally considered undesirable in the vegetable garden, but in this instance, we believe, they are old favourites or very useful varieties. It also contains some dwarf or pyramidal Pear trees, which generally bear well. The borders by the sides of the principal walks are planted with hardy herbaceous plants, spring bulbs and Roses, &c., and all the walks are margined with a neat edging tile, which is much to be preferred in the vegetable garden to Box, or, indeed, to any other live edging.

The original soil of the garden is of excellent quality, and generally produces good crops of all kinds of culinary vegetables, but it lies rather low, and the crops consequently suffer during very severe winters. Mr. Tuck, with the view of protecting his Broccoli crop, adopts a plan which generally proves successful, although it failed to be so last winter, which is not to be wondered at when its exceptionally severe character is remembered. It is well known that the practice of laying down Broccoli plants early in the winter (or, say, end of October), and well covering their stems with soil, not unfrequently saves the crop. It has, however, one drawback, inasmuch as the check necessarily given to the plants by this operation results in the production (in some soils, at least) of small heads. To obviate as far as is possible this result Mr. Tuck sows his Peas in lines 6 feet apart, and plants lines of Broccoli between. The shade thrown by the Peas has the effect of causing the plants to become somewhat leggy, and when the Peas are cleared away the Broccoli plants are earthed up in all respects the same as Celery. By following this system the plants receive no check, their stems are protected, and the result is generally fine large heads, while the trenches thus thrown out are utilised for the Celery crops. The gardens of Hengrave have decidedly the credit of being the first in England to ripen the fruit of the celebrated Green Gage Plum. It is supposed to have been brought from the Continent and planted in the gardens here by a member of the Gage family, from whom it appears to have derived its name. From the rear of the gardens extending due north to the extremity of the park is a narrow walk, between two lines of very aged Lime trees, which have a very remarkable appearance. The walk is known as the Bath House Walk, and in former times led to a house used as such, but it has long disappeared, and the spot which it occupied is enclosed by a high Yew hedge, while the well or reservoir which supplied the water may still be seen. And from this spot walks extend in all directions throughout the extensive coverts which surround the park.

The park contains some 300 acres of excellent land; the west and south-west portions of it present fine rich undulating surfaces, embellished with numerous specimens of remarkably fine park trees of various kinds. The mansion faces the south, and has a broad expanse of fine clean gravel in front. From this the drive to the left leads to the chief entrance in the village of Hengrave, while that to the right passes through the south-western portion of the park to another entrance gate, near to what is known as the Hyde Wood.

A well concealed ha-ha, or sunk fence, separates the park and the lawn, at a distance of a hundred yards or more from the front of the mansion; and from this part an avenue of fine old trees extends to the southern extremity of the park. This avenue is 60 yards wide, and appears to have been originally composed of the Oak and the Elm, with occasionally an Ash of gigantic dimensions. These trees have all the indication of great age, and as the southern portion of the park is in the parish of Farnham, they may have witnessed the defeat of the Earl of Leicester with his army of Flemings, at the battle of Farnham, which was fought in the year 1173. Various blanks appear to have occurred in this fine old avenue, and these appear to have been filled up at comparatively recent periods by trees of various species, some of which are Cedars of Lebanon, which are all thriving remarkably well, many of them forming already handsome specimens of their kinds, and they tend to give an amount of variety which is by no means unpleasant. Taken altogether the avenue, as viewed from the front of the mansion, has a very fine effect, but this is considerably diminished by a belt of trees, which has been very injudiciously planted across its extreme end, thus precluding further extent of view, and indicating in that direction the precise extent of the park, while in all other respects an idea of illimitability is well sustained; this blemish, however, could be very easily remedied, and will no doubt in due time have the attention it requires. In addition to the many aged and interesting trees contained in the park, there are also various groups of very old Whitethorn trees, which have when in bloom a remarkably pretty appearance together with various groups of evergreen trees, such as Cedrus Libani, Cedrus Deodara, Pinus austriaca and P. insignis, Abies Douglasii, Picea Pinsapo and Nordmanniana, &c. These groups are very tastefully arranged, and although Coniferæ and other evergreen trees are sometimes considered as out of place in park scenery, they, nevertheless, in this instance, produce so excellent an effect that their presence can hardly be objected to. To the west of the mansion, and at a distance from it of a few hundred yards, an exact circle, some 40 yards in diameter, is formed by very large and apparently old Oak and Elm trees. But for what purpose these trees were planted in this particular form there does not now appear to be any record to show. *P. Grieve, Orchard Street, Bury St. Edmund's.*

Fig. 132.—Acer argutum; leaf and seed-vessels.

## RANUNCULUS LYALLII.*

This is the magnificent New Zealand Buttercup with peltate leathery glabrous leaves, a foot and more across, and with erect many-flowered panicles of large, white, cup-shaped flowers, each 4 inches across. The plant is a native of moist places in the southern island of New Zealand, where it is known by the settlers as the Rookwood Lily. It is, or was, in cultivation at Kew, and the specimen from which our figure (fig. 131) was taken—which, however, by no means does justice to the plant—was exhibited by Messrs. Veitch at one of the meetings of the Royal Horticultural Society last year. We believe, however, that the plant is difficult to keep alive in this country, but it is of such striking beauty that English gardeners should not rest till they have succeeded in establishing it. It is probable that a let-alone treatment would answer better than too much coddling.

## THE KEW ARBORETUM.

### The Maples.—XII.

Acer purpurascens, Franchet et Savatier, *Enumeratio Plantarum Japonicarum*, vol. ii., p. 320 (No. 2573); Maximowicz, *Mélanges Biologiques*, tome x., p. 593.—Niphon.

This species, according to its authors, is in a barren state scarcely distinguishable from A. diabolicum. It is, however, clearly characterised in a flowering or fruiting condition. The flowers of this are large, deep purplish-red, and the cells of the seed-vessels are broader than long, whereas in A. diabolicum the equally large flowers are yellow, and the cells of the samaræ are longer than broad.

Acer argutum, Maximowicz, *Mélanges Biologiques*, tome vi., p. 368; tome x., p. 594.—Subalpine woods in the provinces of Senano and Nambu, Niphon.

An elegant species, quite new to cultivation, recently introduced from Japan by Messrs. Veitch & Sons, from whose material—collected by Mr. C.

* Ranunculus Lyallii, Hook. f., *Handbook of the New Zealand Flora* (1867), p. 4.

Maries—the accompanying illustration (fig. 132) has been made. There seems no reason to doubt the hardiness of this remarkably handsome Maple; probably before long it will become a general favourite. The figure here given is the only one which has yet appeared.

Acer barbinerve, Maximowicz, *Mélanges Biologiques*, tome vi., p. 369; tome x., p. 593.—Woods of South-Eastern Mandschuria.

In general appearance this resembles closely the preceding species. It forms a shrub about 10 feet high, the main stems having a smooth fuscous bark, whilst that of the young shoots is red. The racemes are fewer flowered than in A. argutum, and the samaræ have larger cells and more strongly-veined wings than obtain in that species. Not yet introduced to cultivation. *Geo. Nicholson, Kew.*

## Orchid Notes.

Work in the Houses.—The period of growth with many plants in each of the divisions will now have fairly commenced, and attention must be directed to this essential part of their life. Doubtless the months of May and June are the most charming in regard to the number, variety, and richness of the blooms, but it is also to many the time for making a fresh start in the formation and building up of new bulbs and leaves. Many that are now flowering on growths made last summer and autumn, such as the greater part of the Dendrobes, some of the Lælias, Cattleyas, &c., may be placed in a cooler division to that in which they have been growing, and remain there for a week or more without any serious injury happening to them. Plants that are now flowering on growths which are not complete because only started in spring should remain where they are, or else in the desire to lengthen the flowering period the growths may be checked, and smaller sized bulbs will be the result. The first consideration in regard to the growing of the plants is the state and quantity of the roots, and as regards those in pots, baskets, or shallow pans, the state of the compost. Whether this be of moss or peat, or both combined, it is of the utmost importance that it be clean, porous, and sweet, and the drainage at the same time free and open. Water in large quantities may be given to almost everything during the time of active growth, if only these conditions are assured. Less water must be given to any plants that are in a mixture of peat and moss which quickly becomes sour. As soon as it can be done either pick away all the sour parts, and surface with soil of an open fibrous nature, or shake the plant out altogether, and pot it afresh. The season, as yet, is not far advanced, and anything thus requiring shaking out may be so served, and before the season is past it will show by its healthy roots and vigorous starting that this is by far the wiser course. It happens sometimes that the peat is not so good as at first sight it appears to be; let it, therefore, always be sufficiently dry for the greater part of the fine dusty soil to fall out when it is picked for using. The nobile section of the Dendrobiums, and others of a similar growth and habit, that flowered early in the spring, will have started and will now be growing freely. D. nobile in its many forms, with D. Ainsworthii splendidissimum ×, and other seedlings of a similar character, will always be freely and largely grown; and all may be grown in baskets. When well established they will require an abundance of water whilst the bulbs are in progress of formation. In baskets the growths probably are somewhat shorter, but the joints are closer and the bulbs stouter; generally, too, the blooms are produced more freely than when grown in pots on the stages. I am speaking more particularly of easily managed plants, of small or medium size, that can be hastened into flower or retarded with ease. I know that where the house is suitable, large plants will grow well, and flower freely on the stages where they have the first consideration; but my remarks are not intended for these. Dendrobes grown in baskets are liable to be attacked with red-spider, which soon disfigures and weakens them. Look them all carefully over, and if any of this pest be present, first sponge every leaf, and then dip them in a solution of soft-soap, tobacco-water, and a few drops of turpentine, mixed together with hot water, but only using it when it is nearly cold. Yellow-fly is also apt to get upon the points of the new growths; this also may be got rid of by sponging and dipping; if, however, they can be carefully fumigated the fly will be destroyed the more effectually. The true D. nobile pendulum, now seldom seen, is a fine variety, the centre of the labellum being unusually dark, and the sepals and petals somewhat more wavy than in the old type. D. nobile intermedium is almost the opposite of this; the growths are naturally erect, and of a dark green colour; the flowers are of medium size, the sepals and petals pure white, or, if grown in strong light, with just a faint tinge of rosy-purple upon the tips; the lip is white, with a nice spot of purple in the centre. Let very little fire-heat be now used in all the divisions; none whatever will be required in the Odontoglossum-house. Ventilate freely, and whenever favourable leave some of the lower ventilators open all night in all the houses. See that the ends of houses, or places where the blinds do not cover, are smeared over with whitewash, or "Summer Cloud," or the sun may quickly scald and permanently disfigure many of the plants. *W. Swan, Fallowfield.*

Oncidium macranthum.

This fine Orchid does best in the cool-house and with very similar treatment to that of the other cool-house Odontoglossums. It also succeeds well fixed on a large block of wood. The finest and healthiest plant I ever saw was grown by Mr. John Ward, when he was gardener to the late J. G. Wilkins, Esq., of Leyton. He tied the plant just as it was imported on to a very large block of wood, and hung it up in the cool-house near the glass. This plant produced several very fine spikes each season. Mr. Bull told me that he had tried the "Summer Cloud" to shade his glasshouses; but wisely, I think, abandoned this for blinds to run up and down on rollers. Fixed shading of any kind is very objectionable, as the plants ought not to be shaded constantly, however thin the shading may be. Orchids are very expensive plants, and it is scarcely wise to injure their constitution by over-shading. The blinds should only be let down when the sun is shining on the plants; in dull weather they should be removed, also as early as possible in the afternoon. *J. Douglas.*

Vanda Parishii Marriottiana.

This rare plant has lately appeared a second and a third time. In April Mr. J. H. Ross, Castagnola, Lastra a Signa, kindly sent me a fine flower, and a finished drawing by Mrs. Ross. I learned that the brown tops of the sepals are really genuine, and not in consequence of any chemical change by fermentation. Now (at the end of May) Mr. W. Bull sends a fine flower, coming from Mr. F. Yates, Higher Feniscowles, Blackburn. Each specimen had a few individual differences. There are, however, nowadays so many individuals of Orchids that if we wish to overlook them, as the Arabs look over their horses, we should want some hundreds of *employés*—twenty for Odontoglossum crispum, at least. *H. G. Rchb. f.*

Cattleya exoniensis ×.

In 1874 Mr. Armar Corry, of Maer Hall, Staffordshire, bought a plant of this fine hybrid at Stevens' Rooms for 18*s.*, and has recently sold it to Sir Trevor Lawrence for £50. We hear that it is a fine specimen with seven breaks.

## Florists' Flowers.

Grafted Ivy-leaf Pelargoniums.—Two years since, having a number of tall useless seedling Zonal Pelargoniums, I thought I would try the experiment of grafting upon them some Ivy-leaved varieties. I reasoned thus:—The natural habit of these plants is creeping, or pendent, and not to grow erect; therefore the present plan of growing them into pyramids is at once unnatural and ill calculated to show off the beauties of the plant to the best advantage. I thought that if I could work these on to tall stems, and induce them to droop from the apex to the pot, that I should thus ensure the *beau-ideal* of a naturally growing Ivy-leaf Pelargonium. I worked some fourteen kinds, all good ones, but, not doing so till late in the autumn, my success did not at all equal my expectations. But then whose success in ventures ever does? Out of the fourteen several united, but only two finally took and have produced good heads. These are Alice Lee and St. George, both robust woody kinds, whilst most of the others had that wiry habit so common in the old Ivy-leaf; and to that habit, and its want of affinity with the big soft wood of the Zonals, do I attribute my chief want of success. Probably grafting or budding in the spring or early summer would lead to better results, but it is no doubt a fact that the more robust of the Ivy-leaf will most readily unite to the Zonal stocks. One anticipated result has not followed with the two kinds I have been successful wit h So far from the growth drooping gracefully down naturally, it will persist in ascending, and sets all my notions of what ought to be at defiance. No doubt when it becomes so much developed that weight will have due effect it will come down. At present the heads are dense, full of young growth, and exhibiting flower-buds in great abundance, and I am hopeful that ere the summer is past the trouble taken will not have been in vain. *A. D.*

Double Show Auriculas.

Double varieties of the alpine Auriculas are well known, and the tendency of the show varieties is also in the direction of producing double flowers. I have enclosed a sample of several varieties from a batch of seedlings raised from the finest edged flowers. I have looked in vain amongst hundreds of rejected seedings for something that could be called beautiful, and at the same time a distinct break away from the usual stereotyped form: I must look to those who say there are such flowers to point them out. As a first attempt those enclosed are distinctly double, but I cannot say I like them, and they must go to the rubbish heap. *J. Douglas, Loxford.*

[The flowers sent are structurally very interesting. Within the ordinary corolla and the stamens borne on it is a series of petal-like tubes or trumpets, in other cases flat petals showing the colour of the original corolla. The styles are almost wanting, so that the stigmas are sessile. As our correspondent says, they are not much to look at now, but we regret his determination to throw them on to the rubbish heap, for in some of them there are the indications of a very beautiful type, consisting of an outer series of petals, each of the form of a Gothic or ogee arch, and an inner series, smaller, of the same form, exactly alternating with the outer ones. Supposing this form perfected, its roughness eliminated, we should have a very distinct break, and one which would form a welcome variety to the too common concentric circles. Eds.]

The Ranunculus.

The beds of these beautiful flowers are now in full beauty, and a very pretty sight it is to see the neat and symmetrically formed double flowers nodding in the breeze. These and the Pansies are at present the principal feature in the florists' gardens. The old florists used to be very particular about shading their flowers, using mats "1 or 2 feet from the surface of the ground." Then watering had to be performed in a particular way—"the leaves were not to be wetted;" and I was told, only a few weeks ago, that they never did well unless a heavy shower of rain fell as the leaves appeared through the ground. Failing this, they were to have a good drenching of water. Then the soil had to be trenched so deep; so much manure at the bottom, none at the top, and poor soil quite on the surface. The fact is, that ordinary well-worked soil, light or medium, suits it admirably. Indeed it matters little what the soil is. If the fine sandy peat left over after repotting Orchids is used to plant the tubers in, they will grow freely, and flower well. We water the plants overhead, if the weather is dry, up to the time the flowers open. Like the Auricula, some of the fine double varieties of fifty years ago have been handed down to us, and we admire them all the more because of the thoughts they suggest of the gardens of the florists so long ago. Why should not the Persian Ranunculus be still further improved? We have some of the material to work upon that the Rev. Joseph Tyso had in 1831; and he tells us, through the pages of the *Horticultural Register*, how to manipulate the flowers in order to obtain seeds. He says:—"Obtain some of the best show flowers in each class which produce a pericarpium, or seed-vessel, either dark, white, scarlet, crimson, yellow, striped, &c., and a number of the best semi-double of each corresponding class producing anthers as well as pericarps. Thus, if a new flower is desired, fertilise Naxara, Variat, Quixos, or any good dark flower, with the pollen of a semi-double of the same colour. . . . Those that have the greatest number of petals are to be preferred, so that they have anthers producing farina."

This beautiful little flower is well worth more general cultivation. I am sure they are cheap enough; the best named Scotch varieties can be obtained from any seedsman at 10*s.* a hundred, and

the stronger growing French form at the same price. Those who wish to save seeds could do so by using the pollen from the French varieties on the more double old-fashioned strain. The seeds may be sown n the autumn, and the plants very soon produce flowers. *J. Douglas, Loxford.*

# Garden Operations.

## *HARDY FRUIT GARDEN.*

All disbudding on Peach walls ought now to be completed, and the work of thinning the fruits be in an almost equally advanced state. Where the set is regular over the trees and the crop heavy, remove in the final thinning all fruits of second size, and those that are placed so near to the nails as to require the drawing of the latter when the fruits swell. It is not advisable to leave additional fruits to provide for loss during the stoning process, for every fruit left beyond the perfecting powers of the trees only induces the result it is retained to obviate. Strong and leading shoots will now require to be kept nailed-in, tying-in closely with matting the heels of any shoots that do not start well in the required direction. Continue to use only tepid water on Peaches until the water in tanks and pools becomes warmed by the hotter weather we are now enjoying, and on the slightest reappearance of green-fly use soft-soap or some one of the advertised insecticides. As the fruits begin to swell it will be necessary to see that the roots are well supplied with water should the rainfall be deficient; if this be neglected the commendable practice of shallow planting and occasional lifting fails through inattention to an essential requirement. Apricots thinned last month are growing rapidly, and the remarks just made relative to watering Peach trees apply with equal force to those, and, indeed, to all fruit trees on walls the aspect of which is southern, or partly so. Examine the shoots frequently for the maggot that is so troublesome on Apricot foliage, and keep them in check by pinching and removal. Where there is the convenience of hydrants in gardens, and the water can be applied at high pressure from the hose, there is little difficulty in keeping trees clean after this time; but early in the season such water is much too cold for the tender foliage. The breast-wood on Plums and Cherries is now growing rapidly, and will require prompt attention. Pinch-in closely all strong shoots, and retain unpinched those short ones that promise to form natural spurs. See that the black aphis is not allowed to establish itself on Cherry trees, by using an insecticide immediately upon its appearance; this will most likely have to be repeated for subsequent visitations of this persistent insect. Vines on walls will now be showing their bunches, and can be pinched-in to a couple of leaves beyond and be tied-in. If any shoots have been left at the previous disbudding that are not required, let them be removed at once; and see that shoots from the base of each Vine are preserved, to be run up as young canes to replace any that may require removal in the autumn; indeed, some varieties bear but shyly from spurs in the open air, and it is necessary to replace the old canes by new ones. Let these new canes be trained-in not nearer than 3 feet from the main stem, and see that the Vines have that attention paid to their requirements which is found indispensable under glass to that thorough ripening of the canes which is more difficult to achieve outside. Continue to keep a sharp look-out for Gooseberry grubs, and destroy them in the young state before they injure the bushes. The green fruit, which is now in constant demand for tarts, should be gathered from such varieties as are unsuitable for bottling and for dessert when ripe. I find the large Lancashire berries come in most usefully for the earliest supply by reason of their size; while they are totally unsuited for the bottling fruit that will require to be gathered at an early date. For the latter purpose Warrington generally meets with most approval, and is a variety that may be usefully grown in double the quantity of any other sort, as it is also one of the best late-keeping dessert berries. Attention to the removal of suckers from fruit trees, the hoeing of fruit quarters, and the general tidiness, will now be requisite in this department. Also give additional mulchings where needed. *R. Crossling, St. Fagan's Castle, Cardiff.*

## *PLANT HOUSES.*

Stoves.—Several kinds of flowering plants, which greatly aid in beautifying the stove, and also the intermediate-house during the summer months, will now be rapidly advancing into flower, and such as Allamandas, Bougainvilleas, Dipladenias, and Vincas will, when showing flower, be greatly benefited by occasional doses of guano-water, or liquid-manure from the farmyard. If these stimulants are applied previous to the plants "knotting" for bloom, a too-luxuriant growth will be the result, ending oftentimes in disappointment. With such plants as Ixoras and Rondeletias, the cultivator ought to be more cautious in the application of stimulants; as though requiring an abundance of water, when advancing towards the flowering state, these harder wooded plants will not thrive so well if too liberally treated in this respect. Among stove bulbous plants, Achimenes and Tydæas should also be encouraged with occasional doses of weak liquid-manure. Eucharis amazonica will also be benefited when advancing into bloom if treated with liberal doses. If it is required to retard these latter plants after they have pushed up their flower-spikes, they may with safety be removed to a cool greenhouse at this season of the year. I have in fact placed them in the open air during the summer, where they have opened their flowers, though these have been somewhat smaller than usual. Pancratium fragrans can be kept back in like manner. Any young growing stuff among stove plants should be potted on before becoming pot-bound; through pressure of work from other quarters this work at this, the busiest season of the year, has oftentimes to be deferred, to the future injury of the plants if they are intended for specimens. Now we are having more genial weather and a larger amount of sunshine, the night or minimum temperature of the stove will at times exceed 70°; when this happens a "chink" of top air will be beneficial. I am no advocate for dispensing with fire-heat altogether, except in the very hottest weather; a little heat in the pipes and a little air on the house being far better. Where a large amount of Adiantum cuneatum is required for cutting, some of the stock may be removed to a cooler and more airy house; the growth made therein will stand longer after being cut if thus treated.

Greenhouse.—If a few healthy plants of Heliotrope are selected now (from those grown for bedding purposes) and are potted on and kept pinched back for a while they will make most acceptable plants either for the drawing-room or conservatory during the latter end of the summer. Browallias also make most useful late flowering plants, and in order to keep them dwarf they should also be kept pinched for some time. Where not already sown, it is not too late to sow this useful annual for the latest work. A pinch of Ten-week Stock seed, if sown now will also give plants that will render good service in the autumn. The winter blooming kinds of Ericas and Epacris may now be safely placed out-of-doors, shading them from the direct rays of the sun for a few days. A bed of coal-ashes is about the best thing on which to stand them. The earliest flowering varieties of Azalea indica will, if they have completed their growth, be better for being got out and gradually inured to the beneficial effects of the sun in hardening the same, and in plumping up as early as possible the flower-buds for another season's bloom. If any signs are seen of the presence of thrips, the plants ought to be well fumigated twice or thrice before removal. The older plants of Fuchsia may be stood out also (if short of room), taking them under cover again when opening their blooms. Where climbing Roses are trained to the roof, or grown in a house specially for them, they will now be most liable to attacks of mildew, which should be checked immediately. This is done either by syringing the plants with water strongly incorporated with sulphur, or by dusting the foliage with the same preventative. The stock of winter-flowering Chrysanthemums should now be shifted into their blooming pots, before they receive any check. If any fly is detected on the points of the growth, stop the spread of the same either by dipping in soft-soap or tobacco-water; dusting with tobacco powder would also answer as well.

Conservatory.—Where large plants of Camellias are grown in pots they are oftentimes removed out-of-doors, when they have completed their growth and the foliage is sufficiently matured to withstand the wind, &c. Where this course is practised great care must be paid to the watering. See that they do not become too dry at the root; more failures may be attributed to this oversight than to any other cause when these plants are placed outside. Such plants as the hardier kinds of Palms and Dracænas will make an agreeable change during the summer. The small-growing grasses, as Cyperus alternifolius and laxus and Eulalia japonica, will also be most useful for mixing with flowering plants. *James Hudson, Gunnersbury House Gardens, Acton, W.*

## *FRUIT HOUSES.*

Pines.—During the summer months it is a good plan to put a number of recently potted plants into large dung frames, where they will lay the foundation of a thoroughly robust constitution. Other conveniences are by this means obtained, and a larger number of plants can be fruited without the aid of additional permanent houses. For the next month or two nearly all the available space will be taken up by fruiting plants in various stages of development, and when the room so occupied becomes vacant the auxiliary plants from the dung frames are available. Another plea for this reserve is that during very hot weather the plants so grown take less water, and the growth is all that can be desired. Take suckers from plants from which the fruit has been cut, and subject the old stools to the treatment previously recommended. Smooth Cayennes and Charlotte Rothschilds are at all times worth looking after, as they never get too plentiful. A small batch of these kinds may be put into fruiting pots, to succeed the early potted lots. Watering must not be neglected for other operations, and must be applied at the right moment. No plants require more careful watering to do them justice, not even a Vanda or a Saccolabium. Liquid-manure should be given at every alternate watering, or on every occasion if not given in too strong doses. The present is a good time to start Charlotte Rothschilds. This variety swells its pips better and makes finer fruit in the autumn than in the early summer. The last lot of Queens should be started into fruit in June or July, for as a rule they do not swell well after November. Succession plants should not be allowed to become overcrowded before giving them their last shift. Any rooted suckers in 5 or 6-inch pots should have a shift into 7 and 8 inch pots; these will form a batch for fruiting in August and September. Keep the atmosphere moist by constant damping and syringing, but this must at all times be done with judgment, and the soil should never be allowed to become sour or soddened. Reduce the use of fire-heat to a minimum by careful early closing. *D. Wilson, Castle Hill, Devon.*

### Vines.

Early vineries in which ripe Grapes are hanging should have an abundant supply of air on bright days, and the borders sufficient water to keep the berries plump and the foliage healthy. Succession-houses in which Grapes are colouring must have a good supply of warm air back and front, leaving a little on all night. Keep a little heat in the pipes all day, and on bright days damp the house down early, and again at mid-day slightly, so that it will dry up while the sun has full power. Succession-houses will not now require very much fire-heat, but it is always better to have a little and close early in the afternoon, allowing the temperature to rise to 90° or 95° after closing with sun-heat, thoroughly damping paths, borders, and walls with tepid water. Foster's Seedling, Madresfield Court, or Chasselas Musqué, which are sometimes liable to crack when on the point of changing colour, do better with the laterals allowed to ramble to take away the extra sap, and a thorough soaking of tepid manure-water a few days before they change will carry them until they are ripe, for if watered when commencing to change colour they are sure to crack more or less. Keep Muscats at a night temperature of 70°, raising it early in the day to 80°, gradually increasing the back air as the temperature rises; they will not at present require any front air except in early houses where the fruit is changing colour, which can have a somewhat drier atmosphere and a brisk heat to bring up the colour. Muscats taking their first swelling had better be looked over and have the small berries or any that are left too thick taken out at once, taking care not to touch the berries left with the scissors. Stop all the laterals when the trellis is covered with foliage. Examine the borders and if dry, water well with tepid manure or guano-water, for vineries that are well drained will take very liberal supplies of water every few weeks at this time of the year. Late varieties that are to hang in the fruit-room for next year's use ought now, if not already done, to be fit for thinning, or they will not have time to ripen properly, without which they never keep well. Keep a little heat in the pipes according to the state of the weather, for if hot and bright they will not require much fire-heat, but I always use a little. Late houses of Black Hamburghs will now be coming into flower, and will be the better for a little fire-heat turned on early in the morning, which makes the atmosphere better suited for the dispersion of the pollen; stop the laterals and tie down the shoots as required. After thinning give a thorough watering with tepid manure-water, and if the house does not come below 63° at night it will do without fire, but if the days are dull a little turned on in the morning will do good. The Vines in the morning will be heavily laden with dew, which is very beneficial and better than all the syringing that can be given to them. Our late Hamburgh-house is never syringed overhead at all; but the paths, borders, and walls well damped down instead. Vines planted in permanent houses must have liberal supplies of water, now that they are growing freely—clear tepid water will be the best at present. Give a good supply of air towards mid-day, and close early in the afternoon. Vines planted in outside borders, if well mulched, will not require so much water as those planted inside; do not by any means, however, let them get dry, but examine the borders every week. Stop pot Vines for next year's fruiting as soon as they get to the required length, and give liberal supplies of manure-water when the pots are filled with roots. *Joshua Atkins, Lockinge Gardens, Wantage.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday, June 6 { Continuation of Great Horticultural Exhibitions at South Kensington and Manchester. Opening of the Bath and West of England Agricultural Society's Show at Tunbridge Wells.

UNMIXED evils are fortunately rare. To most things, however bad, there is a set-off, and if plant lovers and fruit growers have but too much reason for their plaints at the results of the last two winters, there are at least some compensations. When, for instance, have the flowering shrubs made a braver show than they have this spring? We are all of us, consciously or unconsciously, too much tied by the dictates of fashion even in the matter of gardens, too much addicted to run to extremes. Now it is evergreens which command our sympathies; now it is Conifers which too exclusively lay hold on our attention. It may be that the wholesale slaughter of the last two winters may serve to bring to the fore once more the deciduous trees and the FLOWERING SHRUBS. Many of these are in this country frost-proof, and their variety and beauty will, in this season at any rate, compel our admiration and lead planters to wonder why they have passed them over in such comparative neglect. We do not wish to institute comparisons or to praise one set of plants at the expense of another; we do but bend to the circumstances of the season when we direct attention to the unusual beauty of the flowering shrubs and trees in this particular spring.

Making a beginning with the early flowering species, who is insensible to the beauty of the yellow-flowered Jasminum nudiflorum? Who does not rejoice to see the yellow flower-heads of the Cornus mas, and the elegant bells of the Forsythia? Who does not delight in the fragrant blossoms of the Chimonanthus, the Lonicera Standishii and fragrantissima? A little later we were charmed with the rosy tints of the Pyrus japonica and the orange tints of P. Maulei, the white sheets of the Amelanchier, and the pink hues of the Almond; and just now we are revelling in the glorious profusion of the Thorn—even the common hedgerow, Cratægus oxyacantha, is a marvel of beauty; and the pink varieties, conspicuous among which is Paul's double Thorn, are equally laden with blossom. The Magnolias, too, have been, and are magnificent, from the white-flowered conspicua to the purple-tinted Lenné variety. Rhododendrons show in many places traces of the winter's terrors, but the Azaleas have been and are a blaze of bloom. A bed of small bushes at Kew has furnished a display of splendour unusual even among Azaleas. The Pears, both fruit-bearing varieties and the ornamental kinds, especially that very lovely form, Pyrus Malus floribunda, have been simply magnificent. The graceful plumes of the Manna Ash, Fraxinus Ornus, have been unusually graceful; the Bird Cherry is laden with bloom. The chaste white blossoms of Exochorda grandiflora cause one to rejoice that such a shrub is as hardy as it is lovely. And then the wealth of bloom in the Brooms and the allied genera, Laburnum, Genista, Cytisus, Caragana! Who, again, would be without the solid beauty of Viburnum plicatum?—who would dispense with the delicate tints of the Weigela?—who is insensible to the beauty of Rubus deliciosus? Later on there is promise in the Tulip trees, in the Philadelphus, in the Hypericums, in that strangely neglected autumn-flowering Hibiscus syriacus, better known perhaps as Althæa frutex.

We have mentioned only a few of the more prominent flowering trees and shrubs, but no one will deny their beauty, and we have been obliged to use the present and past tenses in speaking of them, for the hot sun of the last few days near London has caused many of the flowers to fall. True, they do not last long, and when out of bloom some of them are not remarkable for beauty of habit. What matter: the cunning planter knows how to overcome that defect, and knows how, even at this season, to combine them with the lovely tints of the expanding foliage of the deciduous trees generally, and with the more highly tinted leaves of the purple Sycamore, the reddish-brown of the Acer Schwedleri, the purple Beech, and the Birch of like hue, the deep purple bronze of the Japan Maple, which happily proves as hardy as the variegated Negundo, so useful for contrast with darker tinted plants. And to turn for a moment to the Conifers. At this season, at any rate, the tints of the young buds ranging from delicate green up to orange and pink, and the glow of colour afforded by their catkins, relieve them from the charge of monotony of colour. The plants we have been alluding to are, excepting of course the Conifers, for the most part deciduous, and as hardy, ay, even hardier than our common Oaks and Elms, while they are so beautiful in their season that if the experience of the last two winters leads to their more free use in our shrubberies and plantations, no one will say that the disasters we have alluded to are unmixed evils.

—— MR. DOMINY.—Sir TREVOR LAWRENCE writes as follows:—"Mr. DOMINY has now retired definitively from the service of Messrs. JAMES VEITCH & SONS, after being with them more than thirty-five years, carrying with him the esteem of his employers, and of all who have had to do with him. I need not enlarge on Mr. DOMINY's high personal character, on his industry, or on his courteous civility and attention to all. But his special knowledge and skill are well known, and have been a great help to every Orchid grower in the kingdom. Mr. DOMINY was the pioneer of the hybridisation of Orchids, and his skill has enriched our houses with many beautiful hybrids, such as Calanthe Veitchii, Cattleya exoniensis, C. devoniensis, C. Dominiana, Lælia Veitchiana, &c. Mr. DOMINY has thus strong claims upon all lovers and cultivators of Orchids, and it is desired to give him a well-earned mark of the gratitude and esteem Orchid growers feel for him. Several subscriptions have already been promised, varying from £5 5*s.* (the maximum fixed) to 10*s.* 6*d.*, and the following gentlemen, to whom alone I have as yet applied, have promised me their co-operation:—Right Hon. J. CHAMBERLAIN, M.P.; W. E. BRYMER, Esq., M.P.; Sir HENRY PEEK, Bart., M.P.; Lord RENDLESHAM, M.P.; F. A. PHILBRICK, Esq., Q.C.; J. S. BOCKETT, Esq.; S. LEA, Esq. Among the principal hybrids raised by Mr. DOMINY are Calanthe Dominii, Phaius irroratus, Calanthe Veitchii, Cattleya Brabantiæ, C. Manglesi, C. quinquecolor, C. Pilcheri, C. Pilcheri alba, C. Dominiana, C. devoniensis, C. exoniensis, C. Felix, Lælia Veitchiana, Dendrobium Dominii, Cypripedium Dominii, C. vexillarium, C. Harrisianum, and many others." Subscriptions will be received by Sir TREVOR LAWRENCE, 57, Princes Gate, S.W., or at the London Joint Stock Bank, Pall Mall, S.W.

—— BLUE CHRYSANTHEMUM.—A variety of the Chrysanthemum exists in Japan with blue flowers. It is represented very frequently on Japanese porcelain, both ancient and modern, especially that of Satsuma and Kioto; it also appears on *cloisonné* enamels and embroidery. In the *History of Nin-toku-ten-wau* the following passage occurs:—"In 386, in the seventy-third year of his reign, seeds of the Chrysanthemum were first introduced into Japan from a foreign country, both blue, yellow, red, white, and violet." The Japanese commentator remarks:—By a foreign country is meant the kingdom of Paik-tse, one of the States of Corea." (*Bull. Mens. de la Soc. d'Acclimatation*, January, 1881, p. 54.)

—— CROCUS SEEDS AND SEED-PODS WANTED.—Mr. MAW writes as follows:—"Should any of the cultivators of Croci have seed-pods or seeds of the following species I should be much obliged if they would send me one or two examples in a matured or nearly matured condition. The seeds are more characteristic when just ripe, before they are dead ripe and begin to shrivel:—C. Boryi, C. Tournefortii, C. Orphanidesi, C. Olivieri, C. Crewei, C. tingitanus, C. vitellinus, from Beyrout; C. ochroleucus, C. Cartwrightianus, C. hadriaticus, C. Pallasii=C. Thomasii. I think there is little doubt that cultivation tends to reduce the seed-bearing power of many of the species. The cultivated Saffron has, I believe, never been known to produce seed, and of the garden forms of C. aureus none are known to seed except the type form. I have observed that there is a distinct falling off in seed-bearing after three or four years' cultivation of many species that produced seed freely for the first year or two after being transplanted from their wild habitats."

—— PRUNUS PISSARDI.—In a recent number of the *Revue Horticole* a coloured figure and description of this new Plum is given. It was introduced to the nurseries of M. PAILLET, of Chatenay-les-Sceaux by M. PISSARD, gardener to the Shah of PERSIA. Both leaves and fruits are of rich claret-red colour. The fruits are eaten unripe with salt, and when ripe as a dessert fruit.

—— ROYAL NATIONAL TULIP SOCIETY.—We learn that in consequence of the high temperature which has prevailed during the last few days the Tulip bloom has come on so rapidly that it has been found necessary to hold the show earlier than was originally arranged. In consequence, the show will take place to-day instead of on Wednesday next.

—— ARISTOLOCHIA GOLDIEANA.—This very remarkable species is now in flower in the Regent's Park Botanic Gardens. It may be remembered that we gave a full-page illustration of this flower from a plant which flowered at Kew some years since 1867, p. 1143.

—— DOUBLE-FLOWERED APPLE. — Mr. FISH sends a good example of this in which the petals are greatly increased in number. It forms a fine flower, but as for fruit there could be none; for the dilated flower-stalk, or as it is erroneously called, "calyx-tube," which forms the "Apple," is conspicuous by its absence. The calyx segments are, however, present. We have frequently figured such flowers, which are interesting as showing the real nature of the so-called calyx-tube. They are also highly ornamental, but their our eulogies must cease. The purpose of an Apple is to be eaten—this one fails of its purpose!

—— ILANG-ILANG.—Some time since, when this perfume was first introduced, some doubt was expressed as to the species from which it was procured. Since that time its source has been ascertained to be the flowers of Cananga odorata, an Anonaceous shrub, a native of Southern Asia. A recent number of the *Pharmaceutical Journal* contains a figure and a full description, from the pen of Prof. FLÜCKIGER.

—— STAMPS.—A notification has been issued by the Post-Office authorities to the effect that in future the ordinary adhesive penny receipt stamp may be used as a penny postage stamp, and the adhesive penny postage stamp may be used as an ordinary penny receipt stamp. It is to be understood that for purposes of postage the receipt stamps, in common with postage stamps, must have no printing or writing placed on their face by the public.

—— HENDER'S CRIMSON VESUVIUS PELARGONIUM.—The note at p. 698 has brought out the interesting fact that the sportive Vesuvius has given the Messrs. CANNELL & SON a crimson-flowered variety, which appears to us to be identical in colour with that which originated with the Messrs. HENDER.

—— CYPRIPEDIUM CALCEOLUS.—Mr. MAW writes us that he has a plant with no less than fifty-six expanded flowers on it.

—— THE PHYLLOXERA.—The Cape Government outdoes all others in the stupidity of its regulations in this matter. We understand that the authorities of the Royal Gardens, Kew, being prevented under existing regulations from sending any living plants to South Africa, forwarded to Graham's Town, at the request of the Curator of the Botanic Garden, two casks of compressed Orchid peat. The Cape Government have prohibited its introduction into the colony, although the Government notice relating to the preventative measures against Phylloxera makes no mention of peat, or indeed of soil of any kind. Would it not be better for the Cape Government at

once to prohibit the introduction of all matters of vegetable origin, such, say, as furniture, cork, coal, aniline dyes, and quinine?

—— MAGNOLIA FUSCATA.—Judging from the preface of M. LAVALLÉ'S *Arboretum Segrezianum*, this pretty Chinese shrub must be far from common on the Continent, as it is given as an instance of how plants, which were at one time popular favourites and very generally cultivated, have quite disappeared from the gardens both of nurserymen and amateurs, and almost from botanic gardens too. There seems no danger of the species being lost at Kew, where, in the Temperate-house, there is a large bush bearing a number of its dingy but deliciously fragrant blossoms. Unlike several of its allies from the same botanical region, this species does not stand the winter in the open, but it makes a charming evergreen bush for cool conservatory decoration.

—— NEVIUSA ALABAMENSIS.—A curious shrub is now in bloom in the Rosaceous bed at Kew. It is a Spiræa-like bush, with leafy, sharply-toothed sepals and white stamens, but no petals. As a curiosity, it is worth a place in a wilderness walk.

—— THE AMERICAN CRAB APPLE, Pyrus coronaria, deserves special mention if only on account of its being such a late flowerer. In the Kew Arboretum every other true Pyrus has long been out of bloom, whilst the subject of the present note is at this time in full beauty. It has large violet-scented, rose-coloured blossoms, which are followed by fragrant greenish fruits. LOUDON states that the decaying foliage in autumn exhales an odour of Violets. In its native habitat (Western New York to Wisconsin, and south wards) it grows to a height of 20 feet in the forest glades.

—— BOSSIÆA SCOLOPENDRIFOLIA.—This is not one of the least interesting of the vegetable curiosities from that rich store-house of strange forms of plant life—Australia. It is a leafless shrub, whose thin flattened branches assume the functions performed by the leaves in common every-day plants. Though not so elegant as the Bossiæa linophylla, noted very recently in these columns, the light green flat-winged branches studded with pea-shaped flowers, orange-yellow and dark red-brown, are not without a certain share of beauty, apart from their strangeness. A specimen is now flowering in the Winter Garden at Kew.

—— STIGMAPHYLLUM CILIATUM.—In the Palm-house at Kew this stove climber is now flowering freely. It has glaucous shining leaves and axillary umbels of large bright yellow blossoms. It is a native of Brazil, from whence it was first introduced to this country in 1840, where it first flowered the following year in the famous plant collection of the then Duke of NORTHUMBERLAND.

—— JAMESIA AMERICANA.—This pretty Rocky Mountain shrub is well worthy of general cultivation. It makes a neat dwarf bush, and is thoroughly hardy on rockwork, and would probably be so on all except very water-logged soils. Its flowers, which are about half an inch in diameter, are borne in terminal cymes, and their arrangement, together with the habit and appearance of the plant, give it a remarkable resemblance to some of the Rosaceæ but as a matter of fact it is a member of the Saxifrage family.

—— THE WHITE HAWTHORN. — Unless some old traditions are next winter to receive a rude shock we ought in proper sequence to have one of extreme cold. If it is not so to be, why all the vast preparation being made by Nature for the provision of food for the feathered tribe? Can the "oldest inhabitant" of these isles (a somewhat apocryphal but not the less possible being) remember in any past spring, however remote, a more luxuriant bloom upon the Hawthorn than is everywhere seen now? The hedgerows that have, thanks to the survival of some good sense, not yet been levelled to the ground are white as snow with wondrous masses of flowers. Burdened with the weight of floral beauty, the long branches droop and hang in graceful elegance, forming festoons of flowers that extend for long distances. Single trees, or trees in clumps, are beautiful objects, quite eclipsing the Chestnut in floriferousness, though less noble in outline. The town dweller, who finds almost a new sensation when gazing upon this abundance of Nature's floral wealth, strives somewhat roughly to gratify the natural craving to possess some of these delights by making sad havoc amongst the branches. Still there is enough and to spare; and if in some dark court, or perchance sick chamber, eyes too little accustomed to the beauties of rural scenery are for the moment gladdened by the sight of the May in all its unwonted charms, who will care to chide the marauder? The Holly, too, has been full of bloom, and is setting berries in great quantities.

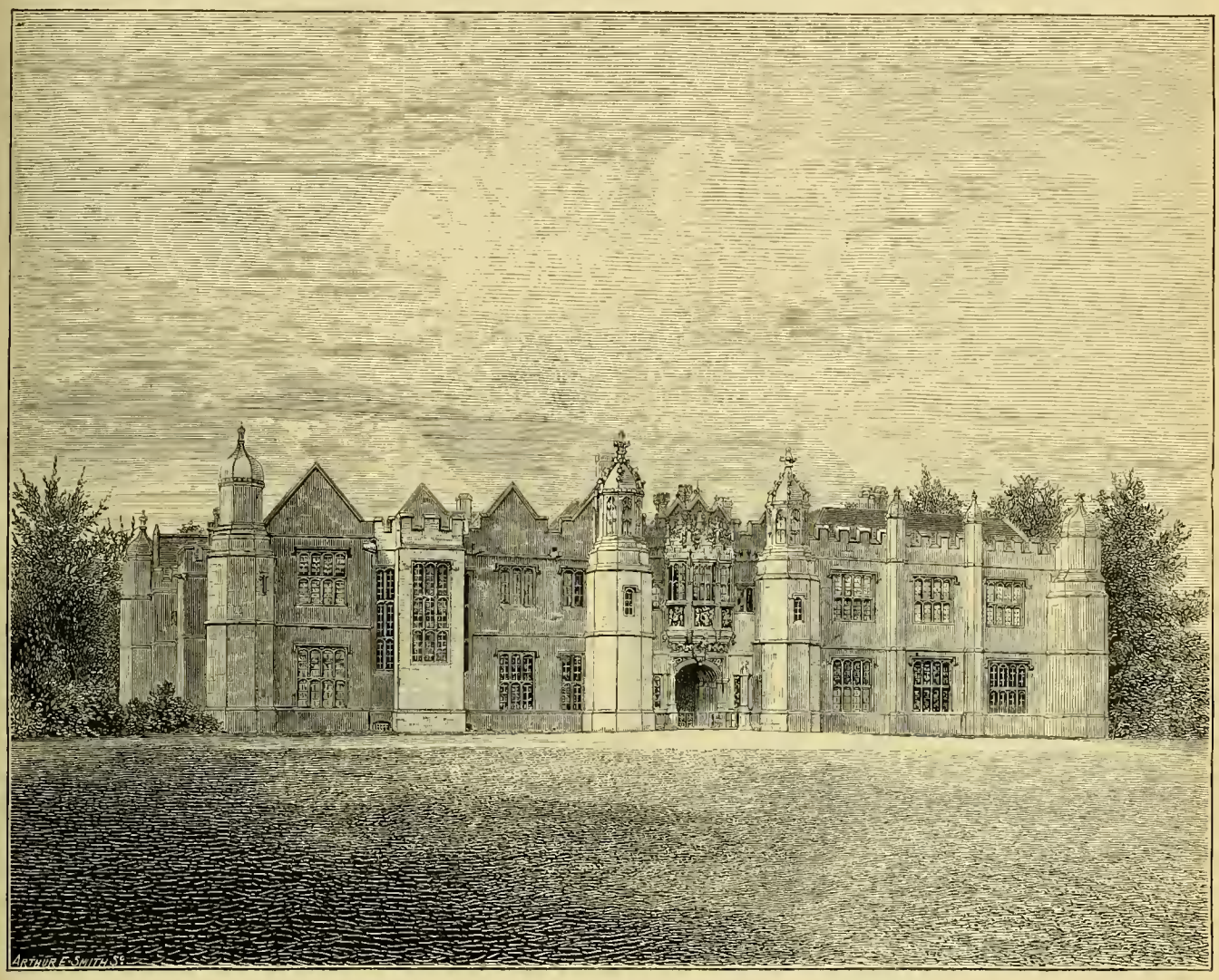


FIG. 133.—HENGRAVE HALL, SUFFOLK. (SEE P. 723.)

This fact will perhaps give more tangible pleasure to humanity than will the mention of the wealth of white Hawthorn bloom, because the red berries will, in the dull leaden winter, gladden our eyes and hearts at the Christmas festive season. Then the singing birds have a decided preference for the haws over the berries of the Holly, and these we shall not grudge them. Thus, whether a hard winter comes, or the winter season be characterised by comparative mildness, the birds will have no lack of food, and we shall have bright red berries in plenty to deck our Christmas firesides.

—— Lilium Martagon.—A specimen of this, the leaves of which were of the usual green colour when we received it, was laid aside for several days in a tin box, and, when again looked at, the leaves were seen to have assumed a violet-purple hue like that of the flowers.

—— Echium arboreum.—A fine specimen of this plant is now in flower in the Winter Garden at Kew. Imagine the Viper's Bugloss, Echium vulgare of our English flora, magnified, its rosette of radical leaves mounted on a long, stout branched stem 4 or 5 feet high, and its glorious red, purple, and blue flowers doubled in size and number, and a fair idea will be arrived at respecting E. arboreum.

—— The Pæony.—If, instead of exalting the big, ugly Sunflower to the position of a floral idol, that fanciful outcome of modern art sensationalism known as the æsthetic had selected the glorious and noble Pæony for the pride of place, there would have been in the taste exhibited more to admire and less reason to suppose that æstheticism and lunacy were twin brothers. *Punch* recently described one of these sufferers from the contagion of art madness as "gazing with a hungry longing into the infinite," and perchance that persistent and set gaze into the ethereal world has led to the discovery that as the sun is the Lord of life and light, so must the Sunflower be the supreme glory of the floral universe. That is a deduction which its name and size may favour, but is hardly supported by other elements. The Pæony is big and it is noble—it is almost gorgeous, if such an appellation can fitly be applied to any flower, and certainly it is beautiful. With some it perhaps has the fault of being double; but if double, it is upon no stiff or formal lines. There are still found the broad, elegant outer petals that form the sides of the cup, the which, instead of being empty, as is the case with single Tulips, are nearly full of other floral petals, not regularly but massively set, and truly making a noble flower. Rich and effective as are the reds and crimsons, there is much beauty about the flowers, having paler tints, and whilst the hues may differ the nobleness in all remains. We can praise the Pæony for its hardiness and its simple habits. It needs no special care—indeed, rather shrinks from it; and with a due appreciation of the seasons, sheds its foliage in the winter, retiring under Nature's own protecting shield till the rigours of winter are passed. Then, with the first presence of spring its big crowns burst into luxuriant leafage, then into flower, and its blooms in size or in beauty are second to none of all the plants that decorate our gardens in the summer season. In rural districts, where the absurdities and follies of idle people have not entered, the Pæony will be found associated with the Laburnum, the Hawthorn, and the Lilac, as the most favoured of all flowers for honouring the festive Whitsun season.

—— Mr. A. Waterer's Rhododendrons in Rotten Row, Hyde Park, are now in the height of their bloom, and the display far exceeds that of last year, which was good. Visitors may be overheard describing them as "beautiful" and "charming;" some we have heard to exclaim "Our parks are well done; we ought to be proud of them!" and others have said they like the style here adopted better than that followed in Paris, "which has so little of Nature and so much of Art." Beautiful and charming, no doubt, is the display, and we note that some of the specimens which we recognise as having been there last year, and which have been wintered there, are amongst the freshest-looking and most freely-bloomed of the lot. The beds of Azaleas lend their bright hues to heighten the effects of which the many-hued Rose Bays furnish the groundwork. We noticed a fine specimen of Mrs. Holford, the original plant, now in full beauty; also groups of Everestianum, an old sort, but not yet beaten; of concessum, of Lady E. Cathcart, of fastuosum flore-pleno, one of the few really hardy Continental sorts; and a group of the vivid green-eyed variety called J. Marshall Brooks, edged with smaller plants of the Queen. The standard, Scipio, referred to last year, stands bold and unharmed, as if the thermometer knew no such depth as zero. There is also to be seen the finest plant in the world of the old favourite Michael Waterer, a grand bush of the Queen, and a fine tall mass of Album elegans, a standard Titien, several plants of the charming roseum elegans, one of the oldest and still one of the best habited and most pleasing of the hardier set, which are never affected in either branch or bud by the destructive frosts which work such havoc on those in whose vessels runs the tender blood of ponticum or arboreum. With these and others, many of them massive single specimens, and others good bushy plants grouped in large beds, Rotten Row is aglow with American plants, and well worth a visit by anyone within reach of it who is fond of flowers; moreover, the most striking varieties are distinctly named.

—— Erigeron aurantiacus.—This is a new and handsome species, recently discovered in the mountains of Eastern Turkestan at elevations of from 6000 to 10,000 feet above sea-level, and distributed from the Imperial Botanic Garden at St. Petersburg. It is a neat dwarf grower, with a scape about a span long, bearing a solitary large flower-head of a charming reddish-orange colour. Now in flower at Kew.

—— Lilies and Fuchsias at Messrs. Beckwith's.—Amongst the numerous examples of well-grown profusely-flowered plants which the market growers prepare for Covent Garden there are none that illustrate more fully what it is possible to accomplish in very small pots than the beautiful examples of Lilium eximium, and of which Messrs. Beckwith are, we believe, the largest growers — their stock this year of this kind, and the nearly allied L. longiflorum combined, being ten thousand. They are mostly grown three in a 48-sized pot, which measures 5½ inches diameter inside the rim, and which, as will be easily understood, does little more than give room for the bulbs to stand touching each other; yet in these little pots each stem of L. eximium bears from three to five of its great white flowers; hundreds there are with from ten to a dozen, and as many as sixteen flowers have been produced in a single pot. They fill several of the long houses, the occupants of each coming on in succession. The plants are as even in height as if made to measure, stout, and fully furnished with leaves, although stood so close that the leaves of each plant touch its neighbours all through from end to end of the long banks they form. The house containing those in bloom which we saw a few days ago presented such a sight as to put completely in the shade any Lily bed we ever yet saw. Standing with their heads within a few inches of the glass, the flowers were literally packed together, and presented a lengthened vista of snowy white trumpets. This eximium variety of L. longiflorum is so much superior to the ordinary L. longiflorum that Messrs. Beckwith will henceforth cease to grow the latter, which under similar treatment usually does not produce more than one or two flowers on a stem, some of the stems failing altogether. Both Dutch and Japanese grown roots are used, but the latter are found to give much the best results. A more useful plant for conservatory or room decoration it would be difficult to imagine, and as such it might with advantage be cultivated by every one who has a greenhouse, or even a good-sized garden frame. When once any kind of soft-wooded plant becomes a general favourite it usually follows that seedling varieties are raised and distributed in such numbers that ordinary cultivators are bewildered what to grow and what to avoid, for it generally turns out that of the multitude forthcoming a few—often a very few—contain so many desirable properties as to stamp their superiority over others that may each have something to recommend them, but individually are wanting in some or other of the essentials that go to make a plant deserving of cultivation for ordinary decorative purposes. In Fuchsias this is particularly apparent; hundreds have made their appearance with it may be fine individual flowers, but which upon trial have been found wanting in other respects—a free disposition to bloom, a sufficiently compact habit, lack of vigour, or the opposite extreme of too rampant growth. It is a matter of the first importance with the market grower that he should have the best, and only the best, sorts of everything he cultivates—Fuchsias as well as other things—to enable him to keep abreast with the times. It is usual for the leading growers to try every variety that is sent out of the various things they grow; and in the choice they make those who cultivate the like plants in private establishments will not be far wrong in taking a leaf out of the market man's book. A Fuchsia for market must be possessed of a good strong constitution, a free branching habit; in the white kinds purity of colour, and a good-sized bloom; in the dark sorts deep, distinct, well-marked colours; in all bold handsome flowers, and a free disposition to produce them whilst young and in a small state. Nothing in their way could be more effective than the immense quantity of these plants which at this season fill the many houses occupied by them in Messrs. Beckwith's establishment. After a trial of all, old and new, the following varieties are principally relied upon:—Miss Lucie Finnis, double white, full even petals, the centre of the flower almost as large as a small Carnation; branches freely without stopping. Abd-el-Kader, double white; a remarkably free-flowering effective sort. Delight, single, tube and sepals rosy-crimson, white corolla veined with rose. Crown Prince of Prussia, single, sepals and tube deep scarlet, recurved sepals, large bluish-purple corolla feathered with carmine. Lady Heytesbury, single, bright rosy-purple corolla, tube and sepals white. Red Marshall, single, very deep red corolla, with bright red tube and sepals; an unusually compact grower, and profuse bloomer.

—— Great Fire at Woolmer Forest.—The *Surrey Advertiser* of Saturday last states that about noon on the previous Sunday a fire broke out in that part of Woolmer Forest situate in the parish of Selborne, and spread into the parishes of Greatham and Liss, causing considerable damage. It is estimated that 1500 acres of forest have been burnt, including about 200 acres of forest timber and 100 acres of seedling trees. The fire played great havoc with a plantation belonging to Lady Earle, in addition to destroying some trees, &c., on the estates of Lord Justice Cotton and the Rev. William Smith, and it was with great difficulty that several houses were saved from the flames.

—— Renovation of Old Vines at Upleatham. — When reduced to a weak condition through the exhausting work of forcing and hard cropping for a long period, there are none of our fruit-bearing plants so capable of being brought round by good treatment as the Vine, especially in the case of such Vines as in their earlier existence have been strong and vigorous. Instances in plenty are to be met with where old Vines, at one time strong, have been so reduced by hard work and insufficient nutriment that they have been looked upon as useless, yet when subjected to judicious management have so fully regained their pristine vigour as to leave no trace of their once enfeebled condition. Of what it is possible to accomplish in this way, in a comparatively short time, we know of no better example than is to be seen in one of the vineries at Upleatham. The Vines are over thirty years old, and from their general appearance show that they had thriven well in their early years; but when Mr. Letts took them in hand the weak shoots and puny bunches showed their exhausted state. The roots are all outside. They were taken up, and a new bed made, which they at once took kindly to, as evidenced by the immediate increase in strength of wood and size of fruit. The sorts are Black Hamburgh, Buckland Sweetwater, and Foster's Seedling. Last year they bore a crop, ripe the beginning of June, as heavy as it is ever desirable to take from permanent Vines; many of the bunches run from 2½ to over 3 lb., and perfectly finished in every way, but especially in the intense black colour of the Hamburghs. These Vines produced the Grapes with which Mr. Letts took 1st prize for three varieties at Newcastle, and also those in his winning collection of fruit at the same show. This year the strength of the shoots and leaves is more like that of Vines some four or five years planted, and many of the bunches from the long old spurs look as if they would run up to 4 lb. each. Young rods are now being brought up, and the old ones will be removed altogether. These Vines give substantial

evidence in support of the practice of those who, in many cases, prefer recuperative treatment to old Vines that have been weakened through some or other of the causes that bring about an enfeebled condition, rather than clearing them out and replanting. Another thing worth mentioning connected with their treatment is that their roots are wholly in an outside border, and the border has nothing more than a few inches of leaves to keep it from being frozen, without anything whatever to throw off the rains and melting snow, about which latter, for the past two winters, those who know the district will not need to be told anything.

—— Luzuriaga radicans.—Like its near ally, Callixene polyphylla, this pretty cool-house plant is a native of South Chili, where it roots up the mossy trunks of the forest trees. It has dark green foliage and large pendulous snow-white starry blossoms. In its native country the roots are used as a substitute for sarsaparilla, and according to the collector, Bridges, its stems are used for rope-making. It is now in bloom in the winter garden at Kew.

—— A Swarm of Bees in the Strand.—On Tuesday afternoon a swarm of bees appeared in Wellington Street, Strand, and settled on the outside of the *Army and Navy Gazette* office (it should have been on the *Gardeners' Chronicle* or the *Field* office), causing for awhile some obstruction to the traffic. The attention of Mr. Tegetmeier, the well-known naturalist of the *Field*, was called to the fact, and having obtained a box, he succeeded very shortly in hiving the swarm.

—— Ixias.—From Messrs. Charles Smith & Son, of the Caledonia Nursery, Guernsey, we have received a boxful of very handsome Ixias, consisting of some three dozen charming varieties. Of self, or nearly self-coloured flowers, Lucretius, rosy-purple; Bucephalus major, deep rose; Lady Slade and Rosea multiflora, bright rose-pink; Achievement, purple, shaded rose; Rosea plena, semi-double, rose-pink; and Vulcan, orange-crimson, are especially fine. If anything, more showy than the self-coloured flowers are those the flower-segments of which are self-coloured within and either striped or deeply tinted with some good contrasting colour on the under surface. Amongst these the finest are Cato, primrose and purple; Model, orange and rosy-purple; Magnifica, bright orange and deep crimson; Horatius, pink and rosy-purple, with maroon blotch; Diana, white with purple centre and powerfully scented; and Isabella, white and rose, and black in the centre. Very distinct also is Viridiflora, sea-green, with a black centre. The Messrs. Smith state that Ixia and Tritonia blooms, to open well when cut, should be stood in water, not too crowded, so as to allow room for each individual flower to expand. When so arranged the vessel containing them should be placed in a warm sunny position, free from draught. Treated in this manner they will expand and last for a very considerable time in great beauty—beauty that is excelled by very few plants either bulbous or otherwise.

—— The Weather.—General remarks on the temperature, rainfall, and duration of bright sunshine, for agricultural and sanitary purposes, during the week ending May 30, issued by the Meteorological Office, London:—The weather has been generally fine and bright, but on the 26th, 27th, and 28th it was dull and close over England, and sharp thunderstorms occurred in several districts, accompanied by some heavy falls of rain. The temperature has been much higher than of late, and was a few degrees above the mean in all districts except "England, S.W." The maximum for the period was 79°, which occurred at Cambridge on the 30th; and at Silloth, Loughborough, and Durham readings as high as 78° were registered, while at most other stations the highest readings for the week were between 73° and 76°. The minima were nowhere very low, the lowest reading of all (36°) occurring at Bawtry on the 29th. The rainfall was rather more than the mean in the N.E., E., and N.W. of England, and equal to it in "England, S.," but less elsewhere. Bright sunshine was more prevalent in the N. and E. than in other parts of the kingdom, the percentages ranging from 72° in "England, N.E." to about 41° in the "Midland Counties," "England, S.," and "Ireland, N." Depressions observed;—The only depressions noticed within our area during this period were a very shallow one over our south-east coasts on the 26th and another shallow one in a similar position on the 29th. During the earlier part of the week the barometer was highest to the north, and lowest to the south of our islands, so that moderate easterly breezes prevailed on all our coasts; but on and after the 27th the wind was more variable in direction and very light in force.

—— Gardening Appointments.—Mr. Sydney Cooke, late Gardener to J. B. Hankey, Esq., has been engaged as Gardener and Orchid grower to D. B. Crawshay, Esq., Rosefield, Sevenoaks; Mr. John Chisholm, from Messrs. Dickson & Co.'s Pilrig Park Nursery, Edinburgh, has been appointed Gardener to the Right Hon. the Earl of Caithness, at Stagenhoe Park, Welwyn, Herts; from Messrs. Downie & Laird's Nursery, Mr. David Crombie has been engaged as Gardener by Mrs. Scott Plummer, Sunderland Hall, Selkirk; Mr. D. Clunas, as Gardener to John Allan, Esq., Peelways, Ayton; Mr. A. Ross, as Gardener to Charles Dundas, Esq., Dalhousie, Crieff; and Mr. C. Bartleman, as Gardener to Evan C. Sutherland-Walker, Esq., Skibo Castle, Sutherland.

## Home Correspondence.

**Scolopendrium Kelwayi = S. Morgani.**—In your paper of May 21 I see a statement of Mr. J. S. Cousens, that Scolopendrium Kelwayi and S. Morgani are identical, and this is my experience. What does Mr. Kelway say? *H. M. Stoltenhoff, Morley Lodge, Lewisham.*

**Bougainvillea speciosa.**—At p. 669 Mr. Horsfield remarks that to see the above in flower in this country is rather the exception than the rule; my experience of this fine flowering plant is quite the opposite, as here it flowers most freely without any particular "wrinkle" in its treatment; but to grow it to perfection it requires to be planted out. Here we have two plants planted out in the centre bed of an intermediate-house, which is 40 feet by 20, and they nearly cover the roof, and at the present time are one mass of bloom, their long racemes of flowers being most useful for large vases, &c. A great many of the racemes are from 3 to 4 feet in length (a sample of which I send you). The treatment is very simple. The main stems are trained up the rafters of the house, and after flowering they are pruned to a couple of eyes; they break very freely, and the weak growths are then thinned out. They always have plenty of moisture at the roots, as the bed is kept filled with flowering and other plants. The house has a south aspect, and the plants in question are never shaded. In an adjoining house of the same size the roof is covered with B. glabra, which flowers most freely throughout the summer. A gentleman who lately saw them told me he had not seen any so fine since leaving Malta, where the two varieties are grown very extensively on the houses and where they flower profusely. *G. Summers, Sandbeck Park.* [The specimens sent were very rich in colour, and splendidly flowered. Eds.]

**Hesperis violacea.**—This pretty species is now in full bloom in my garden. It is perfectly smothered with bright lavender-purple flowers, and is an exceedingly ornamental plant. In Boissier's *Flora Orientalis* it is described as a perennial species and a native of Caria, the Cilician Taurus, and other parts of Asia Minor. It looks to me like a biennial. It is so gay and pretty that I shall certainly save all the seed I can, and if possible strike cuttings. *H. Harpur-Crewe, Drayton Beauchamp Rectory, Tring, May 30.*

**Employer and Workman.**—Under the above Act I summoned a man, who after being in my employment for about three months left without notice (and without even signifying his purpose), on a Saturday night. Three men had treated me thus within a month; and as I suffer from such conduct every summer, often after keeping men in idleness all the winter, I resolved to try at last to stop it. But when the case came before the Petty Sessions at Hampton lately, the summons was dismissed, upon the ground that no notice to leave was required. If this be so, the injury is greater to the workman than to the employer; for the latter can discharge all his men without a penny beyond the wages that have accrued any Saturday night, when it seems to him good; whereas I have paid many workman a week's wages in lieu of notice, when it was wise to be rid of them. I was so surprised at the decision of the Bench that my reasoning powers forsook me, not having been under summons, because the matter appeared so obvious. But I would now submit, and shall be glad to receive with submission any answer to the following statement of the question. In the absence of any express stipulation, an agricultural hiring is interpreted by the custom of the country. The custom of this part of the country is that such hirings are weekly; the weekly payment follows, and confirms a clear presumption of contract; and neither party can be off the engagement except upon the customary terms. The Justices talked about special agreements with the men, and so on; all which things are very well in case of annual hirings such as prevail in the West and North of England. But a special agreement with the come-and-go labourers of this part would, even if they submitted to it, be merely a source of contention; and the simple plan of common sense appears to be submission to the customs which the men are used to, and the masters are content with. I should add that one of the three sitting magistrates took my view of the matter. Also, that the said Act confers upon the Justices the powers possessed by a County Court of enforcing contract. *R. D. Blackmore.*

**Insects.**—I think it a matter of great importance, just at this time, that the attention of all farmers and gardeners should be directed towards a source of great trouble and danger to them, and which is found in the enormous increase of the insect pests which have been occasioned by the effects of the past three wet seasons. All our soils have become infested to a terrible extent with the wireworm, the slug, the Onion-maggot, and the Turnip-fly; and although the promise of the present season is most gratifying, we may still suffer much loss, unless some means of guarding against this source of danger is adopted. For years past I have always sown a small quantity of peat charcoal with every seed I put in. I use it with all plants, and from the beginning I have found that it absolutely banishes every one of these pests. As to Turnips and Mangels, it causes the seedling plant to rush up into the broad leaf so rapidly that the fly can never touch it—thus sowing the crop with one sowing. I procure it from some works near Doncaster, where they prepare it specially: the cost is a trifle—were it ten times as much, I would never be without it. *A. W. E.*

**Gentiana bavarica.**—I enclose a few blossoms of Gentiana bavarica (the alpine Gentian). We have a nice display of flowers of it. The plants are planted out in a sloping 4 feet bed, composed of peat, loam and white sand. After they are planted, additional sand is placed around and upon the tufts, which, when well watered, washes in between the small shoots of the Gentian and makes them firm and tight; this, and watering them twice a day, is, I believe, the secret of success. *R. P., Holgate, York.*

**Rhododendrons.**—There is no doubt that Rhododendrons form a most useful cover for game, at all events where rabbits and hares are numerous, as they do not eat them; but they would be much more used, at least the finer kinds, if nurserymen did not put an almost prohibitive price on them. Look at any catalogue, the first that comes to hand, and you will find the finer Rhododendrons priced at 3*s.* 6*d.* to 5*s.* a plant. One requires to be a duke or a millionnaire to plant many of them at that price, for you think a deal of yourself if you order half a dozen at a guinea. Other plants are reasonable enough—why is there no competition in Rhododendrons? They grow anywhere, in the worst or the best soil—sand, clay, rock, it matters not what to them—and are free and gorgeous flowerers, and would be much used if only the price were a little more reasonable. *H.*

**Hardy Varieties of Broccoli.**—In reply to Mr. Fish's remarks at p. 701, I beg to state that the Broccolis Wilcove's Late White, Richmond Late White, Cooling's Matchless, and Carter's Champion (not Carter's Matchless, as Mr. Fish writes it), were the only varieties which were planted with the crowbar, as stated in the three concluding lines of the notice under the above heading at p. 572, and to the perusal of those few lines I would like to direct those of your readers who may have been lead through the reading of Mr. Fish's closing remarks on the subject at p. 701 to infer, as apparently Mr. Fish would have them to do, that my reference to the crowbar was intended, or calculated to convey that impression, to imply any frost-resisting charm in, or connected with, the crowbar as a "dibble." Nothing of the kind; for if the same-sized hole was made with a broomstick (though it would take a longer time in doing) it would answer the purpose just as well, but my mention that the holes were made with a crowbar was simply and briefly to indicate that, by that implement being necessary to make the holes, most gardeners would have understood that the ground had not been freshly dug prior to the Broccoli plants being put in. I have further to inform Mr. Fish that our losses amongst those plants (fifteen varieties, including the above-named kinds) which had been planted in the ordinary way, and eight or nine weeks earlier than those let in with the crowbar, but from the same sowing and nursery bed, were severe—much more severe than the

appearance of the plants immediately after the frost led me to apprehend. None of our plants were laid last year, nor indeed have I done so for several years back, but I am thinking of resuming the practice. Now, your readers will naturally expect me to state the cause, or combined causes, to which I attribute the preservation of the Broccoli plants in question, seeing that I repudiate having ever entertained the idea, as gently hinted by your able correspondent, that the crowbar contained some kind of magic spell by which each hole made by that implement was rendered frost-resisting. The facts are briefly these :—The seeds were sown on May 3 of last year, and the seedlings were in due time pricked out in the nursery beds, and subsequently all the most forward and promising plants of the respective varieties were finally transplanted, thereby affording more than ordinary space between the individual plants remaining in the nursery beds. And owing to this space the plants made a fine stocky and consolidated growth —a growth which might well be calculated to withstand the withering effects of Jack Frost. These plants were, as stated at p. 572, taken up and planted on August 27 with the crowbar, the holes being made deep enough to bury each plant up to the collar. Thus it will be seen that the plants, owing to the conditions under which they had been grown, were well established, and had almost completed their growth at the time of transplanting, and the check which the plants then sustained prevented them from making an exuberant growth afterwards; and to this procedure, which was akin to laying, and not to any magical effects of the crowbar, and to the fact of the stems of the plants having been buried to the collar—a circumstance which brought them under the protection of snow—I attribute the "cause" of their having passed scathelessly through the past severe weather—31° being the maximum of frost here. This case has favourably impressed upon my mind the necessity of lifting part, if not all, of the Broccoli plants bodily, and transplanting them with the spade in the autumn —say the middle or end of September—by leaving at the time of planting a blank row outside each piece of Broccoli ground as a position for the first transplanted row of plants, after which each transplanted row of plants would occupy the place of the preceding row, and thus facilitate the transplanting process. I hope, now that Mr. Fish is furnished with the particulars of the hardy varieties of Broccoli—and which at the time I wrote the few lines in their praise I intended supplementing at the proper time—he will not consider the fact as "extraordinary." *H. W. W., Longford Castle, Salisbury, May* 30.

**Lachenalias.**—Among the many greenhouse plants that may be had in flower at this season, few, if any, surpass the Lachenalias, which, although not of large size, are remarkable for their exceedingly showy appearance, and the tubular bell-shaped blooms which they produce so freely on spikes after the manner of Hyacinths, having a mixture of colours of scarlet, yellow, and green, which three run into and blend with each other in a way that produces the most brilliant effect. For window decoration or for furnishing small vases in rooms they are quite unsurpassed, as they may be grown in 4 or 6-inch pots, which are quite large enough for twelve or fifteen bulbs, as they do not require much soil if well watered and supplied with plenty of liquid manure when sending up their spikes of gay blossoms. To have these large and fine the thing is to grow the plants well now, as on the amount of healthy foliage and the length of time it is kept so, depends the success of next year, for if the flowers are not manufactured in the bulbs before they go to rest they cannot issue forth after. This being so every care should be taken of the plants, when they have done blooming, by standing them in a cold frame or house, where they can be attended to by being syringed and watered occasionally, so as to keep the soil just moist till the leaves die away naturally. It is the hasty drying off that weakens and spoils bulbs, as instead of giving them time to make fresh growth and recruit their exhausted energies they are hurried to rest long before they are prepared to lie dormant, and the result is, instead of being full, fat and plump with stored-up matter, they are lean, starved, and shrivelled, and consequently unable to push with vigour after lying by for the season. The period of lying by, however, with Lachenalias is of short duration, as no sooner have they fairly died down than they ought to be repotted; but before this is done they should be shaken entirely out from the old soil, and the strongest roots picked out for starting on again in some fresh. Rich sandy loam and leaf-mould or a little peat is the best mixture for them, and in this they should be just buried after having been placed equidistant in the pots, and then stood away in some cold, shady frame to come on slowly and steadily of themselves. When fairly on the move, a little water may be given from time to time, but only just enough to keep the soil moist till the pots begin to fill with roots, and the leaves approach their full size, after which they will take it and liquid manure freely till the flowering season is over. Where many fail with Lachenalias is in keeping them warm in winter, or attempting to force them, which they will not bear, as they are very impatient of heat, and only do really well wintered and grown in cold frames or houses up near the light where they get plenty of air. In such situations the foliage comes strong and sturdy, and the spikes of bloom short, thick, stocky, and able to stand erect and show off their beauty. *J. S.*

**Pear Beurré Robin.**—About this time last year I asked for information anent a Pear named Beurré Robin, a stranger to Hogg's *Fruit Manual*, Scott's *Orchardist*, and every nurseryman's list I had, except that of the late Mr. Standish, of Ascot. Since that time I have fruited the variety, and this year it again bears a fair crop. Since nobody at the time answered my query, and the Pear is evidently little known, I had better answer it myself. In appearance Beurré Robin resembles Fondante d'Automne, but ripens a fortnight to three weeks later. The fruit are of good size, and of a russet hue on the sunny side, being scantily if at all speckled elsewhere. The flesh is very white, juicy, and exceptionally free from grit at the core, and leaves a taste on the palate resembling that fine old Pear, Suffolk Thorn. Can I say more? Another Pear of great promise is Marriette de Millepieds (not Bergamot Marriette de Millepieds). It is by a long way later than any other variety I have got. The tree has as yet only borne one or two fruit, which I believe were good. I trust some other pomologist will be able to confirm my praise of Beurré Robin. *W. Carmichael.*

**Mistleto on a Rose.**—I found three small bunches of Mistleto on an old Cinnamon Rose, about 4 feet from the ground. Is this common? *Granville Ll. Baker, The Cottage, Hardwicke, Gloucester, May* 23.

**Tricolor Pelargonium Masterpiece**—In your last week's number of the *Gardeners' Chronicle* I notice "A. D.'s" remarks on Tricolor Pelargoniums, and having been a large grower and admirer of that class for many years I was interested in what I read; but one little mistake I beg to point out, namely, respecting Masterpiece. Instead of being a seedling of Mr. Pestridge's, it was sent out by Messrs. F. & A. Smith, of Dulwich, and Mr. Pestridge bought it of me once when he honoured me with a visit. I had the same opinion of it then that I have now—that it was correctly named Masterpiece. *W. Potten, Sissinghurst.*

**Young-Wood System of Vine Growing.**—If more gardeners and cultivators of the Vine would carry out the practice of laying in a sufficient quantity of young wood on their Vines for the succeeding crop I feel certain there would not be so many unsatisfactory crops as are so often to be met with. For a number of years we have practised at pruning time the system of cutting to a good eye, no matter whether four or six eyes or 2 or 3 feet; but in this case, as in most others connected with a gardener's duties, a preparation beforehand is very essential, and the best time to select the young wood is when the Vines are making their growth. Lay them in just as room can be spared for their being fully exposed and to secure the ripening of the wood. This, in my opinion, is of the greatest importance in the successful culture of the Vine. The Vines here seem to benefit by that system and annually give satisfactory crops of fruit. I was pleased to read in the *Gardeners' Chronicle* of this young-wood practice being carried out with such good prospects by Mr. Hunter, of Lambton Castle, whose name of itself is sufficient to induce many young aspirants (and old growers too) to try their hands on this method. We find Gros Guillaume fruit very freely on the young wood, and consider it one of our best black Grapes for use early in the year, as it improves in flavour by keeping if well ripened early in autumn. With respect to the syringing of Vines, we have syringed the Vines in our early vinery up to the time we commenced cutting, which has kept them free from red-spider and not affected the bloom on the Grapes. I consider it beneficial. *J. Jefferson, Worksop.*

**The Prospect for Holly Berries and Haws.**—It will be remembered that Holly berries were very thin last year, and that few bushes could be found with anything like a crop on them; but from present appearances they will be plentiful enough this season, as everywhere the trees are full of blossom, which from being so late in opening, cannot fail to set, and the country therefore hereabout will be a pleasing sight next winter, as it abounds with Hollies, which, when aglow with their coral-coloured fruit, are exceedingly ornamental, lighting up as they do the hedgerows and roadsides in a way no other shrubs can. Thorns, too, are full of flower, and in a few days will be as white as a sheet, so that what with these and the Hollies birds will be well provided for next winter should the land then become frost-bound, and the supply of food it contains locked up from their reach. The common opinion when berries are plentiful is that we are sure to have a hard winter, but although this may be a very proper way of viewing things, as showing the providence of a wise Creator for the feathered tribe so dependent on them for support, we know that the same cause which affects the fruit crop makes Thorns and Hollies bare in like manner. Last year trees were rested, and consequently had nothing to do but to make plenty of young shoots and form bloom-buds, which they did, and the autumn being favourable the wood and buds ripened, and we now see the result in the wealth of blossoms they yield. Pears and Apples have been no exception, and the crop of these will be heavier than it has been for many years past, as trees are liberally laden, and to ease them of some of their burden the fruit will require a good deal of thinning. This should be done early by clipping out the small and deformed ones, that the swelling of the others may not be checked at the start. *J. S.*

**Picea concolor.**—I congratulate you on the very correct representation which your woodcut gives of the true Picea concolor. Although leaves of the same species are subject to vary in form, even on the same tree, in different states of growth, comparing the juvenile and adult habits, we also find a marked difference in seedling varieties of the same species; yet dry or chaffy scaled buds never vary into compact resinous ones. This difference forms a permanent and important specific distinction, and is fully shown in the two well-known species, viz., P. pectinata and balsamea, the Silver and Balm of Gilead Firs: the former has the dry or chaffy bud, the latter is entirely covered with resin. In my former article, which you quote, you say "Mr. Barron (formerly of Elvaston), of Borrowash, calls our attention to the 'buds of the true concolor, the scales of which are,' as he says, 'dry, much resembling a cone in miniature, while the terminal bud of Parsonsiana are smaller [?] and covered with resin.'" I called attention to the terminal buds, as they are the most prominent; but this important distinction applies to every bud on the trees named. As to the comparative size of the buds on these trees, I observe in brackets a sign of interrogation where I have said that the buds of Parsoniana are much smaller than those of concolor. Now, apart from the remarkable difference of these two trees, in their mode of growth, arrangement of leaves, colour of bark, and the earlier habit of concolor of coming into leaf the difference of bud must at once settle the question as to the specific difference. As soon as the bud are formed in the autumn, those of concolor (as already described, and well shown in the woodcut) are all remarkably prominent on every twig, as seen in hundreds of specimens which I have examined whilst those of Parsonsiana are not more than one third of the size, and scarcely visible a few yards from the tree. Concolor is so hardy that not a plant has been injured by the frost of the last two severe winters. I cannot believe that Dr. Engelmann has ever had an opportunity of seeing both concolor and Parsonsiana in a state of growth. I think his observations have only been applied to the latter otherwise he would at once have recognised two distinct species. *William Barron.* [Dr. Engelmann was furnished by us with specimens of concolor from Mr. Barron's establishment. Eds.]

**The Overhead Syringing of Grape Vines.**—Your leading article of May 21 on this subject is of importance to Grape growers generally, and I expected to have seen opinions expressed regarding it in the issue which followed, for if overhead syringing is [in a measure] unnecessary, or if it probably does more harm than it does good, it appears a pity that it should be persisted in. At all events, judging from the practice of Grape growers generally, a diversity of opinion regarding the subject would appear to exist. Some very successful cultivators altogether ignore the practice while others, equally successful, continue it from the time the Vines are started into growth until the fruit begins to colour, or to show indications of ripening—generally, however, discontinuing the practice during the short period when the flowers are expanded, on the supposition that the pollen is likely to fulfil its mission most effectually when in a dry condition. Other growers take a sort of middle course (and more particularly in the course of early forcing), and daily or frequently syringe the Vines with the view of assisting them to break into growth regularly, but discontinue the practice as soon as this has been accomplished, with possibly the exception of one or two good washings with the garden engine or syringe when the fruit has fairly set, to free the bunches from the remains of decayed blooms, &c. It will, I think, be hard to say which of the three methods of treatment is best, success having so often followed each of them. There can, however, be no doubt that rainfall, in addition to moistening and enriching the soil in which plants are growing in the open air, is also highly beneficial to the foliage of the plants on which it falls, and Vines growing under glass are of course

xcluded from this benefit; and if syringing overhead s intended solely as a substitute for rainfall then it nust be admitted that there is something unnatural n the mode of its application. Plants of most kinds rowing in the open air have the upper surface of heir leaves wetted by rainfall, and the deposition of lew, &c., while the under surface of the same remains comparatively dry; while, on the other hand, owing to the construction of the houses in which the Grape Vine is usually grown, and the methods in which it is necessary to train the rods or branches, the practice of syringing wets or washes only the under surface of the leaves, leaving in general the upper surface dry, and not unfrequently covered with accumulations of dust or other impurities, which must to some extent impede their proper functions. The atmosphere of a vinery, like that of other glass structures, can be regulated as to humidity or aridity, by sprinkling the floors and walls, placing pans of water upon pipes or flues, &c., and discontinuing this when the latter condition is desired. But with most cultivators no doubt the principal object of overhead syringing is to keep the foliage clean, dislodge insect pests of all kinds, or, what is better, prevent their establishing themselves in any degree. This desideratum would be more easily accomplished were vineries so constructed as to allow the Vines to be trained at a greater distance from the glass roof than is usually the case, together with some mechanical arrangement by which to raise the lower portion of the roof lights to some considerable extent, so as to admit of the operation of overhead syringing, when considered necessary, to be performed from the outside of the structure as well as from the inside, so that the upper surface of the leaves as well as the under surface could be thoroughly wetted and cleansed. The distance from the glass at which Vines are usually trained seldom exceeds 16 or 18 inches, sometimes considerably less, but at even the distance named the young shoots with the embryo fruit not unfrequently get seriously injured by close proximity, if not actual contact, with the glass, at times when it is unduly heated by the rays of the sun during the day, followed by a corresponding depression of temperature, if not actual frost, during the night. Possibly the distance from a glass roof at which the young shoots or branches of the Grape Vine should be trained should never be less than 2 feet; and even if this distance were considerably exceeded it might be still better, and I believe the attacks of such formidable enemies as thrips and red-spider would then be found less frequent than is so often the case when the foliage, &c., is allowed to almost press upon the under surface of the glass roof. *P. Grieve.*

—— The garden syringe is a very useful instrument if properly understood, but gardeners differ so much as to its mode of application that a good practical discussion of this important subject would be very useful and interesting. The conclusion which I have arrived at after upwards of twenty years' experience, a great part of which has been gained under some really excellent practical men, is that great care and consideration are necessary in the use of the syringe: some plants will bear the tremendous washings given them with impunity, but others are soon injured. The practice of overhead syringing of Grape Vines after breaking is not now, I believe, in general use, and when it is followed up it is intended more to destroy some insect pest than for any other purpose. Proper attention to root watering and damping the house is in my opinion a far better practice than any quantity of overhead syringing. Taking up the question of root-watering, as it is scarcely possible to deal with this matter without doing so, and supposing the Vines are planted inside the house, the borders should be well saturated before the Vines are started into growth, and if this is well and properly done they will not require any more root-watering until the berries begin to swell, when frequent soakings will be necessary until the fruit begin to colour, when it should be withheld altogether. Outside borders will as a rule require frequent waterings while the fruit is swelling. If the vineries be well and properly cleaned during the resting period, and the borders, walls, and floors kept sprinkled two or three times a day (according to the weather) during the growing period, the root-watering attended to as before stated, and proper attention paid to day and night ventilation, the surface of the borders kept constantly stirred to keep everything sweet and clean, and assuming that these borders are in good condition and well drained, I am sure most gardeners will agree with me that this practice well followed up will produce finer, better coloured berries, and will be more conducive to the health and longevity of the Vines than any quantity of overhead syringing, and as a rule no insect pest need be feared, at least such is my experience. If we appeal to Nature as our guide we must condemn constant overhead syringing as sometimes we do not get rain for several weeks together, although during that time night dews may be very heavy. By shutting up the houses early and damping down at a rather high temperature, and by allowing the temperature to fall gradually during the night, when we enter the houses the next morning we shall observe the leaves of the Vines covered with little crystal-like drops of water, and sometimes this dew is very heavy, and more like Nature than constant syringing. I was under the impression that the question as to whether leaves absorb vapour or not from the atmosphere was still open and undecided. [No, certainly not as to vapour.] Peaches and Nectarines are so subject to red-spider and other insects, and syringing has been found so necessary as a preventive and a cure, that in this instance it could scarcely be dispensed with, and it is surprising what hard washings these trees will bear; frequently the garden engine is brought out and the water pumped into the trees as if the place was on fire. For outdoor Peaches I have found that if the borders close up to the walls are well saturated with water soon after the fruit is set, and a few more soakings given during the stoning process, the trees and fruit are greatly benefited thereby, and the garden engine may be dispensed with, as red-spider is not so apt to injure them. We are now carrying out this practice, and although the spring has been so very cold and dry the trees are in a very healthy and flourishing condition, and a good crop of fruit is swelling off. *Alfred Gant.*

Broccoli.—If proof were needed to show how faulty our present system of planting and cultivating Broccoli is, the past winter has made it apparent, for hardy as most of the sorts are under certain conditions, they have had to yield to the inclemency of the weather which has made almost a clean sweep in most gardens, and left only here and there a few plants standing. On examining these it will be found that they all have woody stems, caused no doubt by a check received when growing, and it is this solidity of structure that saved them when others around were destroyed by the frost. This shows clearly enough that if we would have Broccoli stand, we must give the plants more room so as to let in plenty of light and air among them to make firm and build up the tissues. Poor hard ground helps materially in doing this, and it is a good plan to plant land without digging by making use of that from which Strawberries have been cleared, or to have rows between Potatos grown 4 feet apart, as then both are benefited by the extra space and the change annually from one to the other forms a good rotation of crops. To get good sturdy plants of Broccoli, they should be pricked out from the seed bed as soon as they are large enough to handle, as the removal at that early stage prevents blanching of the stems, and greatly increases the number of fibrous roots, which renders the final transplanting safe at any time after, however dry and unfavourable the weather may be, as they can get to work at once if watered in at the time to settle the soil about them. Walled-in quarters and rich ground are bad for Broccoli, which always do best in fields or market gardens where they are more exposed, for although finer heads may sometimes be obtained from plants in the first-mentioned positions, the losses are greater, and the only way to make sure of saving them is by laying them in. Where this was done last year and the stems well covered they escaped well, as the snow buried them and assisted in keeping off much of the frost. *J. S.*

Glazing.—If any great change is at any time brought about in our system of erecting and glazing glasshouses it is evident that such change is more likely to come through the market plant and fruit growers, many of whom erect their own houses, rather than through the building trade. The latter, as a rule, in all its erections proceeds very much upon the old lines—some little variations perhaps in style and ornamentation, or the introduction of costly methods of ventilation, but real novelty or boldness in the direction of simplicity and cheapness is neither found nor expected. The market grower, building for himself, is driven by that stern master, necessity, to devise erections at once cheap, simple, and in the highest degree useful. There is to be found in any such plant establishment but little of art, as it is termed; but there is a vast amount of wisdom, experience and sound sense shown, and these must at all times have precedence over the mere fads of artists and garden architects. Although the market grower wants no ornamental structures he must have them serviceable and well adapted for his special purpose. A good grower keeps his houses always at work, and more or less in heat, because his great object is to produce plants as speedily as possible, and yet so grown as to show no evidence of forcing. They must be dwarf, robust, full of leaf, and if flowering plants yet full of bloom. To get these points there is no rest; the plants from the cutting-pot or seed-pan to the market van are always moving; rest means stagnation and loss, and there is neither room nor time for stagnation. To keep driving on is the motto, and in every department it is acted up to vigorously. Some houses just erected by Mr. Bannister, a well-known market grower of Hounslow, very fully exemplify the requirements of a market grower. These are about 11 feet in width, have walls of solid brickwork 30 inches in height, from whence spring sharp-pointed span-roofs that give a maximum of light and ample head-room, whilst ventilation is provided only by means of wooden shutters some 18 inches in depth and 3 feet long, which are placed alternately along the ridge on either side. There are no side lights or bottom ventilation of any kind. That method of pouring in a flood of cold air upon plants is so far put aside as not only useless but harmful. One of these houses, some 130 feet in length, presents a remarkable spectacle inside, for it is literally full on both sides with Mrs. Marshall Fuchsia. There must be several thousands of plants in the house, and all as healthy and admirably grown as it is possible Fuchsias of the size can be, indeed the house is a picture that would strike all not conversant with the methods and doings of market plantsmen with astonishment. The stages or shelves on either side are open, and consist of 4-inch laths or battens laid across at intervals of 2 inches. This form of shelf admits the air to circulate freely amongst the pots, and also the heat to ascend from the hot-water pipes. The speed with which a house of this kind is fitted with piping is remarkable, and is done by Mr. Bannister's own men, but quick hands and the employment of indiarubber rings for the joints enable a long house to be fitted up in one day. The rafters of the roof are fixed at intervals of 12 inches, and are of 1½ inch breadth. The glass is all cut with remarkable exactness to 18 inches by 12 inches, and fills the spaces with great nicety. It is carefully bedded in putty, well pressed down, then fixed in its place with small brads, and so far is finished. There is no top putty, neither is there any to be found on any of Mr. Bannister's houses. Some years' experience has shown him that houses have less drip and require far less of repair when there are no top putties. A useful arrangement has been provided in this new house in the shape of a zinc clip, which is fastened on to the plate just beneath the outside end of each rafter, and when the lower piece of glass is put in, the corners of this just turned up and pressed over, firmly grips the corners of each pane of glass, and not only prevents slipping but assists to project rain-water well off into the gutter below. In erecting houses of this kind all the woodwork may not only be prepared but well painted under cover, and once glazed there is an end of it for some time. What the original cost of erection may be I cannot state, but it is obvious that this most serviceable class of plant-house is built at a comparatively small expense. *A. D.*

Daphne Cneorum.—Daphne indica is a very popular favourite, and highly prized for its delicious perfume; but valuable as that greenhouse plant is Daphne Cneorum is even more so, on account of its hardiness, as it may be grown by any one who has a border or rockery, in either of which positions it is just at home, and more particularly in the last-named situation, for which its procumbent spreading habit renders it just fitted; and not only this, but it likes to drive its roots under loose stones, where it can always find moisture under any conditions of weather. When so favoured, plants of it always thrive well, and bloom profusely, and at this season become objects of great beauty, as, although the flowers are not large, they are borne in trusses at the end of every shoot, and quite cushion the ground with masses of rosy-pink colour. Besides being suitable for borders or rockwork, Daphne Cneorum is fine for pots, and being naturally early blooming, it requires little or no forcing, as under the shelter of glass it comes in about the middle of March, and is then most useful for cutting and working up in bouquets. When grown in pots, the best way is to plunge the plants in a sheltered place in the open, where they can be attended to with water, and encouraged to make a free growth, to assist them in which liquid manure is a great help, and it may be given frequently at that stage, and also when swelling their buds and carrying their flowers. I have heard many complain of being unable to grow the Daphne Cneorum, and have no doubt the failure to do so arose from unsuitable soil, as I find it dislikes any that has been long under cultivation, but that it takes freely to such as is fresh and gritty, like the turfy parings from roadsides or walks, which, if chopped up, answers well to plant or pot in, or for layering with a view to increase the stock. This is the readiest mode of propagation, as by burying any of the side shoots to a depth of 3 or 4 inches they root in a year or so, and may with safety be taken off any time in the spring, which is also the best season for transplanting or dividing any old plants if done before they form their young growth. *J. S.*

Cranbourn Court, Winkfield, Windsor Forest, the seat of Mrs. Graham Smith, which is situated 2 miles from the Ascot racecourse, and 4 miles from the royal borough of Windsor, is well worth a visit from any lover of horticultural pursuits. The Orchid-house contains some nice healthy pieces of Odontoglossum Roezlii, Dendrobium thyrsiflorum, Oncidium sphacelatum, Cattleya Mossiæ, very fine varieties;

Lælia purpurata, Vanda suavis, &c., and also several fine plants of Anthurium Scherzerianum, of the Wardii type. In the vinery there is a good crop, principally of Black Hamburghs, and in the Nectarine-house are grand crops, all Elruge. The Peach-house contains a fine crop of Alexandra, Noblesse, and Princess of Wales. Peaches and Strawberries are also fine in this house. In the Tomato-house there is an exceedingly fine crop of highly coloured fruit, all Hathaway's Excelsior. In the Melon-house Mr. Bland had the Cucumber disease a short time since, but it now contains an abundant crop of Hero of Bath and Reid's Scarlet-flesh. The Gardenia-house has a lot of nice young thriving plants, perfectly clean, and flowering well. The Tea Rose-house is filled principally with Safrano, Isabella Sprunt, and Niphetos; all doing well, and giving a good supply of flowers daily. Spring bedding is also done here in good style, as well as kitchen gardening. There is as well a fine selection of hardy fruits, and the trees bid well for a good supply of fruit this season. *C. D., Staines.*

Seedlings of Winter Aconite.—In reference to notes on p. 693 it may be interesting to the writer of them to know that both Winter Aconites and Crocuses flower the second year from seed in my garden. The seeds of both ripen at the end of May, and if sown at once in rich moist soil appear above-ground in the following February, developing growth for three months. In the February of the second year most of the seedlings flower, though I do not doubt that if the seed is stored or the soil dry and poor that their development may be slower. *C. W. Dod, Edge Hall, Malpas, May* 30.

Green Tree Frogs.—It may interest you to know that keeping as I do many green tree frogs in my Orchid-houses I find they adapt themselves in colour to the plants on which they momentarily find themselves fully as much as chameleons, which I had the opportunity to observe in a long residence in Egypt. My frogs are green, dark and light, yellow, brown, and nearly black, according to the plants on which they happen to be. *H. J. Ross, Castagnola, Lastra a Signa.*

Lettuce.—As an adjunct in a salad Lettuce takes first rank, but to have it crisp and good during the summer, a season when it is always most prized, the plants must be grown quickly and well, and have no check from the time they come up till they turn in ready for use. Sown in beds, and transplanted in the ordinary way, a check cannot be avoided; for however carefully they may be lifted, some of the roots must of necessity be broken, and unless the weather happen to be very showery and favourable at the time, it takes some days before they are able to get fresh hold of the ground. The plan I have adopted for some years past is to sow in drills where it is intended for the plants to remain, which plan I can strongly recommend, as by following it the tap-root is saved, and which to Lettuce is the principal mainstay during the summer; as, unlike others at the side that only ramify near the surface, and are dependent on the moisture they can find there, the tap-root goes straight down, daily penetrating deeper and deeper as long as dry weather continues. To deprive Lettuce of such a forager for its wants and sustenance is to rob it of the chief means of support, and render it too much dependent on the aid of the water-pot, as without assistance the plants soon exhaust the supply contained in the soil within their reach, when they at once flag, and as soon as rain comes they bolt up to seed. Plants that have never been disturbed seldom do this. Not only is there a great gain in this way, but they grow considerably larger, besides which there is also a saving of labour. At this time of year Lettuces like a little shade, such as that afforded by a wall or building away from trees, where they can have the ground to themselves, or where a situation of this kind cannot be afforded them they will be found to do well between rows of Peas if these are grown a good distance apart. Later on one of the best places that can be had for them is that between Celery where the soil from the trenches has been thrown out, which gives them a great depth to root in, and by growing them there space is economised, as it is a position that cannot well be utilised for anything else without doing harm to the Celery. Wherever summer Lettuces are sown the land should be well manured, and the drills drawn about 15 inches apart, and the seed scattered thinly along; but before doing this it is advisable to water if the soil is at all dry at the time, as otherwise the seed will not germinate. When up the plants will require thinning at once, the proper distance to leave them being a foot, which affords ample room for the Cos kinds to grow to their full size. In dry weather liquid manure is a great help; and if very hot and sunny, and the plants are in an exposed situation, it is a good plan to stick a few evergreen branches alongside of the rows, to screen them a bit. As regards sorts, I find none better than the old Paris White Cos for summer use, and Hicks' Hardy Green and the Bath Cos for standing the winter. These two should be sown towards the end of August, and planted out on a warm south border, and at the same time a few to come in earlier close under the wall, where, however severe the frosts may be, they are sure to be safe. *J. S.*

The Myosotis dissitiflora splendens.—This improved variety originated with Mr. Allen, of Shepton Mallet. I received it from him as a seedling several years ago, and along with it another variety not so good. The habit and style of growth are almost identical with this species, only it is stronger and taller, the flower-stems being nearly as tall again. I do not find its constitution different from dissitiflora. It possesses all its peculiarities of going off at times, blushing crimson when roughly handled with the cold biting winds of March or cruelly bitten with 15° or 20° of frost in April. It is a charming variety, but I still prefer the species, for the splendens is not merely larger but different; the flowers are a shade or two lighter, the enlargement of the petals has converted them into a cup rather than a star, and the yellow centre and rays are almost double the size. The results of these changes are that instead of millions of stars of the deepest azure we have a series of tiny cups with yellow eyes or rays, and broad light blue sides or edges—a mixture of lovely colours no doubt, but not equalling in richness the virtually unicoloured masses of the Myosotis dissitiflora. The new variety stands the winter as well, and no better than the old. I cannot, however, admit that my favourite is "miffy." Leave it in old worn-out masses from year to year, and the frost may kill it, and the snow, the hail, chill it to death. But raise seedlings annually or the plants afresh from cuttings, and it stands the winter more bravely than almost any other plant that grows and flowers as early in the season. As to such winters as the last they kill or cripple almost everything; but even through that the major portion of our stock of this Forget-me-not pulled safely without any other protection than the snow. Any one who will take the trouble to cultivate this charming plant with as much care as is necessary to devote to Violets will hardly call it miffy, nor be disappointed with its extreme usefulness and beauty as a spring decorative plant. It is but scant praise to add that there is positively nothing to approach it, and that a garden without this Forget-me-not in the spring is something like what we might imagine a noon to be without a sun. It is strong enough to stand alone anywhere, but looks still more lovely, if possible, contrasted with the common Primrose, and it is not really miffy. *D. T. Fish.*

Richardia æthiopica.—What a useful winter and spring-flowering plant this is, and especially is it a grand and suitable plant either in a cut or growing state for Eastertide decorations. The effect produced by a well-grown and well-flowered batch of Arums, with their bold trumpet-shaped flowers of pure white, which are thrown well above an equally striking and graceful foliage, is at once commanding and pleasing. An Hon. and Rev. gentleman informed me the end of last month that the spikes and leaves of Richardia æthiopica that he had from here on Easter Eve, and which he placed in large bottles of water, were then quite fresh, and, owing to the flowers being garnished with their own foliage, resembled veritable plants. This is a fact that ought not to be forgotten by those interested in floral decoration. As this is the month in which to lay the foundation for a successful floriferous issue a few remarks respecting the summer treatment of this deservedly popular plant may not be out of place now, and may also be the means of stimulating those of your readers who may not hitherto have succeeded to their satisfaction in the cultivation of the Richardia æthiopica to fresh attempts in that direction. Our mode of procedure—and doubtless that of many others—is as follows:—"The plants, having been thoroughly watered the previous evening, are divided, and, if necessary, pulled to pieces, according to the number of plants required for the embellishment of the conservatory, &c., and planted in rows at from 16 to 18 inches apart every way in a mixture consisting of three parts loam and one of rich short dung. In planting them the plants receive a gentle shake upwards to settle the soil among the roots, treading according to the condition of the soil, which, when each plant is being finished, should be drawn back from the stem, thus forming a sort of basin for the reception of water at the roots. This done, a stick is placed to each plant, to which are tied the leaves, to prevent their being broken with the wind, which would be injurious to speedy root-action. These leaves will, however, gradually die down, but not before the roots are pushing into the prepared soil, and fresh crowns or leaves are being formed. After the lapse of a few weeks the plants will have thoroughly established themselves. The only summer attention they require after this process is to give them liberal supplies of water, and to keep them free from weeds. About the end of August the plants are ringed with a spade, as far from the stems as the size pots into which they are to be potted; and about the middle or end of September they are taken up and potted in a mixture the same as that in which they were planted, of which they will only require sufficient to fill in the chinks between the balls of the plants and the pots. After this process, in the event of the weather being bright, the plants are shaded for a few days, until the roots have taken hold of the soil, which they will speedily do. The Richardia æthiopica is a gross feeder, especially so when throwing up and developing its flower-spikes, which it does freely, and almost continuously, and therefore requires and should receive liberal and frequent supplies of liquid manure at the roots. *H. W. W.*

Anemone fulgens.—Among the many hardy spring-flowering plants this is one of the most brilliant and showy, its blooms being of that rich fiery scarlet as to be almost unequalled for brightness and effect, especially when seen with the sun on them, as then they are quite dazzling to look on, and light up a border in a way few other things can do. In patches associated with light flowers like those of the Narcissus, Triteleia uniflora, Arabis, or white Daisies or Pansies, they are wonderfully telling, and, being double, are most valuable for cutting, as they stand well in water, lasting perfectly fresh for more than a week. Those who would have Anemone fulgens in perfection should plant the roots in light sandy soil, and leave them there, as the taking up and storing for the winter has a weakening effect, for however carefully they may be laid by and preserved they are sure to shrivel, and if kept damp often rot. Left in the ground where they grow the conditions are natural, and they remain sound and plump, and when the time arrives for them to move they start away vigorously, and send up masses of flowers. The way I have always seen them do best is in having places prepared by digging out holes where they are to be planted, and working a spadeful or so of rotten manure in the bottom, over which the roots are placed in sharp soil and covered with a sprinkling of sand, which keeps them clean and prevents stagnant moisture lurking about them. Next to starting them well the most important point in the cultivation of Anemone fulgens is the preservation of the leaves on the plants till they ripen off naturally, for unless this is done the tubers suffer from the loss, which if repeated, causes them to dwindle away and die. *J. S.*

## Reports of Societies.

Crystal Palace: *May* 28.—By comparison with former displays of a similar character, the show held on Saturday last can only be said to have been of a very moderate description, and indeed poor when contrasted with the grand lot of plants brought out at Regent's Park with the previous Wednesday. Many of the stove and greenhouse plants, Azaleas, &c., shown there were also staged at Sydenham, and therefore but little need be said of them. Messrs. B. Peed & Son, Lower Streatham, and Messrs. J. Peed & Son, Roupell Park, were the only trade exhibitors of nine stove and greenhouse flowering plants, and the awards went in the order named. In the amateurs' class Mr. Chapman, gr. to J. Spode, Esq., beat Mr. B. Peed, gr. to Mrs. Treadwell, Lower Norwood, and Mr. Rann, gr. to J. Warner, Esq., Handcross Park. The Heaths were poor, and only the 1st prizes were awarded in each class, Mr. B. Peed taking one, and Messrs. B. Peed & Son the other. The Azalea classes were better, the plants for the most part being large and well bloomed. Mr. Turner had the best nine amongst nurserymen, his plants being somewhat above medium size and well bloomed. In the corresponding class for amateurs Mr. Child, gr. to Mrs. Torr, Garbrand Hall, Ewell, beat Mr. Ratty, gr. to R. Thornton, Esq.; and Mr. Henry James, Lower Norwood, and Messrs. J. Peed & Son, Roupell Park, were placed equal 2d for six in the trade class. In the amateurs' competition for a similar number Mr. Ratty beat Mr. B. Peed; and Mr. Turner had no difficulty in securing the highest award for twenty, showing a fine, fresh, and well-bloomed lot of young plants. Both trade and amateur classes for fine-foliaged plants were very good ones. In the latter Mr. Rann, who beat Mr. Penfold, gr. to the Rev. Canon Bridges, of Beddington, had a noble specimen of Areca sapida, a splendidly coloured Croton interruptus, between 5 and 6 feet in diameter; and a fine C. variegatus. Mr. B. S. Williams was 1st amongst nurserymen, with a very fine Dracæna Baptistii, a handsome Yucca filamentosa variegata, Geonoma Seemanni, and others. Messrs. Hooper & Co., Covent Garden, were 2d, and Mr. Henry James 3d. Mr. B. S. Williams and Mr. T. N. Penfold also took 1st prizes each for Ferns, both showing nice groups of nine. The amateurs' class for nine Orchids brought out a very interesting set. Mr. Child took the 1st prize, with a rather uneven group, but which contained a well furnished specimen of Vanda suavis, 4 or 5 feet high, with nine good spikes; and a very healthy Aerides Fieldingii, with four fine branching spikes not yet fully in bloom. Mr. Salter, gr. to J. Southgate, Esq., Selborne, Streatham, who came in 2d, had a very evenly balanced lot, though only of moderate size, the most noticeable examples being of Oncidium

oncolor and the small-flowered Dendrobium marmoratum. The 3d prize went to Mr. Cutt, gr. to Walter Cobb, Esq., Sydenham, who had, amongst others, an Oncidium macranthum with a very fine spike. Mr. Coningsby, gr. to C. Dorman, Esq., Laurie Park, had a small specimen of Cattleya Alexandra, a lovely white flower with a puce coloured blotch on the lip; Odontoglossum polyxanthum, with two good spikes, the flowers on one being much darker spotted than the other. Mr. B. S. Williams had a well-matched group of nine, and took his 1st prize easily. For nine Crotons, and also for nine Dracænas, Mr. Rann came in 1st; Mr. J. R. Bird, gr. to J. A. Causton, Esq., West Dulwich, 2d; and Mr. T. N. Penfold, 3d. Messrs. John Laing & Co. beat Mr. H. Coppin, of Shirley, Croydon, with tuberous Begonias. Of Roses there were none, and they were sadly missed; and of Pelargoniums, show and fancy, Mr. Turner was the best exhibitor. Messrs. Dobson & Son, of Isleworth, came to the front again with herbaceous Calceolarias, taking a 1st prize with a neatly grown and well-assorted set of plants. At the four corners of the central transept were large groups arranged for effect, and in this class the awards were taken by Messrs. John Peed & Son, Mr. C. J. Salter, and Messrs. John Laing & Co. In the miscellaneous class extra prizes were awarded to Messrs. Jackman & Son for a grand group of Clematises; to Mr. J. R. Bird for a capital group of Calceolarias and Tree Mignonette; to Mr. B. S. Williams for a nice collection of new plants; to Mr. Hooper, of Bath, for a very attractive lot of cut blooms of Pansies, Pyrethrums, Pæonies, &c.; to Mr. W. Rumsey, of Waltham Cross, for cut Roses; and Mr. W. Griffin, for Gloxinias.

Certificates of Merit were awarded to Messrs. J. Laing & Co., for Begonia Davisii flore-pleno superba; Croton Laingii, a pretty plant, with long, spirally twisted leaves, orange in colour as well as the stem, and green at the tip; Begonia Mrs. Robert Whyte, one of the finest of the pink-flowered section; and Coleus Standard Rival. To Mr. Turner, for Tricolor Pelargonium Mr. H. Cox, and for Pelargonium Martial, a show variety, with blood-red flowers, marked with a deep maroon blotch; and to Mr. B. S. Williams, for Actiniopteris radiata australis, Asplenium apicidens, Phlebodendron elegans, Heliconia nigro-punctata, and Odontoglossum Alexandræ giganteum.

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**Reading Horticultural:** *May* 19.—The Reading Society is one of a few that had a successful season in 1880. This year some fresh features were added to the schedule of prizes, and the result was a spring show on the above date of more than ordinary attractiveness. Flowering plants were a marked and leading feature throughout. In the class for twelve specimens the only exhibitor was Mrs. Marsland, The Wilderness, Reading (Mr. W. Lees, gr.), who had medium-sized plants in excellent condition, the leading subjects being Franciscea calycina major, carrying large and richly coloured flowers; Mussænda frondosa, in rare condition; Clerodendron Balfourianum, Trachelospermum jasminoides, Erica Cavendishiana, E. depressa major, Azalea Bernard André, a fine exhibition variety; Vinca alba, Bougainvillea glabra, &c. In the class for six plants the Hon. R. Boyle, Purley (Mr. Hope, gr.), secured the 1st prize with a rich coloured form of Lantana named splendens, Plumbago capensis, Tabernæmontana coronaria flore-pleno, very good; Bougainvillea glabra, in fine colour, and two others. M. Lonergan, Esq., Cressingham (Mr. Bennett, gr.), a new exhibitor, who promises well in the future, was 2d. There was also a class for four specimens for amateurs, but it brought but one exhibitor, viz., Major Storer, Purley Park (Mr. Mortimer, gr.), the 2d prize only being awarded to plants of a medium character. In the class for a single specimen flowering plant, W. Fanning, Esq., Reading (Mr. W. Ashby, gr.), was placed 1st, with a remarkably good example of the rich coloured Rhododendron Michael Waterer, grown as a standard in a small pot, and literally laden with large and finely shaped trusses of flower. N. Clarke, Esq., Reading (Mr. Armitage, gr.), and an exhibitor whose name did not transpire, were placed equal 2d; the former, with a capitally grown specimen of Tetratheca verticillata: the latter with a large white Azalea. An excellent specimen of Tabernæmontana coronaria flore-pleno, from W. G. Baskett, Esq., Reading (Mr. Palmer, gr.), was placed 3d—probably the best specimen plant in the show, but unfortunately having but a few expanded flowers.

Azaleas made a rare display, being grouped together in a conspicuous position at the lower part of the tent. The best nine were furnished by Mr. Bennett, all trained in pyramid form, even in size, a little deficient in flower here and there, but remarkably well grown. Mr. Lees came in 2d, with a few remarkably good and some indifferent plants. The 3d prize went to Mr. Armitage. In the class for four Azaleas, Lord O. Fitzgerald, Windsor (Mr. Lockie, gr.), was 1st, and Mr. Mortimer 2d. There was also a class for six plants in 8-inch pots, small and well flowered quarter specimens being generally shown.

Roses were much more numerously shown than usual, but the plants, though fairly well grown, were not the satisfactory specimens we should like to see them. Pelargoniums were a conspicuous feature because of their bright colouring; the plants generally pretty well grown and neat in appearance. Mr. Ashby, who is generally well ahead in this class, had the best nine. Mr. Mortimer came in 2d. The decorative types were decidedly in the ascendant, but as they are all free growers and flower profusely, it is not surprising they are selected for exhibition purposes.

Orchids were more numerously shown than we have seen them for a few years past, and very attractive. The plants were small, but nicely grown and flowered, and it would be a matter for congratulation if this feature of the show could be more largely extended. The best three specimens came from G. May, Esq., Caversham (Mr. Pound, gr.), who had a charming specimen of Dendrobium Falconeri, D. thyrsiflorum, and a small plant of Vanda suavis, remarkably well bloomed. Mr. Bockett came 2d with Dendrobium thyrsiflorum, Oncidium sphacelatum, and Odontoglossum citrosmum; being run hard for 3d position by Col. Loyd Lindsay, M.P., Lockinge Park, Wantage (Mr. J. Atkins, gr.), who had a nice piece of Cattleya Mossiæ, a small but well done specimen of Dendrobium nobile, and a Cypripedium barbatum. The best single specimen was Dendrobium Falconeri, also from Mr. Pound; Mr. Hope being 2d with Dendrobium thyrsiflorum. This group of Orchids found many admirers, the singular beauty of the flowers being highly attractive.

Calceolarias are always a leading feature, and generally at Reading there is that excellent balance between foliage and flowers one likes to see. Mr. Mortimer had the best six plants, having superb heads of bloom, but the foliage somewhat weak; still for size, quality, and variety, the flowers were unsurpassed. Messrs. Lockie and Bennett was 2d and 3d respectively. The lead taken by Messrs. Sutton & Sons in the improvement of the Gloxinia was seen in the capital specimens shown on this occasion. The plants were of good size, superbly grown and grandly flowered, and reflected great credit on the cultivator, Mr. Baskett, to whom the 1st prize was awarded. J. W. Workman, Esq., Reading (Mr. Durman, gr.), was 2d; and Mr. Mortimer 3d. Some of the flowers in the third collection were damaged, evidently through lack of care in packing.

As is generally the case the class for groups of plants arranged for effect to fill a space 12 feet by 10 feet was numerously produced. They are excellent padding for a show where a large space has to be filled, are usually an attractive feature, but vary somewhat in the degree of taste shown in the arrangement, though they differ but little in the plan. Mr. Baskett had decidedly the best group—a good assortment of foliage and flowering plants, with the details well worked out. Mr. Bennett was 2d, and B. Simonds, Esq., Reading (Mr. Burbidge, gr.), 3d. Mr. Pound was the only exhibitor in the class for a group 6 feet by 4 feet, Orchids being a leading feature; but the space is too confined to admit of a tasteful arrangement.

Fine-foliage plants were shown in groups of nine and four. Mr. Mortimer was 1st in the larger class, having good specimens of Alocasia metallica, Latania borbonica, Cissus discolor, Croton Weismanni, Pandanus Veitchii, Alocasia macrorhiza variegata, and others. H. T. Simonds, Esq., Caversham (Mr. Bezant, gr.), was 2d, his leading plants being Croton variegatus, Maranta Makoyana, Pandanus Veitchii, Cissus discolor, Latania borbonica, &c. Mr. Lees was well in 1st with four specimens, Latania borbonica, Pandanus Veitchii, Cycas revoluta, and Croton Weismanni; Mr. Hope was 2d, with Pandanus Veitchii and Cissus discolor as his leading plants. Mr. Mortimer had the best group of nine Ferns, all good examples of judicious culture; Mr. Bezant coming in 2d. In the class for four specimens Mr. Lees, who greatly assists to make the Reading show successful, was 1st, having a remarkably good specimen of Platycerium alcicorne, Mr. Hope coming in 2d. The best specimen foliage plant was Alsophila australis, from Mr. Bezant, hardly pressed by a capital Davallia Mooreana from Mr. Mortimer. The latter was placed 1st in the class for six Lycopodiums, having a very good lot.

Mr. C. Turner, The Royal Nursery, Slough, staged a group of small specimen Azaleas, including Roi d'Hollande, very fine; Stella, Ferdinand Kegeljan, Duc de Nassau, Cordon Bleu, the nearest approach to a blue Azalea we have yet seen; Countess of Beaufort, Apollo, very fine; Daphne, which appears to be a double form of Apollo; Bernhard André, Flag of Truce, Jean Vervaene, &c.—about fifty plants in all. Certificates of Merit were awarded to Mr. Turner, for Azalea Madeline, a very fine double white variety; and to variegated Zonal Pelargonium Mr. Henry Cox, the leaves of which are grandly coloured. An extra prize was awarded to Mr. Turner's group.

In the cut flower classes Roses were not numerously shown, but good for the season. Mr. Tranter, Upper Assenden, was 1st with twelve blooms; Messrs. Lees and Lockie came in 2d and 3d. In addition, Mr. Tranter had a box of splendid blooms of Maréchal Niel, very large and richly coloured, to which the 1st prize was awarded in the miscellaneous class. The classes for twelve and six bunches of cut flowers brought good competitions; with the larger number Mr. Bennett was 1st, and Mr. Atkins a very close 2d. In the smaller class for six bunches Mr. Mortimer came in 1st, Messrs. Hope and Burgess being 2d and 3d. Generally these stands of flowers were flat and monotonous, and possibly some means could be adopted to make them more effective. There were prizes for show and fancy Pansies, but the exhibitors had so mixed them up together—not, apparently, understanding the distinction—that it will be best in the future to offer prizes for cut Pansies, leaving the exhibitors to show what they please.

As usual, table decorations, arrangements in wild flowers, bouquets, and button-holes, were numerously produced, but the late hour when they were judged and the crowded state of the tables prevented any particulars from being gleaned. The arrangements in wild flowers were very pretty, and it is evident many choice Ferns grow in the neighbourhood of Reading.

Fruit was but sparingly produced, and we regret being unable to afford particulars. Vegetables were in strong force, and, despite the season, generally very good. In the class for a brace of Cucumbers, the special prizes given by Messrs. Sutton & Sons, the 1st prize went to Mr. Howe, gr. to Sir R. Sutton, Bart., Benham Court, for Challenger, a very fine and handsome variety, raised between Telegraph and Freeman's Yard Long. It was deservedly awarded a Certificate of Merit. In the class for a brace competing for the Society's prizes Mr. Lockie was 1st, with Model; and Mr. Ross, The Gardens, Welford Park, 2d, with Tender and True.

Despite the boisterous weather there was a good attendance. The plants were, as usual, arranged with admirable judgment by Mr. W. Phippen, the superintendent.

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**National Auricula: Northern Section,** *April* 26.—This show was held in the Town Hall, Manchester, in connection with one of the spring shows of the Royal Botanical and Horticultural Society. The Auriculas were not equal to those shown last year, either in point of numbers or quality, owing to the lateness and the generally unfavourable character of the season. The competition was confined to Northern growers; the classes for single specimens of show varieties being well filled, and the competition close. Of alpine Auriculas, which are not so extensively cultivated in the North as in the South, the display was not equal to that recently seen at South Kensington. The gold-laced Polyanthuses were fairly represented; and various interesting collections of miscellaneous plants were staged. The exhibition was well attended. The prize list stands as follows:—

Class A. *Six Auriculas, dissimilar.*—1st, Mr. Jonathan Booth, with George Lightbody, Lancashire Hero, Alexander Meiklejohn, Prince of Greens, Acme, Charles Perry; 2d, Mr. Benjamin Simonite, with Lancashire Hero, John Simonite, George Lightbody, Mrs. Douglas, Frank Simonite, and a green-edged seedling; 3d, Mr. E. Pohlman, with Alma, Lorne, Perry, Garibaldi, Catharina, New Green; 4th, Mr. Thomas Mellor, with Bolivar, Prince of Greens, and four seedlings; 5th, S. Barlow, Esq., with Queen Victoria, Trail's Beauty, Frank Simonite, Lovely Ann, Colonel Taylor, and Lord Palmerston; 6th, Mr. William Bolton, with Trail's Beauty, Lovely Ann, Frank Simonite, Lancashire Hero, Ellen Lancaster, and Alexander Meiklejohn; 7th, William Brockbank, Esq., with Lancashire Hero, Alexander Meiklejohn, Florence, Lovely Ann, Colonel Taylor, and Acme.

Class B. *Four Auriculas, dissimilar.*—1st, Mr. Benjamin Simonite, with Mrs. Douglas, Frank Simonite, Lancashire Hero, and a green seedling; 2d, Mr. Jonathan Booth, with Acme, Alma, Lorne, and Prince of Greens; 3d, Mr. Thomas Mellor, with Ringleader, Reliance, a white-edged seedling, and two seedlings; 4th, Mr. E. Pohlman, with Garibaldi, Anna, Trail's Beauty, and Alexander Meiklejohn; 5th, S. Barlow, Esq., with Smiling Beauty, Anna, Alexander Meiklejohn, and C. J. Perry; 6th, Mr. William Bolton, with Confidence, Talisman, J. Waterston, and a seedling self.

Class C. *Two Auriculas, dissimilar.* — 1st, Mr. Jonathan Booth, with Acme and Dr. Horner; 2d, Mr. E. Pohlman, with New Green and Mazzini; 3d, Mr. Wm. Bolton, with Alex. Meiklejohn and a seedling; 4th, S. Barlow, Esq., with Duke of Argyll and Trail's Beauty; 5th, Mr. J. Beswick, with Erebus (not Horner's) and Lovely Ann; 6th, Mr. Thomas Mellor, with two seedlings; 7th, Mr. Benjamin Simonite, with Lancashire Hero and John Waterston.

Class D. *Two Auriculas, dissimilar—open to maiden growers only.*—1st, Mr. Ed. Shepley with Rev. Geo. Jeans and Pizarro; 2d, Mr. Geo. Geggie with Mrs. Sturrock and General Niel.

*Premier Auricula in the Show.*—Mr. Jonathan Booth, with Prince of Greens.

Class E. *Alpine Auriculas, four dissimilar.*—1st, Mr. J. Beswick, with Goliath, Conspicua, Dolly Varden, and Diadem; 2d, Mr. Thomas Mellor, with Ovid, Dazzle, Diadem, and Conspicua; 3d, S. Barlow, Esq., with Brightness, Spangle, Beatrice, and Mercury; 4th, Mr. E. Pohlman, with four seedlings; 5th, R. Gorton, Esq., with Mrs. Meiklejohn, Lightbody, Beatrice, and Diadem; 6th, Mr. Shaw, with Queen Victoria, Ovid, Elcho, and Diadem; 7th, Wm. Brockbank, Esq., with Ovid, Sydney, Diadem, and Tenniel.

Class F. *Single specimens, green edges.*—Premium and 2d, Mr. Jonathan Booth, with Colonel Taylor; 1st, 3d, and 4th, Mr. Benjamin Simonite, with a seedling, Lovely Ann, and Talisman; 5th, Mr. Thomas Mellor, with a seedling; 6th and 8th, S. Barlow, Esq., with King of Greens and a seedling; 7th, Wm. Brockbank, Esq., with Sir Charles Napier.

Class G. *Single specimens, grey edges.*—Premium, 1st, 2d, 3d, and 5th, Mr. Thomas Mellor, with Ringleader, Confidence, Bolivar, J. Waterston, and a seedling; 4th, 6th, and 7th, S. Barlow, Esq., with Samuel Barlow, Alderman Brown, and Complete; 8th, Mr. Wm. Bolton, with George Lightbody.

Class H. *Single specimens, white edges.*—Premium, 2d, and 5th, Mr. Thomas Mellor, with seedling (Reliance), John Simonite, and a seedling; 1st and 4th, Mr. J. Booth, with Acme and Mrs. Headly; 3d, Mr. Shaw, with Catharina; 6th, Wm. Brockbank, Esq., with Frank Simonite; 7th, Mr. Benjamin Simonite, with R. Dean; 8th, Mr. Pohlman, with Bright Venus.

Class I. *Single specimens, selfs.*—Premium, 3d, and 8th, Mr. Thomas Mellor, with three seedlings; 1st, Mr. Pohlman, with a seedling; 2d, Mr. Shaw, with Perry; 4th, R. Gorton, Esq., with Blackbird; 5th and 7th, Mr. J. Booth, with Ellen Lancaster and Lord Lorne; 6th, S. Barlow, Esq., with Mazzini.

Class K. *Single specimens, alpines, yellow centres.*—Premium, 1st and 3d, Mr. Pohlman, with three seedlings; 2d, Mr. J. Beswick, with Dazzle; 4th, Mr. Shaw with Ovid; 5th, R. Gorton, Esq., with Mrs. Meiklejohn

Class L. *Single specimens, alpines, white centres.*—Premium, Mr. E. Pohlman, with a seedling; 1st, Mr.

Beswick, with Conspicua; 2d, R. Gorton, Esq., with Beatrice; 3d, Mr. J. Booth, with a seedling; 4th and 5th, S. Barlow, Esq., with Elcho and Little Annie.

Class M. *Polyanthuses, three dissimilar, black grounds.*—1st, Mr. J. Beswick, Lancashire Hero, a seedling, and Congleton Queen; 2d, S. Barlow, Esq., with President, Exile, and John Bright; 3d, Wm. Brockbank, Esq., with Lancashire Hero, Favourite, and Exile; 4th, Wm. Bolton, with Exile, Hero, and Favourite; 5th, Mr. T. Mellor, with Exile, Lancashire Hero, and Favourite.

Class N. *Polyanthuses, three dissimilar, red grounds.*—1st, Mr. J. Beswick, with Lancer, George IV., and unknown; 2d, S. Barlow, Esq., with Walsall Seedling, Firefly, and Sunrise; 3d, Wm. Brockbank, Esq., with Prince Regent, William IV., and George IV.; 4th, Mr. Wm. Bolton, with Lincoln, George IV., and unknown.

Class O. *Single specimen Polyanthus, black ground.*—Premium, Mr. Wm. Brownhill, with Favourite; 1st and 2d, Mr. J. Beswick, with Favourite and Lancashire Hero; 3d, 4th, and 5th, Mr. E. Shepley, with President, Exile, and Rev. F. D. Horner; 6th, and 7th, S. Barlow, Esq., with a seedling, and J. Bright.

Class P. *Single Polyanthus, red ground.*—Premium, S. Barlow, Esq., with Sunrise, very fine; 1st, S. Barlow, Esq., with Jane; 2d, Mr. E. Shepley, with William IV.; 3d, Mr. J. Beswick, with George IV.; 4th, Mr. G. Geggie, with Prince Regent; 5th, S. Barlow, Esq., with Walsall Seedling; 6th, S. Barlow, Esq., with Firefly; 7th, Mr. J. Beswick, with one unknown.

Class Q. 12 *Fancy Auriculas, dissimilar.*—1st, S. Barlow, Esq.; 2d, Mr. Wm. Bolton.

Class R. 12 *Fancy Polyanthuses, dissimilar.*—1st, Mr. Wm. Brownhill.

Class S. 12 *Fancy Primroses, dissimilar.*—1st, W. Brockbank, Esq.

First-class Certificates were awarded to Mr. Thos. Mellor, for white-edged Auricula Reliance; and to Mr. E. Pohlman, for dark self, Brunette.

## Notices of Books.

*New Commercial Plants and Drugs.*—Mr. Christy has issued a fourth part of this publication, destined to make known the properties and uses of newly introduced vegetable substances. Figures are given, amongst others, of Ceara rubber, Manihot Glaziovii, Mangabeira rubber, Hancornia speciosa.

—— *Spanish Plants.*—The second part of Wilkomm's *Illustrations Floræ Hispaniæ insularumque Balearium* has lately been issued. It comprises very faithfully executed portraits of new or rare species native to Spain or the Balearic Islands. The text is in Latin, Spanish, and French. The plants figured in the present issue are Cressa cretica var., Cephalaria balearica, Hymenostemma Pseudanthemis, Glossopappus chrysanthemoides, Coleostephus myconis, Centaurea balearica, Sonchus cervicornis, Æthcorhiza montana, Ranunculus abnormis, R. nevadensis, and R. nigrescens.

—— *Arboretum Segrezianum.*—A second part of this beautifully illustrated work has lately been issued. The plants illustrated are Cratægus Lavallei, a new species of unknown origin, with shiny branches, glabrous, oblong, shortly stalked serrate leaves, large white flowers in terminal corymbs and subglobose reddish-yellow fruits. The autumnal tints of the foliage and the richly-coloured fruits render this "the most desirable of all the species." The native country is quite unknown. Diervilla sessilifolia (the Weigela splendens of gardens), Nuttallia cerasiformis, Catalpa Kæmpferi—a Japanese plant often confounded with C. Bungei; it is hardy in the neighbourhood of Paris. Exochorda grandiflora, a charming Rosaceous shrub, described by Lindley in *Gardeners' Chronicle*, 1858, p. 925, with simple oblong glabrous shortly stalked leaves, and racemes of large white flowers. It is a native of Northern China, and is quite hardy.

## WOOD WEAVING.

We quote the following interesting details on a very peculiar manufacture from *Cassell's Family Magazine*. The manufacturing district of the Austrian empire lies in the north of Bohemia, where miniature Birminghams and Manchesters are congregated together by the dozen, and hundreds of thousands of "hands" are actively and ceaselessly employed. For miles the high road is bordered by houses, chiefly one-storied wooden buildings with roofs of thatch or shingle, where the rattle of looms may be heard without intermission from early dawn till late at night. In some of the towns numberless chimneys pour forth volumes of black smoke by day, while by night the windows of the large factories glow with light as if there were a general illumination. One of the busiest of these little towns and villages is Ehrenberg, which lies close to the Saxon frontier, and is distinguished from the rest by a peculiar industry, which appears to be carried on in only two other places besides. The peculiar industry for which Old Ehrenberg is distinguished is wood weaving—*sparterie* work, as it is called—which was introduced something more than a century ago by a carpenter named Anton Menzee. The threads used for weaving are no thicker than writing paper, and vary in width from the fifth to the twenty-fifth part of an inch. The Aspen is the only tree whose wood is sufficiently tough and pliable to supply these threads in the required lengths. The Aspen was formerly indigenous in Bohemia, but has now almost entirely disappeared, or at all events does not exist in sufficient quantities to supply the demand in any degree; consequently the raw material for the *sparterie* work has to be brought from Russian Poland, which is both a laborious and expensive process. The wood merchants go to Poland twice every year, in the early spring and in the autumn, the only time at which the wood can be cut with advantage, as none can be used at once but that in which the sap has not yet risen, or from which it has departed. Wood cut during the summer has to lie in water for a year, otherwise it is red and useless. It must be quite free from knots, as the smaller defects or irregularity, such as ordinary persons would hardly notice, make the fibres quite unfit for weaving purposes. Arrived in Ehrenberg, the wood is planed and divided into pieces nearly 2½ inches wide. When these have been made perfectly smooth, they are divided again by an instrument resembling a plane, but furnished with a number of fine knife-blades, which mark the wood at regular distances, according to the width the strips are to be. This process requires the utmost dexterity and nicety, as it is absolutely essential that the divider should exactly follow the direction of the fibre, and for this reason among others it must always be done by hand. The divider makes incisions one-fifth of an inch deep; the wood is then carefully planed, and comes off in thin paper-like strips, some of which are not wider than a stout thread; they are gathered up as they fall by women, who examine them, and pick out any defective pieces; and, in spite of all the care taken in the selection and manipulation of the wood, there is a good deal of waste in the process. The threads or fibres being now ready, must be tied in couples at one end before they can be woven. This work is done by children, and in Ehrenberg little creatures of four years old and upwards are employed at it, and earn 4*d.* a day. The weaving is done chiefly by women, and in looms which differ considerably from those in ordinary use, the fibre being, as before mentioned, not more than from 39 to 50 inches in length. The longer fibres form the warp, the shorter (28 to 32 inches) the woof, which is passed in and out by means of a little instrument with an eye like a needle. Until within the last few years this concluded the whole process—the "foundations," as they are called, were complete, and nothing more was done except that a few hats and caps were made of them; but these were of the very simplest description, and anything but becoming. Moreover, they were glued together, which made them very unpleasant to wear in hot or wet weather, and accordingly they fetched but 1*s.* 3*d.* or 2*s.* 4*d.* per dozen, and were worn only by the very lowest classes. Within the last few years, however, a great change for the better has taken place, thanks probably in part to the interest shown by the Government in the manufacture, in part to the establishment of an enterprising firm, and in part perhaps to the fact that the Ehrenbergers have at last become alive to their own interests. At present Ehrenberg sends out not only the raw material, but ready-made goods—fashionable hats of all kinds, and a variety of fancy articles skilfully concocted out of the wood fabric; ladies' hats of every possible description and the latest fashion, such as no one need be ashamed to wear, are made entirely of wood, and sold at astonishingly low prices. Men's hats are to be had of all shapes, from the Panama hat—not a whit inferior to that bought in Paris—to the common hats exported in large quantities to China, and the linings or foundations which give stiffness to the fez of the Turkish soldier. The export trade embraces all Europe, from Spain to Russia, extends beyond the Caucasus to India and China, and maintains active relations with North and South America as well as Australia. The manufacturers are in direct communication with the four quarters of the world, and their goods are being introduced into Africa by French and English traders.

## FORESTRY.

Destruction of the Pine Forest of Ravenna.—The celebrated Pine forest, the charm and the pride and the glory of Ravenna, is a thing of the past. The groves of stately Pine trees that rose terrace above terrace for mile after mile along the shore of the Adriatic are no more. The ruthless frost that destroyed the orchards of France and Germany destroyed also the Pines of Ravenna; and a forest so rich in memories of the past and associated with so much that is dear to artist and poet has disappeared, or is marked only by lifeless, leafless trunks. This calamity—for such it is, as the noble Pines were, if not a source of wealth, at least a source of sustenance to a considerable population—occurred in the winter of 1879-80, yet it has hardly got on record. It has, however, none the less been talked of and deplored. Indeed, all lovers of trees, apart from any sentimental associations, will regret the loss of the Ravennese, which in these days of travelling and reading is really the loss of the whole world. Although it is recorded that the Adriatic was frozen in places some two centuries ago, such an intense wave of cold as that which passed over that part of Europe in 1879-80 has not there been experienced within historic time. At least such may be assumed to be the case, for the Pine forest seems to have grown up with the city, whose history is of the most venerable, and we read of no interruption in its glory. Whether the forest was originally planted by the hand of man or by Nature we cannot tell, but most likely the former, as the seeds of the Pine forming it (Pinus Pinea) are, and have been from time immemorial, a valuable article of food. In former times their importance was doubtless greater than at the present day. Yet the history of the great Pinetum is not unwritten, for we find the title of a book * which we have not been able to consult. The extent of the forest is variously estimated by different writers. Thus, J. A. Symmonds, in his *Ravenna*, states that it stretched some 46 miles along the coast, whereas in the more prosaic description of Murray's *Handbook of Northern Italy* the length is given as 25 miles. It extended from the Lamone River, north of Ravenna, to Cervia, on the south, occupying a sandy tract varying from 1 to 3 miles in breadth. The following description from Symmonds' *Ravenna* is the best to which we have access:—

"As early as the sixth century the sea had already retreated to such a distance from Ravenna that orchards and gardens were cultivated on the spot where once the galleys of the Cæsars rode at anchor. Groves of Pines sprang up along the shore, and in their lofty tops music of the winds moved like the ghosts of waves and breakers plunging upon distant sands. This Pinetum stretches along the shore of the Adriatic for about 40 miles, forming a belt of variable width between the great marsh and the tumbling sea. From a distance the bare stems and velvet crowns of the Pine trees stand up like Palms that cover an oasis on Arabian sands; but at a nearer view the trunks detach themselves from an inferior forest growth of Juniper and Thorn and Ash and Oak, the tall roofs of the stately Firs shooting their breadth of sheltering greenery above the lower and less sturdy brushwood. It is hardly possible to imagine a more beautiful and impressive scene than that presented by these long alleys of imperial Pines. They grow so thickly, one behind another, that we might compare them to the pipes of a great organ, or the pillars of a Gothic church, or the basaltic columns of the Giant's Causeway. Their tops are evergreen and laden with heavy cones, from which Ravenna draws considerable wealth. Scores of peasants are quartered on the outskirts of the forest, whose business it is to scale the Pines and rob them of their fruit at certain seasons of the year. Afterwards they dry the Fir-cones in the sun, until the nuts which they contain fall out. The empty husks are sold for fire-wood, and the kernels in their strong shells reserved for exportation. You may see the peasants, men, women, and boys, sorting them by millions, drying and sifting them on the open spaces of the wood, and packing them in sacks to send abroad through Italy. The *pinocchi* or kernels of the Stone Pine are largely used in cookery, and those of Ravenna are prized for their good quality and aromatic flavour. When roasted or pounded they taste like a softer and more mealy kind of Almond. The task of gathering this

* *Istoria Civile e Naturale delle Pineti Ravennati.* Ginani, Roma, 1774. 4to, 478 pages, 18 plates.

harvest is not a little dangerous. They have to cut notches in the straight shafts, and having climbed often to the height of 80 feet, to lean upon the branches, and detach the Fir cones with a pole—and this for every tree. Some lives, they say, are yearly lost in the business."

Owing to various causes, not all due to the solemn solitude afforded by the trees, the forest has been the haunt of many noted poets from Dante to Byron. The latter commemorates it, and others who have sung its praises, in the following beautiful lines :—

"Sweet hour of twilight !—in the solitude
Of the Pine forest and the silent shore
Which bounds Ravenna's immemorial wood,
Rooted where once the Adrian wave flow'd o'er,
To where the last Cæsarean fortress stood,
Evergreen forest ! which Boccaccio's lore
And Dryden's lay made haunted ground to me,
How have I loved the twilight hour and thee !

"The shrill cicalas, people of the Pine,
Making their summer lives one ceaseless song,
Were the sole echoes, save my steed's and mine,
And vesper bells that rose the boughs along :
The spectre huntsman of Onesti's line,
His hell-dogs, and their chase, and the fair throng
Which learn'd from his example not to fly
From a true lover,—shadow'd my mind's eye."

But the Pine forest of Ravenna, that was for so long, is now no more, and all the world is lamenting. The Pine woods near Pisa and Florence, and in other parts of Tuscany, are very beautiful, perhaps equally beautiful, though not so extensive, as was the Pine forest of Ravenna, and immeasurably less interesting. *H.*

## Natural History.

THE THRUSH.—In the northern counties, where the song of the nightingale is never heard, there can be no doubt that the skylark is the first favourite amongst our singing birds. The next in our estimation unquestionably is the thrush, throstle, or mavis, as it is indifferently called. So far as we have been able to judge, in the country for some miles around Prescot, the larks appear to be nearly as numerous as in former years, but with respect to the thrush the falling off in numbers is most remarkable and much to be regretted. The two winters preceding the last were very fatal to the thrush, but the last has been the worst of all. Should next winter equal it in severity, the thrush will become one of the rarest of our song birds. There are three species of the thrush common to the district. The largest is the thorn thrush, which has received its name from its nests being generally found in hedges. The most beautiful variety is the gorse thrush, which is greatly admired for the beauty of its yellow breast and legs. The wood thrush, the smallest of the three, is a remarkably pretty bird, with nicely-spotted plumage.

Knowsley Park has long been a favourite haunt of the thrush. Formerly, at this time of the year, after a shower of rain, scores of them might be seen on the lawns in front of the Hall looking out for worms. The Rhododendrons were alive with them, as for years the ample cover afforded by these plants has led the thrushes to build their nests in them. At present, it is questionable whether there is one thrush in Knowsley Park as against fifty which were there half a dozen years ago. From various places widely apart from each other we have the same report.

One gentleman writes us, "The song thrush is undoubtedly less numerous in this locality, and I believe generally, than it formerly was. The same might be said of blackbirds, but to a less extent; indeed nearly all small birds, with the exception of sparrows, chaffinches, and bullfinches, are diminished in numbers by the terrible severity of the three last winters, and especially the last one, which was the most destructive to both animal and vegetable life of any within my memory."

From another part we have the following, from the Rector of the parish :—"As I write a throstle is warbling most charmingly in my garden, but doubtless the hard winter has greatly reduced the number of them, although by placing sopped bread in the window sills I did my best to keep them alive during the Arctic weather. The blackbirds seem as numerous as ever."

From another part the Vicar of the parish writes that his wife "did her best to keep the throstles alive during the late severe weather, but she is sure that very many died. I think I may with confidence say that we have not yet heard a 'song.'"

We are quite sure that the serious diminution in the numbers of these favourite songsters will be universally regretted. We hope, however, that next winter all who love to hear the singing of birds will do what they can to provide their favourites with food when the snow and frost prevent them obtaining it in the natural way. It is probable that few of the birds would succumb to the cold if they could procure proper supplies of food during the winter. *Prescot Reporter.*

## Law Notes.

HIGH COURT OF JUSTICE : Chancery Division (*before Mr. Justice Fry*).—THE COMMISSIONERS FOR THE EXHIBITION OF 1851 *v.* THE ROYAL HORTICULTURAL SOCIETY.—This is an action brought by the Commissioners for the Exhibition of 1851 against the Royal Horticultural Society for recovery of possession of certain land at Kensington leased by the plaintiffs to the defendants.

Mr. NORTH, Q.C., in opening the plaintiffs' case, stated that by an order of the Court of Appeal, made in July of last year, all the debenture holders in the defendant Society had been made parties to the action by the name of Mr. Castro, one of them, being added as a defendant. The plaintiffs, however, contended that the holders of debentures had no interest in the questions in dispute.

Various agreements have been entered into between the parties, the first being dated in 1860, by which the plaintiffs agreed to lease to the defendants a portion of their estate at Kensington Gore, "for an ornamental garden, in which they might exhibit and display the progress of horticulture," which would tend to "extend the influence of the science and art of horticulture upon productive industry." The Society and the Commissioners respectively agreed to expend a sum of £50,000 upon the property in the manner set out in the agreement. To raise this amount the defendants issued debentures to the extent of £40,000, the balance of £10,000 having been obtained by donations and fees. An account was to be kept of all money received by the Society, to be rendered half-yearly to the Commissioners, but in making up such accounts the defendants were to be entitled to deduct from the gross receipts certain expenses in respect of keeping up Chiswick Garden for experimental purposes, the amount from time to time payable as interest upon debentures, &c.; lastly, a rent of £2145 to be paid by the Society if the previous deductions should leave a sufficient surplus, otherwise "such a sum only as shall be equal from year to year to the residue of the receipts over and above the sums so in precedence." In the event of the surplus being more than sufficient to pay such rent such surplus was to be divided, one-half going to the plaintiffs as additional rent. For the purpose of regulating these accounts a committee of six (three Commissioners and three members of the Society) was to be appointed. There was also a proviso that in case it should happen after the expiration of the first five years of the lease that the sum or sums payable thereunder to the plaintiffs as rent should fail "in every one of any five consecutive years subsequent to the first five years to be equal to the sum of £2145 per annum" it should be lawful for the Commissioners to re-enter upon the demised premises and to resume possession thereof, with any improvements which the defendants had made. The agreement also provided that after payment of the expenses, interest, and rent, three-fifths of the money received by the defendants should be applied in liquidation of the debt of £40,000, and also, that at the expiration of the term of the lease (thirty-one years) the Commissioners should have the option of either renewing, or declining to renew, on the conditions in the latter case, of taking upon themselves the payment of any undischarged part of the debenture debt of £40,000 to the extent of £20,000, or in the event of less than £15,000 remaining undischarged they should pay the amount to the Society. By a supplemental agreement made in the same year additional land was granted to the defendants at a nominal rent of 1s. per year (as an acknowledgment of the tenancy) upon special conditions, the land so granted being a temporary accommodation to the Society. Then, by an agreement made in March, 1861, power was given to both parties to increase at their option the authorised expenditure of £50,000 by £10,000, one of the conditions being that should the defendants avail themselves of this power, they should pay upon every additional £100 the further rent of £4 5s. Another agreement was entered into in May, 1864, by which the rent to be paid by the defendants for the garden was fixed at £2400 a year, in consideration of a further expenditure on the part of the Commissioners, and the grant of the additional land at the nominal rent was continued. The last agreement was made in April, 1876. It recites that all the structures previously agreed upon had been erected ; that £49,700 was due on the debenture debt, that the receipts were insufficient to provide for the necessary repairs, &c. ; and that it was anticipated that in the course of the year the Commissioners would become entitled to re-enter and take possession on the nonpayment of rent. Under these circumstances the Commissioners, with a view to assisting the Society in raising a sufficient sum (not to exceed £7000) to meet immediate purposes, agreed that until the debenture debt and interest had been fully paid off, any sum due for rent should in the first place be applied in payment of the principal and interest upon the loan, and then any balance due as rent, after satisfaction of the loan and interest, should be expended according to the directions of the committee. But there was a provision that if the income of the Society during the period between December 26, 1877, and December 25, 1878, from entrance fees, subscriptions of Fellows, or other annual subscribers, should not amount to £10,000, the Commissioners might determine the agreement as to the application of the money due as rent.

These are the material points of the agreements, and form the basis of the present action, the plaintiffs alleging that the income of the Society had not amounted to anything like the sum named, and that, pursuant to the agreements, notice had been given to the defendants determining the arrangements come to and claiming repossession of the premises. The defendants, however, declined to give up such possession, on the ground that they were under certain obligations to the debenture-holders, which prevented them from doing so. The Commissioners therefore ask for delivery to them of the land leased to the defendants, for mesne profits, for damages for non-delivery, and an order on all the defendants to pay the costs of the action.

His LORDSHIP said that this was an action which would evidently occupy some time, and he hoped that by giving facilities for the hearing, and by as small a number of witnesses as possible being called, it might be disposed of before the Court rose for the Whitsun vacation.

Mr. NORTH stated that the plaintiffs did not propose to call any witnesses, but his opening must necessarily occupy some time. Mr. North then proceeded to deal with the statement of defence, by which the defendants alleged that the nonpayment of rent was due to the fact that the plaintiffs had not permitted the Expenses Committee to meet since 1871, although constantly applied to to do so, and that therefore the amount payable as rent could not be ascertained. It was also submitted that the power of re-entry possessed by the plaintiffs differed from an ordinary power of re-entry, because the plaintiffs were not bound to accept the rent, if tendered, unless it could be shown to have arisen after satisfaction of the prior charges provided for by the agreement. The debenture-holders also filed a separate statement of defence, claiming priority upon the property in respect of their debentures, and contending that there was an actual partnership existing between the Commissioners and the Society, and that both were liable for the amount due upon the debentures. To these defences the plaintiffs filed a reply, and the debenture-holders served a rejoinder. Various affidavits were read in support of the plaintiff's case, the only witness called being Dr. Hogg, the Secretary of the Royal Horticultural Society, who was examined upon the accounts, and proved the various amounts which had been paid by the defendants to the plaintiffs in consideration of rent. Mr. North argued at some length that the Commissioners were entitled to re-enter upon and take possession of the premises, and he submitted that the case which the defendants had set up was a purely technical one, but one upon which they could not succeed. It was a matter of notoriety that these gardens had not been a success, the only periods in which any surplus was left being "Exhibition years," when a considerable foreign element was introduced, and though it was a matter of regret that the defendants had been unsuccessful in their endeavour to promote the science of horticulture, the Court would not deprive the plaintiffs of their legal right to the property.

The case is still proceeding.

## Obituary.

WE have heard with regret of the death, at Romford, on May 27, of Mr. JOHN SANGSTER, the raiser of the early Pea, "Sangster's No. 1," which for many years has been a household word with every gardener. Mr. Sangster was a member of the old seed firm of Hay, Anderson & Sangster, of Newington, and was one of the three or four first life subscribers to the Gardeners' Royal Benevolent Institution. For many years he also served as a member of the committee of management, and was one of the auditors. Some twenty years ago the firm died out, and Mr. Sangster unfortunately met with a reverse of fortune which left him in such reduced circumstances that he was placed on the pension list of the Institution which he had helped to found, and for over eighteen years he en-

joyed its benefits. Though reduced by misfortune to a position of obscurity, Mr. Sangster's name bids fair to be handed down to posterity in connection with his No. 1 Pea, the history of which is somewhat curious. It first became known about thirty years ago, and was tried at Chiswick in 1852, in conjunction with sorts named Early Frame, Early Kent, and Early Empress, and which were then "considered identical." It was also stated at the time that "Sangster's No. 1 was admitted to have been sent out in mistake." Be that as it may, it is not now generally admitted that "Sangster's No. 1" and "Early Frame" are identical; indeed, they are classed as distinct by the authorities, and both sorts have a pretty formidable string of synonyms—the last-named, indeed, having more than the famous Early Charlton, with which so many liberties have been taken. In the same year as the Chiswick trial, 1852, Mr. Bowes' famous horse, Daniel O'Rourke, won the Derby, and in the following season "Sangster's No. 1" was sent out as "Daniel O'Rourke;" hence arose the synonym which from that day to this has been as popular in gardens as its original name. These two names were not, however, destined to live alone, for, as the trading phrase goes, "there was money it;" and it has since been rechristened at least eight times, its recognised synonyms now being, in addition to the most popular of all—Daniel O'Rourke—Dickson's First and Best, Dunnett's First Early, Early Washington, Carter's Earliest, Sutton's Champion, Isherwood's Railway, Hooper's Early Rival, and Carter's Improved Emperor. At the present day Sangster's No. 1 Pea is sold every spring by hundreds, ay, thousands of bushels, and though its raiser is no more, he has left behind him a most enduring monument.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, June 1, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| May | In. | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 26 | 29.59 | −0.17 | 67.2 | 52.8 | 14.4 | 59.3 | + 4.1 | 52.3 | 78 | N.E.: N.W. | 0.05 |
| 27 | 29.67 | −0.10 | 68.0 | 56.0 | 12.0 | 60.3 | + 4.9 | 56.0 | 86 | N.: W. | 0.00 |
| 28 | 9.69 | −0.08 | 70.0 | 55.8 | 14.2 | 61.3 | + 5.7 | 56.0 | 82 | N. | 0.28 |
| 29 | 29.90 | +0.12 | 63.5 | 51.0 | 12.5 | 54.8 | − 1.0 | 51.8 | 90 | N.: N.E. | 0.29 |
| 30 | 30.16 | +0.36 | 75.2 | 47.0 | 28.2 | 59.7 | + 3.7 | 47.5 | 64 | N.E.: E.N.E. | 0.00 |
| 31 | 30.15 | +0.35 | 76.2 | 50.0 | 26.2 | 62.3 | + 6.0 | 49.2 | 60 | E.N.E. | 0.00 |
| June 1 | 30.01 | +0.21 | 81.5 | 51.0 | 30.5 | 63.9 | + 7.4 | 51.7 | 63 | E.N.E.: N.W. | 0.00 |
| Mean | 29.88 | +0.10 | 71.7 | 51.9 | 19.7 | 60.2 | + 4.4 | 52.1 | 75 | N.: N.E. | 0.62 |

May 26.—Dull misty morning; occasional showers. Cloudy dark night.
— 27.—Dull morning; a close but rather fine day. Dark night.
— 28.—Fine but dull morning; occasional light showers. Thunder at 6 P.M. Rain to 0.25 inch in quarter of an hour. Overcast night, but nearly calm.
— 29.—Rain early in the morning. A dull gloomy day. A fine night.
— 30.—A very fine warm day; fine clear night.
— 31.—A very fine warm dry; fine clear night.
June 1.—A very fine bright day. The maximum temperature was the highest of any since September 4, 1880. Fine clear night.

London: *Atmospheric Pressure.*—During the week ending Saturday, May 28, the readings of the barometer at the level of the sea in the neighbourhood of London increased from 30.42 inches at the beginning of the week to 30.45 inches by the morning of the 22d; decreased to 29.78 inches by the morning of the 26th; and at the end of the week was 29.98 inches. The mean reading at the level of the sea was 30.09 inches, being 0.28 inch higher than last week, and 0.06 inch above the average for the week.

*Temperature.*—The highest temperatures were 73°.4 on the 23d, and 71° on the 22d. The lowest of the high temperatures were 67°.2 on the 26th, and 68° on the 27th. The mean of the seven high day temperatures was 70°. The lowest temperatures were 44°.8 on the 22d, and 49°.5 on the 23d. The highest of the low temperatures were 56° on the 27th, and 55°.8 on the 28th. The mean of the seven low night temperatures was 51°.4.

The greatest range of temperature in one day was 26°.2, on the 22d; the next greatest being 23°.9 on the 23d. The least ranges were 12° on the 27th, and 14°.2 on the 28th. The mean of the seven daily ranges was 18°.6.

The mean temperatures were 57° on the 22d, 59°.8 on the 23d, 59°.2 on the 24th, 58°.5 on the 25th, 59°.3 on the 26th, 60°.3 on the 27th, and 61°.3 on the 28th, being respectively 2°.9, 5°.5, 4°.6, 3°.5, 4°.1, 4°.9, and 5°.7 above the average.

The mean temperature for the week was 59°.3, being 7°.3 higher than last week, and 4°.5 above the average of the corresponding week for sixty years.

The highest readings of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, were 145° on the 24th, 138° on the 23d, and 136° on the 22d. The lowest readings were 70° on the 27th, and 97°.5 on the 26th. The mean of the seven daily readings was 116°.

The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 38° on the 22d, and 42° on the 23d and 24th. The highest readings were 54° on the 27th, and 52° on the 28th. The mean of the seven daily readings was 45°.7.

*Rain.*—Some fell on three days, the largest quantity being 0.28 inch on the 28th, and the smallest being 0.04 on the 26th. The total fall of rain for the week was 0.37 inch.

England: *Temperature.*—During the week ending Saturday, May 28, the highest temperatures were—78°.2 at Cambridge, 77°.5 at Leicester, 76°.6 at Nottingham, and 76°.5 at Norwich. The lowest of the high temperatures were—68° at Hull, and 68°.3 at Plymouth. The mean from all stations was 73°.1. The lowest temperatures were—37° at Hull, 41° at Nottingham and Sheffield, and 41°.4 at Wrottesley. The highest of the low temperatures were 46°.5 at Liverpool, and 45° at Sunderland. The mean from all stations was 42°.7.

The greatest ranges of temperature during the week were—Cambridge, 39°.2; Nottingham, 35°.6; and Leicester and Sheffield, 33°.5. The least ranges were—Liverpool, 23°.7; Plymouth, 25°.6; and Truro, Leeds, and Sunderland, 28°. The mean from all stations was 30°.4.

The mean of the seven high day temperatures was highest at Cambridge, 74°.3; the next in order being Nottingham, 73°.1, Leicester, 71°.9, and Norwich, 71°.1; the least means were Hull, 63°.9, and Sunderland, 64°.1. The mean from all stations was 68°.8.

The mean of the seven low night temperatures was least at Hull, 44°.8, the next in order being Sunderland, 46°, Cambridge, 46°.6, and Bristol, 46°.7. The means were highest at Plymouth, 52°.1, Blackheath, 51°.4, Norwich, 51°.2, and Truro, 51°. The mean from all stations was 48°.8.

The mean daily range was greatest at Cambridge, 27°.7, the next in order being Nottingham, 25°.5, and Leicester, 22°.9. The least mean daily ranges were—Plymouth, 13°.5; Liverpool, 15°.2; and Truro, 17°. The mean from all stations was 20°.

The mean temperature for the week was highest at Norwich, 59°.4, the next in order being Blackheath, 59°.3, and Leicester and Cambridge, 58°.8. The least means were—Hull 52°.6, Sunderland, 53°.3, and Bristol, 55°.8. The mean from all stations was 57°.1.

*Rain.*—Some fell at all stations, with the exception of Truro, the greatest quantities being Cambridge 1.29 inch, Sheffield 1.28 inch, and Liverpool 1.15 inch. The smallest quantities were—Plymouth 0.02 inch, Bristol 0.04 inch, and Brighton 0.18 inch. The average fall was 0.49 inch. The average number of days on which rain fell was two.

Scotland: *Temperature.*—During the week ending Saturday, May 28, the highest temperatures were—Glasgow, 74°, Paisley, 72°, and Greenock, 71°.2. The general mean was 70°.1. The lowest temperatures were—Paisley, 36°, Aberdeen, 40°.8, and Edinburgh, 41°.9. The general mean was 41°.2.

The mean temperature was highest at Paisley, the next highest being Greenock, 56°.3. The mean was least at Glasgow, 52°.2. The general mean was 54°.9.

*Rain.*—The largest falls were Glasgow, 0.26 inch, Edinburgh, 0.20 inch, and Greenock, 0.16 inch. The general mean was 0°.15 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—Bacon.

Where can I get fresh fruits of Nipa, and fresh cones of Dammara? I should be glad to defray the expense of transit. *J. Starkie, Gr., Park House, St. John's Wood.* [Some of our Indian and New Zealand correspondents might be able to assist. Eds.]

## Answers to Correspondents.

Aphides: *J. W. S.* We cannot answer your question, never having made any experiments in killing aphis in the way you mention. Could you not try a few experiments on some dirty plants (we have none), and report the result?

Books: *D. S.* Loudon's *Encyclopædia of Plants* is the fullest, but it is expensive, and not up to time. For special groups there are various books, which we will mention if you tell us what set of plants in particular you wish to study.

Columbines: *C. P.* Very pretty, but not better than we have already. The rose-coloured variety without spurs is deserving further development. The absence of spurs is not uncommon; the old writers spoke of such forms as "Star Columbines."

Insects: *J. McD.* The insects sent, which you state are now boring holes $\frac{1}{16}$ of an inch in diameter in the Larch poles which support your verandah—in which dozens of such holes were made last year—have nothing to do with the boring of such holes. They are female Ichneumon flies (Pimpla persuazoria), which are now engaged in inserting their very delicate egg-borer (like a very fine black needle) into the wood, in order to deposit their eggs in the bodies of the larvæ at work in the wood of the poles, which are the real cause of the mischief. The Ichneumons, therefore, are your friends, and not enemies. *I. O. W.*

Lily of the Virgins: *H. & Co.* The old white Lily of the cottage gardens, Lilium candidum.

Names of Plants: *H. B. S. S.* The yellow flower is Trollius europæus, and the white one Saxifraga granulata flore-pleno. The Vine is a curiosity, but not of very unusual occurrence.—*W. A. Williams.* Dendrobium formosum.—*J. MacDonald.* 1, Asphodelus ramosus; 2, Prunus Padus; 3, indeterminable without flowers; 4, a Berberis, not recognised.—*J. Clarke.* 1, Adiantum æthiopicum (assimile); 2, Myrtus communis, narrow-leaved variety; 3, Adiantum concinnum; 4, Litobrochia aurita; 5, Adiantum reniforme; 6, too imperfect. — *A. E.* 1, Retinospora pisifera aurea; 2, Biota orientalis aurea; 4, Cupressus Lawsoniana; 5, a Cupressus; 6, Cedrus Deodara; 7, Taxus adpressa; 9, Retinospora ericoides. The others we do not recognise.—*T. S. P.* Spiræa hypericifolia.—*J. R. H.* Viburnum Lantana and Saxifraga granulata flore-pleno. — *J. W. H.* Veronica gentianoides; Begonia, near nitida and obliqua; Orchids, 1, Dendrobium chrysotoxum (if the raceme be pendulous); 2, perhaps Dendrobium Devonianum, or pulchellum. — *J. R., Coventry.* Thermopsis fabacea.—*H. J. Ross.* Odontoglossum Lindleyanum. — *R. O.* 1, Epidendrum calocheilum; 2, E. Stamfordianum.—*J. M.* Sparaxis tricolor.—*F. Hannaford.* Diplacus glutinosus, var. grandiflorus, and Rosa lutea, var. bicolor.—*W. B.* 1, Pyrus latifolia, a close ally of our White Beam; 2, apparently Alnus cordifolia.

Notice to Quit: *Cam.* Having become a yearly tenant, you are legally entitled to six months' notice to quit, and the notice must be given for the tenancy to expire on the same quarter-day as your tenancy commenced; thus, if your tenancy commenced at Christmas, the notice must be given on June 24. We do not think a claim for compensation would hold good in the absence of an agreement.

Polyanthus: *G. D.* A pretty variety, and worth keeping, but not superior to others. We should hardly consider it new.

Silver Sand: *Cognomen.* 1, no; 2, no; 3, a legal question—we cannot pretend to decide; 4, you must act on your own responsibility.

## CATALOGUE RECEIVED.

Auguste van Geert, Ghent — General Catalogue of Plants.

Communications Received.—H. H. C.—F. W. B.—St. J. C.—B. C.—J. H. M.—E. D.—T. C.—Dick Radclyffe & Co.—R. C.—C. M. S.—R. W.—W. Richardson & Co.—Diss.—T. W.—J. A.—E. B.—E. D.—E. S. D.

# Markets.

*COVENT GARDEN, June 2.*

A good business doing, with prices well maintained. *James Webber, Wholesale Apple Market.*

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Lily of the Valley, 12 bunches | 4 0– 9 0 |
| Anemone, 12 bunches | 2 0– 4 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 0 6– 1 0 | Narcissus, in variety, 12 bunches | 4 0– 9 0 |
| Bouvardias, per bun. | 1 0– 2 0 | Pelargoniums, 12 sprays | 0 9– 1 0 |
| Calceolaria, 12 bun. | 9 0–12 0 | — zonal, 12 sprays | 0 4– 0 9 |
| Carnations, 12 blms. | 1 0– 2 0 | Pæony, 12 bunches | 9 0–24 0 |
| Cornflower, 12 bun. | 4 0– 6 0 | Primula, double, per bunch | 0 9– 1 6 |
| Daisies, 12 bunches | 2 0– 6 0 | Ranunculus, 12 bun. | 6 0–12 0 |
| Eucharis, per doz. | 4 0– 6 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Forget-me-not, 12 bunches | 3 0– 6 0 | Stephanotis, 12 spr. | 3 0– 4 0 |
| Gardenias, 12 blms. | 1 6– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | Tuberoses, per dozen | 2 0– 3 0 |
| Iris, 12 bunches | 9 0–18 0 | Tulips, 12 bunches | 3 0– 6 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Wallflowers, 12 bun. | 6 0– 9 0 |
| — red, 12 blooms | 1 0– 3 0 | Woodroffe, 12 bun. | 3 0– 6 0 |
| Lily of the Valley, 12 sprays | 0 9– 1 6 | | |

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Genista, per doz. .. | 9 0–18 0 |
| Begonias, per doz. .. | 6 0–12 0 | Ivy Geranium, doz. | 4 0– 6 0 |
| Calceolaria, per doz. | 9 0–12 0 | Lilium longifl., doz. | 24 0–42 0 |
| Creeping Jenny, doz. | 3 0– 4 0 | Lily of the Valley, per pot .. .. | 1 6– 2 0 |
| Cyperus, per dozen | 6 0–12 0 | Lobelia, per dozen.. | 4 0– 6 0 |
| Dracæna terminalis | 30 0–60 0 | Marguerite, white, per dozen.. .. | 18 0–24 0 |
| — viridis, per doz. .. | 12 0–24 0 | — Yellow, per doz. | 12 0–30 0 |
| Erica, in variety, doz. | 18 0–30 0 | Mignonette, per doz. | 5 0– 8 0 |
| Euonymus, various, per dozen .. .. | 6 0–18 0 | Myrtles, per doz. .. | 6 0–12 0 |
| Evergreens, in var., per dozen .. .. | 6 0–24 0 | Palms in var., each | 2 6–21 0 |
| Ferns, in variety, per dozen .. .. | 4 0–18 0 | Pelargoniums, doz. | 9 0–30 0 |
| Ficus elasticus, each | 1 6– 7 6 | — tricolor, per doz. | 3 0–12 0 |
| Foliage Plants, various, each .. .. | 2 0–10 6 | — scarlet, per doz. | 4 0– 9 0 |
| Fuchsias, per dozen | 6 0–12 0 | Roses, various, doz. | 12 0–30 0 |
| | | Spiræa japonica, doz. | 9 0–18 0 |
| | | Stocks, per dozen .. | 4 0– 6 0 |

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apricots, per box .. | 1 6– 2 6 | Lemons, per 100 .. | 4 0– 6 0 |
| Cherries, per box .. | 1 6– 2 6 | Melons, each .. | 5 0– 8 0 |
| Figs, per dozen .. | 9 0–12 0 | Peaches, per dozen.. | 15 0–20 0 |
| Gooseberries, ½-bush | 6 0– 6 6 | Pine-apples, per lb. | 1 0– 2 0 |
| Grapes, per lb. .. | 3 0– 8 0 | Strawberries, per lb. | 4 0– 8 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. .. .. | 3 0– 6 0 | Garlic, per lb. .. | 1 0– .. |
| Asparag., Fr., bndl. | 2 0–15 0 | Herbs, per bunch .. | 0 2– 0 4 |
| — English, bund.. | 6 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. .. .. | 0 6– 1 6 |
| Beans, French, p. lb. | 1 0– .. | — Engl. Cos, score | 1 6– .. |
| — Broad, per lb. .. | 1 0– .. | Mint, green, bunch.. | 0 4– 0 6 |
| Beet, per doz. .. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 0– 2 0 |
| Cabbages, per doz. .. | 1 0– 2 0 | Onions, per bushel.. | 11 0– .. |
| Carrots, per bunch.. | 0 4– 0 6 | — Spring, per bun. | 0 9– .. |
| — New Fr., bund. | 1 6– .. | Parsley, per bunch.. | 0 4– .. |
| Cauliflowers, English, each .. .. | 0 3– 0 6 | Radishes, per bun... | 0 2– 0 6 |
| Celery, per bundle .. | 1 6– 2 0 | Rhubarb, per bund. | 0 4– 0 6 |
| Cucumbers, each .. | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. .. | 2 0– 3 0 | Spinach, per bushel | 2 0– 2 6 |
| | | Tomatos, per lb. .. | 0 9– 1 0 |

POTATOS:—Kent Regents, 80s. to 100s.; Champions, 60s. to 85s.: Best Regents, 120s. per ton; German Reds, 4s. 6d. to 8s. 6d.; Belgian Kidneys, 3s. 9d. to 4s. per bag.

## SEEDS.

LONDON; *June* 1.—The attendance on the seed market to-day was exceeding bare, and the business doing as nearly *nil* as possible. Stocks of all kinds leave off as previously noted, exceedingly light. Letters from America describe Clover seed as closely used up, and what little remains over is strongly held. Prices of Mustard and Rape seed are firm; but in the absence of rain the sowing demand is, for the moment, meagre. Very low quotations now prevail for Hemp seed. *John Shaw & Sons, Seed Merchants*, 37, *Mark Lane, London, E.C.*

## CORN.

On Monday at Mark Lane the demand was slack in every department. Wheat was not so firm as on the previous Friday, except for Australian, which was steady. Flour met a very dull sale, and Barley, Beans, and Peas, with limited transactions, were unaltered from the rates of Monday se'nnight. Oats, in consequence of heavy supply, were again cheaper, making 6*d.* to 9*d.* decline for the week. Flat Maize was offered at 24*s.* 6*d.* ex ship.—On Wednesday very little business was attempted. Supplies of Wheat were moderate, and prices nominal on the spot, from the absence of business of any extent. Flour was dull and drooping. Barley, Beans, Peas, and Maize unchanged. Oats were in large supply, and cheaper to sell.—Average prices of corn for the week ending May 28:—Wheat, 44*s.* 1*d.*; Barley, 31*s.* 9*d.*; Oats, 24*s.* 1*d.* For the corresponding period last year:—Wheat, 44*s.* 11*d.*; Barley, 30*s.* 4*d.*; Oats, 25*s.* 1*d.*

## CATTLE.

At the Metropolitan Market on Monday trade was depressed by the increased weight of supplies, more especially in the beast market, where prices declined quite 2*d.* per stone on the best and 4*d.* on second-class English and foreign, excepting Portuguese cattle. The sheep-pens cleared very slowly, and in many cases easier rates had to be taken, though not to alter quotations. Lambs met a slow sale, as did calves.—Quotations:—Beasts, 4*s.* 4*d.* to 4*s.* 8*d.*, and 4*s.* 10*d.* to 5*s.*; calves, 4*s.* 8*d.* to 6*s.* 4*d.*; sheep, 5*s.* to 5*s.* 4*d.*, and 5*s.* 6*d.* to 6*s.*; lambs, 7*s.* to 8*s.*—On Thursday trade was very quiet. Beasts were dull, and had sales been forced less money must have been taken. Sheep and lambs were firm, with a good inquiry, and calves sold at late rates.

## POTATOS.

The Borough and Spitalfields Markets reports state that supplies continue fair and the trade steady at the following quotations:—Scotch Champions, £3 10*s.* to £4 10*s.*; English, £5 to £6 per ton; German reds, 4*s.* to 4*s.* 6*d.*; Belgian kidneys, 3*s.* 6*d.* to 4*s.* per bag. Lisbon new, 12*s.* to 14*s.*; Maltese, 10*s.* to 16*s.* per hundredweight; Jersey round, 2*d.* to 3*d.*; kidneys, 3*d.* to 4*d.* per pound.—The imports into London last week were as follows:—10,365 bags Hamburg, 212 bags Bremen, 17,754 bags Stettin, 565 bags Brussels, 2536 bags Antwerp, 310 bags Rotterdam, 799 bags Bordeaux, 366 bags Boulogne, 1808 bags St. Nazaire, 576 bags Rouen, 148 packages Malta.

**Government Stock.**—On Monday and Tuesday Consols for delivery closed at 102⅛ to 102¼, and at 102⅜ to 102½ for the account. On Wednesday the closing prices were, 100⅝ to 100¾ for delivery, and 100⅞ to 101 for the account—both ex div. Thursday's final quotations were, for delivery, 100⅜ to 100½, and 100⅝ to 100¾—both ex div.


# Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

## GREEN'S PATENT "SILENS MESSOR" AND "MONARCH" LAWN MOWERS

Over those of all other Makers is universally acknowledged.

**They will Cut**

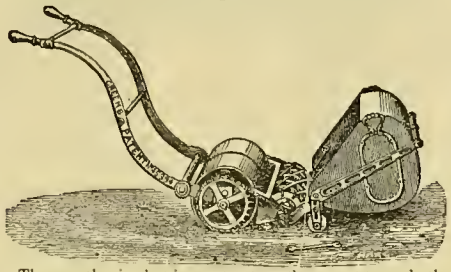
**Either Short or Long Grass, Bents, &c., Wet or Dry.**

These advantages no other Lawn Mowers possess.

They are the only Mowers which have been in CONSTANT use from 15 to 20 years in the Royal Gardens, Windsor,

| | |
|---|---|
| Buckingham Palace Gardens | The Hyde Park Gardens |
| Marlborough House Gardens | Hampton Court Gardens |
| Royal Horticultural Society's Gardens, South Kensington | The Zoological Gardens, Regent's Park |
| The Royal Botanic Gardens, Regent's Park | The Dublin Botanic Gardens, |
| The Crystal Palace Company's Gardens, Sydenham | The Liverpool Botanic Gardens |
| The Winter Palace Gardens, Dublin | The Botanic Gardens, Brussels |
| | The Hull Botanic Gardens |
| | The Leeds Horticultural Gardens |

And in most of the Principal Parks and Squares in the United Kingdom.



They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant. The above machines have proved to be the best, and and have carried off Every Prize in all cases of Competition. Every Lawn Mower is guaranteed to give entire satisfaction, otherwise they may be returned AT ONCE, free of cost to the purchaser.

The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

| | | | £ s. d. |
|---|---|---|---|
| To cut 6 inches. | Can be worked by a lady .. | .. | 1 15 0 |
| ,, 8 ,, | ,, ,, .. | .. | 2 10 0 |
| ,, 10 ,, | Can be worked by one person | .. | 3 10 0 |
| ,, 12 ,, | ,, ,, .. | .. | 4 10 0 |
| ,, 14 ,, | ,, ,, .. | .. | 5 10 0 |
| ,, 16 ,, | This can be worked by one man on an even lawn .. | .. | 6 10 0 |
| ,, 18 ,, | By man and boy .. .. | .. | 7 10 0 |
| ,, 20 ,, | ,, ,, .. .. | .. | 8 0 0 |
| * ,, 22 ,, | Two men .. .. .. | .. | 8 10 0 |
| ,, 24 ,, | ,, .. .. .. | .. | 9 0 0 |

* If made stronger, suitable for donkeys, 30s. extra.

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

Carriage paid to all the Principal Railway Stations in the United Kingdom. Illustrated Price LISTS free on application.

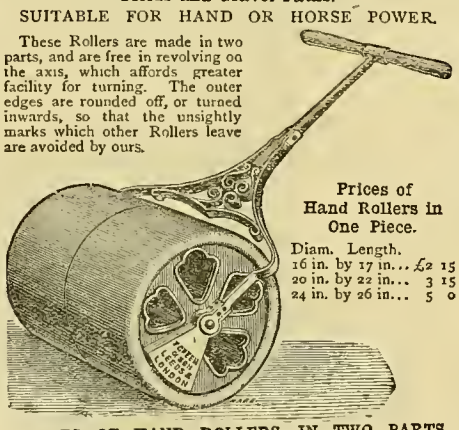
N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

# GREEN'S PATENT ROLLERS

**For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.**

SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks which other Rollers leave are avoided by ours.



**Prices of Hand Rollers in One Piece.**

| Diam. | Length. | £ s. d. |
|---|---|---|
| 16 in. by | 17 in... | £2 15 |
| 20 in. by | 22 in... | 3 15 |
| 24 in. by | 26 in... | 5 0 |

**PRICES OF HAND ROLLERS IN TWO PARTS.**

| Diam. | Length. | £ s. d. | Diam. | Length. | £ s. d. |
|---|---|---|---|---|---|
| 16 in. by | 17 in. .. | 2 15 0 | 24 in. by | 26 in. .. | 5 0 0 |
| 20 in. by | 22 in. .. | 4 0 0 | 30 in. by | 32 in. .. | 9 0 0 |

Prices of Rollers fitted with Shafts suitable for Horse and Pony, on application, and special quotations for Rollers 3 feet, 3½ feet and 4 feet diameter.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

**THOMAS GREEN AND SON (Limited),**

SMITHFIELD IRONWORKS, LEEDS;

And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

Carriage of Rollers Paid to all the Principal Railway Stations in Great Britain.

# HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet.

**Carriage Paid to any Railway Station in England.**

*Price Lists on application.*

ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

# BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities of

**BETHAM & SON,**

9, LOWER THAMES STREET, LONDON, E.C.

B. & Son have always a large stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. and 21-oz.; and also large sizes in all qualities for cutting up purposes, in 200 ft. and 300-ft. cases.

# T. MILLINGTON AND CO.,

43, Commercial Street, E.

*PLATE, SHEET, CROWN GLASS.*

SHEET GLASS, IN CASES, FOR CUTTING UP.

| | | | | |
|---|---|---|---|---|
| Common .. | 15-oz., 300 feet, 30*s.* 0*d.*, if 21-oz., 200 feet, | | | 30*s.* 0*d.* |
| Fourths .. | ,, | ,, | 34*s.* 6*d.* ,, ,, | 34*s.* 6*d.* |
| Thirds .. | ,, | ,, | 42*s.* 6*d.* ,, ,, | 42*s.* 6*d.* |
| Seconds .. | ,, | 200 feet, | 42*s.* 6*d.* ,, ,, | 48*s.* 6*d.* |
| Best .. | ,, | ,, | 51*s.* 0*d.* ,, ,, | 61*s.* 0*d.* |

Also 26-oz., 28-oz., and 32-oz. Glass.

SMALL SIZES, IN 16-OZ., PER 100 FEET.

| | | | |
|---|---|---|---|
| 6 × 4 to 7½ × 5½ .. | 9*s.* 0*d.*, 10*s.* 0*d.*, 11*s.* 0*d.*, 12*s.* 0*d.* | | |
| 8 × 6 to 10½ × 8½ .. | 9*s.* 6*d.*, 10*s.* 6*d.*, 11*s.* 6*d.*, 12*s.* 6*d.* | | |
| 11 × 9 to 14 × 10 .. | 10*s.* 0*d.*, 11*s.* 0*d.*, 12*s.* 6*d.*, 14*s.* 0*d.* | | |
| 15 × 10 to 18 × 12 .. | 11*s.* 0*d.*, 12*s.* 0*d.*, 13*s.* 3*d.*, 14*s.* 6*d.* | | |
| 20 × 12 to 20 × 18 .. | 11*s.* 6*d.*, 12*s.* 6*d.*, 13*s.* 9*d.*, 15*s.*; | | |

if 21-oz., 13*s.* 9*d.*, 15*s.*, 17*s.* 6*d.*, 19*s.* 6*d.*

SHEET LEAD, WHITE LEAD, OILS, TURPENTINE and COLOURS.

**Rosher's Garden Edging Tiles.**

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

# ORNAMENTAL PAVING TILES,

for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

F. ROSHER AND CO., Brick and Tile Merchants.

See Addresses above.

# SILVER SAND,

fine or coarse grain as desired. Price, by post, per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries.

KENT PEATS or LOAM supplied at lowest rates in any quantities.

F. ROSHER AND CO.—Addresses see above.

N.B.—Orders promptly executed by Rail or to Wharves.

A liberal Discount to the Trade.

# DOULTON & CO.,

LAMBETH POTTERY, LONDON, S.E.

**VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,**

IN

## IMPERISHABLE TERRA COTTA.

PLAIN AND ORNAMENTAL PAVINGS;

TILES FOR LINING WALLS OF Conservatories.

ART POTTERY, including JARDINIERES AND OTHER

**Table Decorations and Vases, Fountains, &c., for the Conservatory, in**

DOULTON WARE, LAMBETH FAIENCE AND THE NEW SILICON WARE.

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**Geometrical Mosaic and Encaustic**

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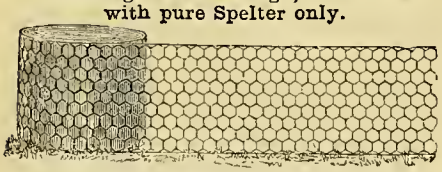

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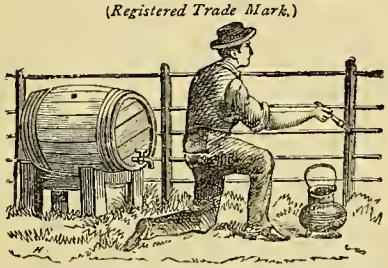

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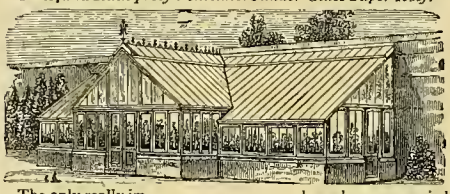

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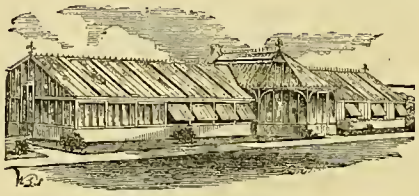

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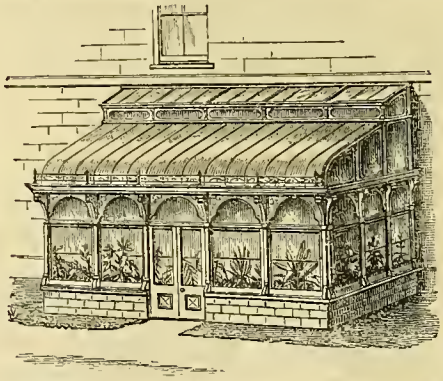

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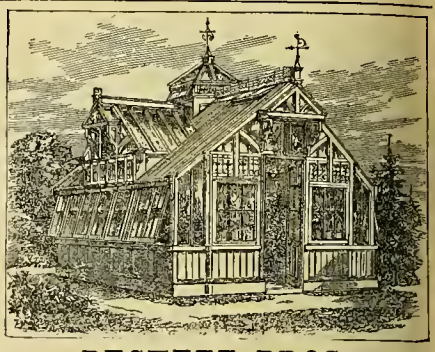

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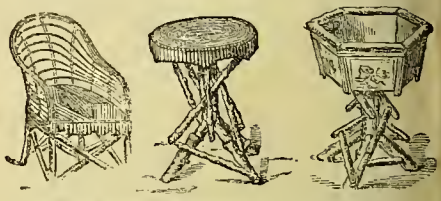

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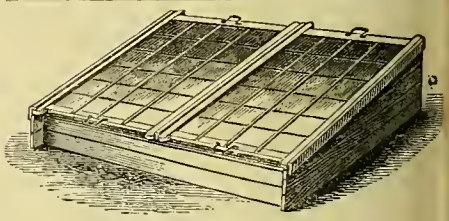

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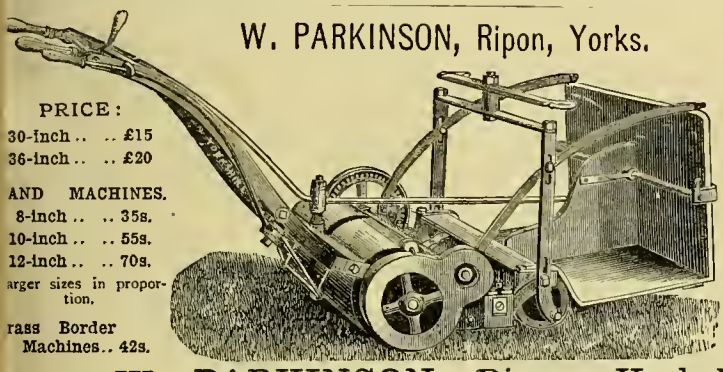

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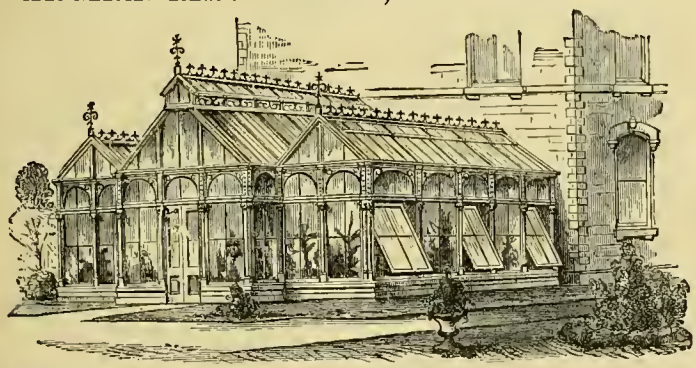

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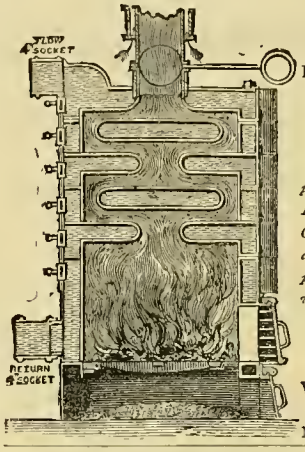


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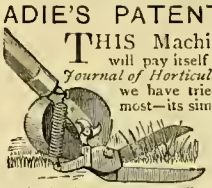

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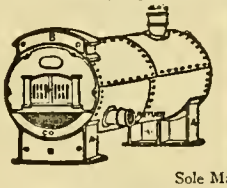

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FISH NAPKINS, 3s. 11d. per doz.; DINNER NAPKINS, 6s. 10d. per doz.; TABLE CLOTHS, 2 yards square, 3s. 11d., to finest quality made. REAL IRISH LINEN SHEETINGS, 2 yards wide, from 1s. 11d. per yard. FINE LINENS and LINEN DISHERS, yard wide, 1s. per yard. COLLARS—Ladies and Children's, 3s. 11d. doz.; Gentlemen's, 4s. 11d. and 5s. 11d. doz. SHIRTS—Best Four-fold Linen Fronts, &c., 35s. 6d. per half-dozen (to measure, 2s. extra). CUFFS—For Ladies, Gentlemen, and Children, 5s 11d. to 10s. 9d. per dozen.
ROBINSON & CLEAVER, to the Queen, BELFAST.
REAL SHETLAND WOOL SHAWLS.
WHITE, 2 yards square, post-free .. .. 1s. 10d. each.
CARDINAL or BLACK .. .. .. .. 2s. ,,
*Also a special Lot of richly-fringed*
SHETLAND SHAWLS.
WHITE, post-free .. .. .. .. .. 3s. 3d. each.
BLACK or CARDINAL .. .. .. .. 3s. 6d. ,,
*The above are marvellous goods.*
ROBINSON & CLEAVER, to the Queen, BELFAST.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 2d. per yard; 100 yards, 16s. 4 yards wide, 4d. per yard; 50 yards, 16s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.
TIFFANY, 5s. and 6s. per piece of 20 yards.
EATON and DELLER, 6 & 7, Crooked Lane, London Bridge.


*IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not forwarded, but are sent at once to the Returned Letter Office.*

J. DELAMERE begs to thank his numerous applicants for the situations advertised, having made arrangements. If any of the testimonials sent are originals, will return them on receipt of post-card.

**Nursery Manager.**

FRANCIS & ARTHUR DICKSON & SONS, 106, Eastgate Street, and the "Upton" Nurseries, Chester, require the services of a thoroughly qualified and experienced GENERAL MANAGER for their Nurseries at Upton. A sound practical knowledge of every branch of the Nursery Trade, combined with energy and ability to control and direct the various Departments of a large Business in an efficient and thorough manner, are indispensable. Personal character must bear the closest scrutiny. Applicants are requested to give full particulars of their business experience, and where acquired; the nature and extent of their former charge; the date at which the above duties could be undertaken, references, age, and salary expected.

**Head Gardener.**

WANTED, IMMEDIATELY, to go to Jersey, a WORKING HEAD GARDENER. Must have a thorough knowledge of Forcing Vines, Plants, &c., for the London Market. Married man, without children preferred. State wages and full particulars.—E. C., 37, Market Place, Leicester.

WANTED, as GARDENER, a strong, active, young man, to take entire charge of a fair sized Kitchen and Flower Garden, small Orchard and Conservatory, near Blackheath. Wages, 22s. per week.—L., 30, Belmont Hill, Lee, Kent.

WANTED, a GARDENER, about 25 or 30, unmarried, in a small place. Plain Garden, no Hothouses. Must make himself generally useful. Several years character, and hard working.—Write, stating wages and particulars, S. B., Shere, near Guildford.

WANTED, as good GENERAL GARDENER, a single man, steady and active. Greenhouse and Frames. Must be able to see to Cows, and Milk, and be useful; a boy under him. Good wages given to a competent man.—Address, by letter only, to A. B., Abinger Hatch Inn, Abinger, Dorking.

WANTED, a WORKING GARDENER who thoroughly understands all branches of his business, where three Under Gardeners are kept. Wages, 25s. per week, with cottage.—H., Higham's Library, Faversham, Kent.

WANTED, a WORKING GARDENER age not exceeding 45, who has had experience in Irrigation, to undertake the Management and Cultivation of the Llandaff Sewage Filtration Grounds, about 2½ acres in extent. Wages 28s. per week.—Applications, in Candidates' own handwriting, with recent testimonials as to honesty, sobriety, and competency, to be sent under cover to W. P. STEPHENSON, Clerk to the Urban Sanitary Authority, Queen's Chambers, Cardiff, on or before Thursday, June 2, 1881.

WANTED, as SINGLE-HANDED GARDENER, in the country, a married Man, without encumbrance—a good, active, handy man. Garden and Land, no Glass. Wife, charge of Poultry, &c. Wages, 18s. per week with lodgings.—Apply, by letter, with full particulars of age, previous employment, &c., to R., 11, Saint Helen's Place, London, E.C.

WANTED, a WORKING FOREMAN, in a small Country Nursery. Must have a knowledge of Budding and Grafting, and the Cultivation of Greenhouse Plants.—Apply, stating terms, to H. and F. SHARPE, Wisbech.

**Plant Grower.**

THE LIVERPOOL HORTICULTURAL COMPANY (J. Cowan), Limited, REQUIRE a thoroughly qualified and experienced PLANT GROWER. A man who has been accustomed to produce Plants and Flowers in large quantities for the London Market will be preferred.—Apply, giving references and stating salary expected, to the MANAGER, Garston, near Liverpool.

WANTED, a young man as SOFT-WOODED PROPAGATOR and GROWER for Market.—State wages and references to E. COOLING, Mile Ash Nurseries, Derby.

WANTED, for a Provincial Nursery, where Fruit Trees and Roses are extensively Grown, a good MAN for Outdoor Work, Grafting, Budding, Packing, &c. Permanent situation to a suitable man.—State particulars as to wages and ability, and references to R. W., Messrs. Hurst & Son, 152, Houndsditch, E.C.

WANTED, a MAN who understands New Groundwork, also Planting and Bedding-out Villa Gardens. Constant employment. Must have good references as to sobriety, &c. Apply, stating age and wages expected, to B. MALLER, Burnt Ash Lane Nurseries, Lee, S.E.

WANTED, a young MAN; successful Budder, and general Outdoor Nursery Work.—State wages required to H. CUNINGTON, Nurseryman, Stockport.

WANTED, as IMPROVER, a strong lad who has been accustomed to bothy, and has worked in Kitchen Garden. Wages 13s. Will have benefit of seeing Fruit Culture and New Plants under glass.—Apply by letter T. CHRISTY, F.L.S., Malvern House, Sydenham, S.E.

WANTED, IMMEDIATELY, ONE or TWO young MEN, who are quick Potters. Those who have been used to Market Work preferred.—Address, stating age, where last employed, and salary required, to A. M., *Gardeners' Chronicle* Office, W.C.

WANTED, in a Nursery near London, TWO young MEN, to assist in the Houses.—Enclose references to R. M., *Gardeners' Chronicle* Office, W.C.

**Nursery Clerk.**

FRANCIS & ARTHUR DICKSON & SONS, 106, Eastgate Street, and the "Upton" Nurseries, Chester, are open to engage an experienced NURSERY CLERK, who can conduct the Correspondence and take Charge of the Office Department of a large Nursery, where several Clerks are engaged. Applicants must possess a thorough knowledge of Plants, and have filled a similar appointment.—Give full particulars of experience, when disengaged, references, age, and salary expected.

**Seed, Grain, and Oilcake Business.**

WANTED, in the above business, a young MAN, newly done with his time. One with experience in Book-keeping, and able to attend Market preferred. Enclose *carte*.—WM. McKEAN, Duke Street, Glasgow.

WANTED, a young LADY of good experience, for a Florist's Business.—Apply by letter, giving full particulars, WISE AND RIDES, General Agents, Tavistock Court, Covent Garden, W.C.

## WANT PLACES.

B. S. WILLIAMS begs to intimate that he has at present in the Nursery and upon his Register some excellent Men, competent either to fill the situation of HEAD GARDENER, BAILIFF, FOREMAN, or JOURNEYMAN. Ladies and Gentlemen requiring any of the above will please send full particulars, when the best selections for the different capacities will be made.—Holloway, N.

DOWNIE AND LAIRD can at present recommend with every confidence several first-rate SCOTCH GARDENERS, whose character and abilities may be thoroughly depended upon, either for Large Establishments or Single-handed Situations; also FOREMEN, UNDER GARDENERS, and FARM BAILIFFS.—17, Frederick Street, Edinburgh.

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MANAGER—to Grow extensively for Market first-class Fruit, Cucumbers, Roses, Stephanotis, Gardenias, &c.; or undertake to work up a First-class Connection in a New Undertaking.—Age 37; twenty years' experience.—A. B., 61, Broadwall, Blackfriars, S.E.

GARDENER (HEAD).—Mr. WEBB, Gardener to J. H. Manners Sutton, Esq., would be pleased to recommend his Foreman as above—For testimonials, &c., address Kelham Gardens, Newark, Notts.

GARDENER (HEAD), to any Nobleman or Gentleman requiring a thoroughly competent, industrious man.—Age 32, married, no family; good character.—ALPHA, 5, Heathside Cottages, Roehampton.

GARDENER (HEAD), where two or three are kept, or good SECOND.—Married, no family; wife could undertake small Laundry if required.—GARDENER, Mr. Hughes, Yiewsley, Uxbridge.

GARDENER (HEAD).—Age 34, married, no family; thoroughly practical in all branches of the profession. Distance no object. Good references.—N. B., 8, Burrell Row, Beckenham, Kent.

GARDENER (HEAD), to any Lady or Gentleman requiring the services of a thoroughly practical and trustworthy man.—Age 27, married.—JOHN DOBSON, The Gardens, Davenport Hall, Congleton, Cheshire.

GARDENER (HEAD).—A GENTLEMAN can recommend his Head Gardener, who he is parting with on account of extensive alterations at his country house. Thoroughly understands Management of Gardens, Early Forcing, &c.—H. S. B., 38, Queen's Gate, South Kensington, S.W.

GARDENER (HEAD); age 25, single at present.—J. WILSON, The Gardens, Colston Bassett Hall, near Bingham, Notts, can with confidence recommend his present Foreman, Frederick Chambers, to any Lady or Gentleman requiring the services of a practical man. Highest references.—Apply as above.

GARDENER (HEAD).—Dr. T. W. JONES can with great confidence recommend George Cook, age 39, married; seventeen years in present place, and now only leaving in consequence of the death of his employer. Thoroughly well up in all branches of the profession, and can give the highest testimonials.—Bylocks, Enfield Highway, N.

GARDENER (HEAD); age 35, married, no family.—J. CARTER, Gardener to T. Marrian, Esq., desires to re-engage with any Lady, Nobleman, or Gentleman, requiring the services of a thorough practical Man in every branch of the profession. Satisfactory references from present and former employers.—The Gardens, Thurcroft Hall, Rotherham, Yorks.

GARDENER (HEAD); age 30, married.—Mr. GOODALL, Head Gardener to Charles T. Hambro, Esq., Milton Abbey, Blandford, Dorset, and Mr. MOLYNEUX, Head Gardener to W. H. Myers, Esq., Swanmore Park, Bishop's Waltham, Hants, can recommend a first-class Gardener to any Lady or Gentleman requiring the services of a thoroughly practical man in all branches of the profession. First-class character and testimonials. For particulars address to either of the above.

GARDENER (HEAD, WORKING), where more are kept.—Age 40, married, one in family; several years' experience. References good.—HEAD GARDENER, Coldbeater's Lodge, Mill Hill, Middlesex, N.W.

GARDENER (HEAD, WORKING).—W. REID, The Gardens, Norbury Hall, Ashbourne, Derby, can with confidence recommend his late Foreman, J. Hughes. Well experienced in Stove and Greenhouse Plants, Vines, Peaches, Melons, and the Routine of Kitchen and Flower Gardening.—Apply in first instance as above.

GARDENER (HEAD, WORKING), where four or more are kept.—Age 30, single; understands the general routine of Gardening. Seventeen years' experience, nearly five years in present situation.—R. ANNISS, Weston House, Albury, near Guildford, Surrey.

GARDENER (HEAD, or SINGLE-HANDED).—Married; understands Vinery, Stove and Greenhouse Plants, Melons and Cucumbers, Kitchen and Flower Gardening. Twenty-six years' experience. Good character; will bear strictest investigation.—J. C., 6, Park Terrace, Writtle Road, Chelmsford, Essex.

GARDENER and BAILIFF.—JOHN KITLEY, Gardener and Bailiff to Sir A. R. Palmer, Bart., Wanlip Hall, Leicester, is now seeking a situation in either or both of the above capacities. Has given perfect satisfaction in every situation he has held. Highly recommended by past and present employer.

GARDENER and LAUNDRESS.—Situations are wanted by a married couple, without family (age 26)—man to work in Garden or make himself useful (can wait table), wife good Laundress. Good characters.—J. D. J., 9, Holly Terrace, Whetstone, Middlesex.

GARDENER (SECOND), or IMPROVER.—Age 20; has a good knowledge of Orchids, and the various branches of Gardening. A Premium if required. Good character. Total abstainer.—M. P. A., Woodlands Nursery, Maresfield, Sussex.

GARDENER (UNDER); entirely in the Houses preferred.—Age 20. Can be well recommended.—W. A. C., The Charterhouse, London, E.C.

GARDENER (UNDER), in the Houses or to assist outdoors.—Mowing, &c. Seven years' character.—M. C., Smith, Stationer, Upper Mitcham, Surrey.

GARDENER (UNDER), to assist in the houses and outdoors.—Age 20; six years' experience. Twelve months' good personal character.—H. C., 52, Kensington Park Road, W.

GARDENER (UNDER).—Age 24; good knowledge of the various branches of Gardening. Good character.—W. H., next to the Post-office, Havering, Romford, Essex.

FOREMAN.—Well experienced in Plant Growing and Fruit Forcing for Market.—W. SHORTEN, Cowslip Road, Wansted, Essex.

FOREMAN, in the Houses, in a good establishment.—Age 26; eleven years' experience. Two years in last situation as Foreman.—J. B., 16, Charles Street, Bishop's Fields, Chester.

FOREMAN, in a good establishment.—Age 24, single; has had good experience under glass, and can be highly recommended.—A. STURT, Findon, Worthing, Sussex.

FOREMAN, or GROWER, in a Market Nursery.—Married; fifteen years' experience. A good character from present employer.—FOREMAN, 30, Milton Street, Marsh Lane, Bootle, Liverpool.

**To Nurserymen.**

FOREMAN and PROPAGATOR.—Age 38; twenty-five years' practical experience with Stove and Greenhouse Plants, especially with Azaleas, Camellias, Ericas, Epacris, Roses, Rhododendrons, Clematis, Vines, and General Nursery Stock, &c.—W. EASTON, Green Lane, Heaton Norris, Stockport, Lancashire.

JOURNEYMAN, in the Houses.—Age 25. Good character.—C. W. N., 33, Lindow Street, Northenden Road, Sale, Cheshire.

JOURNEYMAN, in a Gentleman's Garden, where several men are kept.—Age 20; five years' practice in large places, and five years' good character. Strong, active, and good workman.—W. B., Cemetery Lodge, Rothesay Road, Luton, Beds.

JOURNEYMAN (SECOND), in a Private Nursery, where large quantities of Plants are grown for the Conservatory.—Age 20; has been used to the above work. Can be well recommended.—C. H., 5, Gertrude Street, Chelsea, London, S.W.

**To Nurserymen.**

PROPAGATOR and ROSE GROWER (INDOOR), in a well established Nursery or Market Nursery.—Age 25; eight years' experience in some of the leading Nurseries. Well up in the Cultivation of Roses, Coniferæ, Clematis, and Soft-wooded Plants. Three years in present situation. Highly recommended by present and previous employers.—For further particulars as to character, &c., apply to T. ROBINSON, King's Acre Nurseries, Hereford.

PROPAGATOR (SECOND), in a good Nursery.—Well up in Roses, Rhododendrons, Coniferæ, Clematis, and Camellias. Eight years' experience at W. Paul & Son's.—F. COLLYER, Eleanor Road, Waltham Cross.

BUDDER AND GRAFTER (ROSE), in a Nursery.—Age 24; well up in the business.—A. B., 1, Milton Place, Park Street, Slough, Bucks.

IMPROVER, or JOURNEYMAN, in the Houses, under a good Foreman.—Age 21; three years' reference from present employer.—Apply with particulars to G. WEEKS, Clevelands, Shanklin, Isle of Wight.

IMPROVER, in a Gentleman's Garden.—Age 19; has been six years in present situation. Will be highly recommended.—JAMES BOOKER, Swiss Cottages, Avisford, Arundel, Sussex.

TO NURSERYMEN and FLORISTS.—A young man (age 28) seeks an engagement. Twelve years' experience. Understands the Making of Bouquets, Floral Decorations, &c. A good knowledge of Nursery Stock, and used to Waiting upon Customers. Good references as to character and ability.—H. F., 26, Alexandra Street, St. Leonards-on-Sea.

ASSISTANT in the Retail Seed Trade.—Five years' experience; good reference.—A. B. C., 23, St. George's Square, Tunbridge Road Maidstone.

ROWLANDS' ODONTO is the purest and most fragrant dentifrice ever made. It whitens the teeth, prevents decay, and gives a pleasing fragrance to the breath. All dentists will allow that neither washes nor pastes can possibly be as efficacious for polishing the teeth and keeping them sound and white as a pure and non-gritty tooth powder; such Rowlands' Odonto has always proved itself to be.

ROWLANDS' MACASSAR OIL has been known for the last eighty years as the best and safest preserver and beautifier of the hair; it contains no lead or mineral ingredients, and is especially adapted for the hair of children. Sold in usual four sizes. Ask any Chemist, Perfumer, or Hairdresser for Rowlands' Articles

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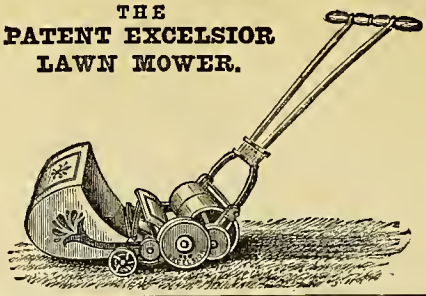
THE PATENT EXCELSIOR LAWN MOWER.



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ALL OTHERS ARE IMITATIONS.

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Awarded the SILVER BANKSIAN MEDAL of the Royal Horticultural Society, June, 1880, for Special Merit.

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CUTS THE BORDERS.
DOES NOT RIB THE GRASS.
THE LIGHTEST IN DRAUGHT.
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## COMBINATION GARDEN IMPLEMENT.

This simple Machine will cut turf and grass at the same time cleaning the lower part of the pathway which forms the gutter, throwing the rubbish on one side, making a clean cut of the Turf and leaving a smooth bottom to the pathway; acts for Weeding Gravel Walks, Hoeing, and Gathering the Refuse. It will cut out all kinds of Ornamental Flower Beds, &c., Water-courses, and Gutters. This Patent Machine has been shown in Hyde Park, where there are upwards of twenty miles of Turf-edging, and is considered to be the best implement for the purpose ever seen. It was sent to the Crystal Palace, where there are about ten miles of Garden-edging, besides all their Ornamental Flower Beds, and gave every satisfaction, a supply being sent in at once. The Machine shows at a glance Simplicity and Lightness in Construction, and, being so cheap, is at every one's command.

It can be sharpened with a stone in the ordinary way, and is sold in three sizes:—

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| 10s. | 12s. | 14s. |

## W. CLARK'S
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## GRASS and CORN CUTTER.

This useful machine is used for Lawns, Banks, Grass Edgings, Round Flower Beds and places where the Lawn Mower cannot reach; will trim Shrubs, Ivy, and Creepers; cutting Clover, Rye, and other green crops; trimming Hay and Corn, Ricks, Thatch, &c. It is not intended to supersede the Lawn Mower but to supplement its use, and from the many and varied uses to which it can be applied will be found one of the most economical inventions ever offered to the public.

It is sold in five sizes, with or without trays.

**PRICES.**

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| The 8-inch Machine, complete with Roller and Tray .. .. .. .. .. .. | 21s. |
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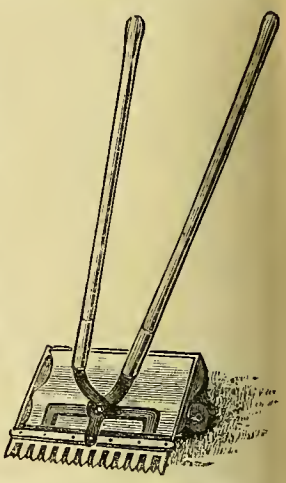

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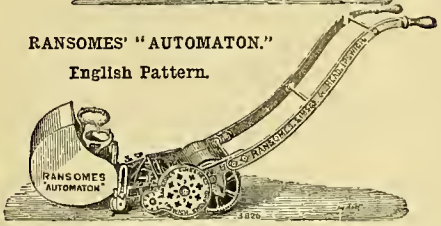
American Pattern.



RANSOMES' "AUTOMATON."
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## ARE THE BEST.

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The **"GLOBE"** Lawn Mowers are intended to meet the demand for machines specially adapted for cutting long grass; and which, whilst similar to the Lawn Mowers imported from America, have the special advantages of the more accurate fitting and general durability of English manufacture and perfect adjustment.

**PRICES, without Grass Box.**

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| 8-in. for Small Lawns and Edgings .. | £2 2 0 |
| 10 in. ,, use by a Lady or a Boy .. .. | 3 3 0 |
| 12-in. ,, ,, ,, ,, .. | 4 4 0 |
| 14-in. ,, ,, Man .. .. .. | 5 5 0 |
| 16-in. ,, ,, ,, on Level Lawns .. | 6 6 0 |

Grass Boxes extra if required.
8-in., 5s.; 10 and 12-in., 7s. 6d.; 14 and 16-in., 10s.

The **"AUTOMATON"** Lawn Mowers are thoroughly strong, well made, and durable machines, and the best suited for *general* work and *Gardeners'* use. They cut the grass perfectly, leave no ribs, but produce a smooth velvety surface on the Lawn, and are light in draught.

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| 14-in. ,, ,, Man .. .. .. | 5 10 0 |
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Boots for Donkey, 20s. per set.

**R., H. & J. also manufacture "Reversible" Lawn Mowers for Small Gardens and Amateurs, and "Horse-Power" Lawn Mowers for Large Lawns, Cricket Grounds, &c.**

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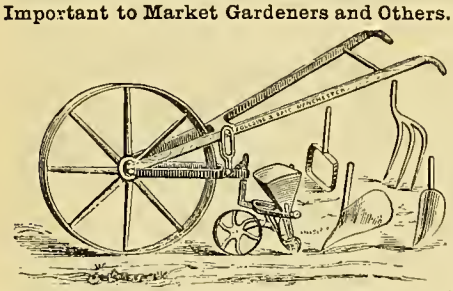

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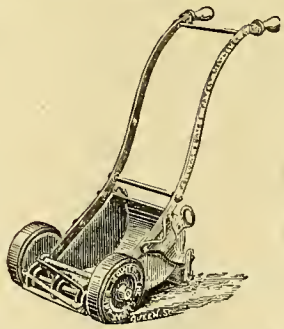
# LAWN MOWERS



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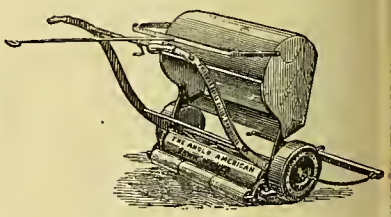

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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, June 4, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 389.—Vol. XV. { New Series. } SATURDAY, JUNE 11, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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Now Ready, in cloth, 16s.,

*THE GARDENERS' CHRONICLE,*

Volume XIV., JULY to DECEMBER, 1880.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M.; Scientific at 1 P.M.; General Meeting for the Election of Fellows, &c., at 3 P.M., on TUESDAY next, June 14.

N.B.—An Exhibition of Choice FLOWERS, &c., will be held in connection with the Meetings of the Fruit and Floral Committees in the Conservatory.

Band of the Royal Horse Guards from 4 o'Clock P.M. Admission, 1s.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EVENING FÊTE and SPECIAL EXHIBITION, WEDNESDAY, June 22. Gates open at 8 P.M.

The Bands of the 1st Life Guards, 2d Life Guards and the Coldstream Guards, by kind permission of their Commanding Officers, will be in attendance. Tickets to be obtained at the Gardens only by Vouchers from Fellows of the Society, price 10s.; or, on the day or evening of the Fête, 15s. each.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EXHIBITION of RHODODENDRONS and AMERICAN PLANTS, by Mr. Anthony Waterer, of Knap Hill. Open daily. Admission as on ordinary days, or by Spring Exhibition Tickets, to be obtained at the Gardens only by Vouchers from Fellows of the Society, price 2s. 6d. each.

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EXHIBITION of FLORAL DECORATION and SHOW of PELARGONIUMS, June 10 and 11.

STRAWBERRY and CHERRY EXHIBITION, with FLOWER MART, June 17 and 18.

ROSE FAIR and PRIZE for the BIGGEST GOOSEBERRY, July 2.

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J. FORSYTH JOHNSON, Horticultural Director.

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SALISBURY MEETING, JUNE 21 to 24.

GRAND FLOWER and FRUIT SHOW. Handsome Prizes are offered, and entries may now be made. Schedules sent post-free on application to

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Salisbury.—June, 1881.

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JOHN WATERER AND SON'S EXHIBITION of these Plants is NOW ON VIEW daily at the Gardens of Cadogan Place, Sloane Street. Admission 1s.

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MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, City, E.C., on MONDAY NEXT, at 12 o'Clock precisely, about 500 lots of ESTABLISHED ORCHIDS, many of them in flower and bud, amongst which will be found several very fine pieces of Odontoglossum vexillarium, and others; forty plants of Cypripedium niveum, showing flower; Cattleya Trianæ, fine specimen, with eight new leads; two plants of Epidendrum sceptrum, with ten and eleven flower-spikes; Dendrobium Wardianum, and others; Angræcum sesquipedale, A. Ellisii, A. mellucidum; Cattleya Mendelii; Masdevallias and Lælias in variety; Disa grandiflora, from the Cape; quantity of ORCHID BASKETS, &c.

View morning of Sale. Catalogues had at the Mart, and 8, New Broad Street, E.C.

**Lælia majalis, direct from Mexico.**

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MR. F. S. REYNOLDS will SELL by AUCTION, in convenient lots, at the above Nurseries, situate adjoining the Broadway Stations of the Great Western Railway and Metropolitan District Railway, on SATURDAY, June 18, at 2 o'Clock precisely, the well-grown Plants, &c., as above.

Catalogues at the Nurseries, and of Mr. F. S. REYNOLDS, 81, Edgware Road, W.

**Wednesday Next.**

IMPORTED and ESTABLISHED ORCHIDS.

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Company, Colchester, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, June 15, at half-past 12 o'Clock precisely, Importations of large pieces of ODONTOGLOSSUM PESCATOREI, O. NÆVIUM MAJUS, CATTLEYA TRIANÆ, &c., also Established and Semi-established plants of CATTLEYA MENDELII (none of which have yet bloomed in this country), MASDEVALLIA SHUTTLEWORTHII, M. LEONTOGLOSSA, ONCIDIUM MARSHALLIANUM, &c. Also a few lots of ORCHIDS in flower.

May be viewed the morning of Sale, and Catalogues had.

**Thursday Next.**

ODONTOGLOSSUM KRAMERI, LÆLIA AUTUMNALIS, CATTLEYA IMPERIALIS (GIGAS).

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, June 16, at half-past 12 o'Clock precisely, an Importation of ODONTOGLOSSUM KRAMERI—this is a lovely species, very rare in its native habitat, flowers violet, crest golden-yellow, spotted red, lower half of lip violet; LÆLIA AUTUMNALIS, in very finest varieties, and in grand masses, probably the finest consignment ever received; CATTLEYA IMPERIALIS, the best form of GIGAS, and a truly fine Cattleya; CYPRIPEDIUM CAUDATUM and SCHLIMII, ODONTOGLOSSUM LONDESBOROUGHIANUM, O. MACULATUM SUPERBUM, and other Importations.

May be viewed the morning of Sale, and Catalogues had.

**The Grove, Highgate.**

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, The Grove, Highgate, on SATURDAY NEXT, June 18, at half-past 12 o'Clock precisely, by order of the Executors of the late E. J. Nettlefold, Esq., a small collection of STOVE and GREENHOUSE PLANTS, consisting of Crotons, Marantas, Palms, Specimen Tree and other Ferns, Camellias, Azaleas, Orange Trees, Fruit Trees in Pots, Roses, quantity of Geraniums, and other Bedding Plants; a few lots of TOOLS, &c.

May be viewed the day prior and morning of Sale; and Catalogues had on the Premises, and of the Auctioneer, 38, King Street, Covent Garden, W.C.

**The Fifth Portion of the Celebrated Collection of ORCHIDS formed by JOHN DAY, Esq., of Tottenham.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, June 21 and 22, at half-past 12 o'Clock precisely each day, the Fifth Portion of this celebrated Collection, comprising, amongst other fine things:—

| | |
|---|---|
| Cattleya Trianæ, white variety | Nepenthes villosa |
| Odontoglossum Andersonianum | Saccolabium curvifolium, yellow var. |
| ,, polyxanthum | Cymbidium Loïse Chauvieri |
| ,, Rossii majus, var. rubescens | Anguloa eburnea |
| Cryripedium Druryi | ,, uniflora |
| Angræcum Ellisii | Lælia purpurata, grand variety |
| Aerides Schröderi | Oncidium ornithorhyncum album |
| ,, Fieldingii, v. album | Vanda furva (limbata) |
| ,, ,, v. Williamsii | |

Also great numbers of CATTLEYA MOSSIÆ and C. MENDELII, PHALÆNOPSIS AMABILIS GRANDIFLORA and SCHILLERIANA, ODONTOGLOSSUM VEXILLARIUM, and many other showy species in great variety, which being offered without the LEAST RESERVE, are peculiarly adapted to Gentlemen beginning to form a Collection.

On view the mornings of Sale, and Catalogues had.

**Stove and Greenhouse Plants, Orchids, Bedding PLANTS, GARDEN SEATS, HORSES, CARRIAGES, COWS, PIGS, POULTRY, &c.**

MR. J. C. STEVENS is instructed to SELL by AUCTION, on the Premises, Womersley House, Crouch Hill, Hornsey, N., on FRIDAY and SATURDAY, June 24 and 25, at half-past 12 o'Clock precisely each day, a well-grown collection of STOVE and GREENHOUSE PLANTS, a few good ORCHIDS, a large assortment of first-class BEDDING PLANTS, GARDEN SEATS, VANS, &c.; also 3 good CARRIAGE HORSES, 3 COWS, PIGS, POULTRY, RICK of HAY, CARRIAGES, CARTS, and the entire Stock of Garden and Farm, the property of the late Mrs. Peter Robinson.

May be viewed the day prior and mornings of Sale; and Catalogues had on the Premises, and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

**Valuable Established Orchids.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, on THURSDAY, June 30, at half-past 12 o'Clock, precisely, a collection of Established ORCHIDS, many of them extremely rare, and in extra fine specimens. The collection contains, among others, a grand specimen of ANGRÆCUM SESQUIPEDALE, also:—

| | |
|---|---|
| Lælia elegans alba | Cattleya Eldorado |
| Vanda Lowii | Masdevallia chimæra |
| Masdevallia trochilus | Trichopilia crispa marginata |
| Cattleya Eldorado alba | Lycaste Skinneri alba |
| Cœlogyne Massangeana | Odontoglossum Andersonianum Iobatum |
| Lælia purpurata alba | Miltonia virginalis |
| Cattleya bogotensis alba | Oncidium ornithorhyncum album |
| Masdevallia rosea | Masdevallia Wagneriana, 150 leaves |
| Anguloa Rückeri purpurea | Lælia Schilleriana marginata |
| Lælia Schilleriana splendens | |
| Cattleya labiata | |

Further particulars in future Advertisements.

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TO BE SOLD (through ill-health), the STOCK and BUSINESS of a SMALL NURSERY of about 2 Acres, 4½ miles from Covent Garden Market, consisting of Fruit Trees, Deciduous and Ornamental Trees, General Collections of Shrubs, Herbaceous Plants, Pansies, Pinks, Ferns, Phloxes, Pyrethrums, Ornamental Grasses, variety of Roots (Strawberry, Gooseberry, and Currant), Wooden Seed Shop, Stable and Cart-house, and all the plant used for the business. First-class Jobbing Trade done. This is a good opportunity for a young energetic man. By valuation or reasonable offer. Immediate possession and remunerative Stock to go on with (Flowers and Strawberries now ready).

Particulars and terms of Messrs W. L. GOMME, SONS AND HATTON, Imperial Buildings, Ludgate Circus, E.C.

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PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 8, New Broad Street, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

**Hyacinths, Tulips, &c.**

BUDDENBORG BROTHERS, BULB GROWERS, House Bloemswaard, Hillegom, near Haarlem, Holland. Wholesale CATALOGUE now ready, and will be sent post-free on application.

B. B. have an immense stock of CHRISTMAS ROSES, which they can strongly recommend. Prices on application.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

GREAT ROSE SHOW and EXHIBITION by the Pelargonium Society, TUESDAY, June 28, and WEDNESDAY, June 29.

Band of the Royal Horse Guards each day.

Admission:—TUESDAY, June 28, from 1 o'Clock, 2s. 6d.; WEDNESDAY, from 10 o'Clock, 1s.; or, by Tickets purchased before the day by Fellows, for the first day, 2s. Tickets at the usual Agents, and at the Office and Entrances to the Garden.

N.B.—The SPECIAL PRIZES offered by the General Horticultural Company (John Wills), Limited, for GROUPS of PLANTS; Messrs. Laing & Co., for BEGONIAS; Messrs. Webber & Co. and Rivers & Son for FRUIT; and Messrs. Carter & Co., Sutton & Sons, and Webb & Sons for VEGETABLES, will be competed for at this Show.

ENTRIES CLOSE June 23.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

EVENING FETE and ROSE and PELARGONIUM SOCIETY'S SHOW, June 28, from 8 to 12 o'Clock P.M.

Bands of the 2d Life Guards and Royal Horse Guards.

Tickets, to be purchased only by Fellows or their Orders, at the Office, on or before June 21, 5s.; after that date, 7s. 6d.; and on the Evening of the Fête holders of Fellows' Orders will be admitted on payment at the gates of 10s. each person.

GRAND FLOWER SHOW.—WORCESTERSHIRE AGRICULTURAL SOCIETY STOURBRIDGE MEETING, JULY 5, 6, and 7 next. TWO HUNDRED and FORTY POUNDS in PRIZES for PLANTS, FLOWERS, FRUIT, and VEGETABLES, open free to all comers; also a COTTAGERS' SHOW. Entries close June 28. For Schedules of Prizes, apply to

J. S. HAYWOOD, Hon. Sec. Hort. Department,
Seed Merchant, Worcester.

TIVERTON (Devon) HORTICULTURAL SOCIETY.

ELEVENTH EXHIBITION, JULY 7, 1881. Liberal PRIZES for CUT ROSES, open to all England, and to Subscribers for STOVE and GREENHOUSE PLANTS, FRUIT and VEGETABLES. Schedules on application to

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SHROPSHIRE HORTICULTURAL SOCIETY.

ROSE SHOW, July 7.
GREAT SUMMER SHOW, Aug. 17 and 18.

Schedules and full particulars may be obtained from the Hon. Secs.,

Messrs. ADNITT AND NAUNTON,
The Square, Shrewsbury.

BRIGHTON AQUARIUM.—The FIRST SHOW of ROSES and DECORATIVE PLANTS will take place in the Aquarium on SATURDAY, July 9 next. Particulars and Schedules on application to

The MANAGER.

THE ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.

GRAND SUMMER SHOW, July 30 and August 1.

TWELVE PLANTS, Six in Flower and Six Foliage, £20, £15, £10. EIGHT DISHES of FRUIT, £5, £3, £2, £1. And various other PRIZES, amounting to THREE HUNDRED POUNDS in value.

A Subscription of 5s., paid before July 1, enables the Exhibitor to Compete Free of Entry Fee.

C. S. FUIDGE, Secretary.
39, York Street, Lower Avenue.

BRADFORD FLORAL and HORTICULTURAL SOCIETY.

The THIRD ANNUAL EXHIBITION will take place on AUGUST 19 and 20. Schedules of Prizes and all particulars may be obtained on application to

JOSH. WEST, Secretary,
27, Heath Road, Bradford, Yorks.

RHODODENDRONS

The AMERICAN PLANTS at KNAP HILL will be in their greatest beauty during the ensuing fortnight, and may be seen daily, Sundays excepted.

The EXHIBITION of RHODODENDRONS in the GARDENS of the ROYAL BOTANIC SOCIETY, Regent's Park, W., will be ON VIEW DAILY, from June 1. Orders of Admission may be obtained from Fellows of the Society, or from the Exhibitor,

ANTHONY WATERER,
Knap Hill Nursery, Woking, Surrey.

☞ The RHODODENDRONS and AZALEAS in ROTTEN ROW, Hyde Park, W., are supplied by ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.—May 28.

**Immediate Effect,**

H. CANNELL AND SONS begs to announce that they have yet large quantities of GARDEN DECORATIVE PLANTS of all descriptions to offer at reduced prices; also several of the hardy green and white CARPET BEDDING PLANTS by the square yard.

Our Collections of Bedding Plants for the decoration of the Flower Garden, 15s., 30s., and 60s.

For Conservatory Decoration, 17s. 6d., 35s., and 70s.

These Collections always give great satisfaction.

The Home for Flowers, Swanley, Kent.

**Bedding Plants for the Million.**

J. S. HOLDER AND SON can supply strong, healthy Plants of Scarlet and Variegated GERANIUMS, VERBENAS, GAZANIAS, AGERATUM, LOBELIAS, Single PETUNIAS, DAHLIAS, SALVIAS, CHRYSANTHEMUMS, FUCHSIAS, HELIOTROPES, IRESINES, MESEMBRYANTHEMUM, CINERARIA MARITIMA, &c. Eight dozen for 20s.; box and packing free. Cash with order. Crown Nursery, Reading.

**Clearance Prices.—Clearance Prices.**

BEDDING PLANTS.

GERANIUMS—"Vesuvius" and "Master Christine" at 15s. per 100; other varieties of Zonals, mixed, to name, at 14s. per 100.

ALTERNANTHERAS, IRESINES, MESEMBRYANTHEMUM cord. var., VERBENAS, AGERATUMS, LOBELIAS, and many other Bedding Plants, at 10s. per 100. Package, if cash with order, 1s. per 100.

WOOD AND INGRAM, The Nurseries, Huntingdon, and St. Neots.

**DOUBLE CINERARIAS,**
FOR WINTER BLOOMING.

R. H. VERTEGANS is now offering SEED saved from his Superb Collection, at 3s. 6d. and 5s. per packet, post-free. Also Booking Orders for PLANTS, 12 varieties, selected from his large choice and noted strain. Names and Descriptions will shortly be published.

CHAD VALLEY NURSERIES,
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PANSIES and VIOLAS, for Bedding or Exhibition.—Many thousands of strong Plants on Sale, at low prices, our selection. CATALOGUE with LISTS of sorts, post-free :—

| | Doz.—s. d. | 100.—s. d. |
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| BEDDING PANSIES, named sorts | 2 0 | 12 0 |
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WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

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**Verbenas—Verbenas.**

WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff, 6s. per 100, 50s. per 1000 ; strong plants from single pots, full of cuttings, 12s. per 100 ; 100 rooted cuttings, in twelve best show kinds, 8s.; packing included. Terms cash.

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**50,000 Pelargonium Vesuvius.**

WILLIAM BADMAN is sending out VESUVIUS, from store pots, 8s. per 100, 75s. per 1000, packing included. Send cash with order.

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NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.

Prices and plants need only be compared with those of other firms, to prove that in no instance can buyers of plants who study both price and quality be supplied more advantageously than by ourselves.

The Collections are all of the finest sorts, and as varied in colour as possible, fine for exhibition or home decoration, and as certain to be satisfactory to purchasers as collections can be. All are our selection.

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| Abutilons, in variety | 3 0 | Hollyhocks, Seedlings | 4 0 |
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Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

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PRIDE OF WALTHAM (H.P.), delicate flesh colour ; Two First-class Certificates.
LADY SHEFFIELD (H.P.), brilliant rosy-cerise ; First-class Certificate.
RED GAUNTLET (H.P.), bright scarlety-crimson.
English raised ROSES of 1879 and 1880.
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A large general stock of ROSES for all purposes.
ROSES, in pots, for Outdoor Planting, 10s. 6d. to 30s. per dozen.
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Half Specimen and Specimen ROSES, in pots, 5s. to £5 5s. each.
Priced Descriptive CATALOGUES free by post on application. Paul's Nurseries, Waltham Cross, Herts.

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**Verbenas.**

VERBENAS.—Extra strong and well-rooted Plants of Purple, White, Crimson, and Pink, 6s. per 100, 50s. per 1000 ; ten choice Exhibition varieties, beautifully clean and healthy, 8s. per 100, 70s. per 1000 ; Cuttings, 3s. and 4s. per 100, 25s. and 35s. per 1000. All securely packed. Terms cash.

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| GERANIUMS, various sorts | 12s. | per 100. |
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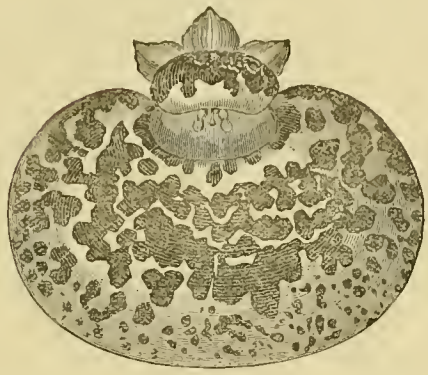

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VICTORIA AND PARADISE NURSERIES,

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FUCHSIAS, 12 best Exhibition varieties, 1s. 6d. ; 12s. per 100.
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„ 18 new varieties, 3s. 6d.
AGERATUM, Dwarf, 12 for 1s. 3d. ; 8s. per 100.
IRESINE, 12 for 1s. 2d. ; 8s per 100.
VERBENAS, 12, in 4 varieties, 1s. 2d. ; 6s. per 100.
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CHRYSANTHEMUMS, 12, in 12 varieties, 2s.
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PELARGONIUMS, 100 Show and Fancy, in 25 varieties, 20s.
GERANIUMS, Bronze, Beauty of Calderdale, 12 for 2s. 6d., 18s. per 100.
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„ Variegated Bijou, 12 for 2s. ; 12s. per 100.
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„ Zonal and Scarlet, 12 varieties, 2s. 6d. ; 18s. per 100
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All well rooted and package free.
Terms—Cash with all Orders.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

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**Cheap Bedding Plants.**

H. I. HARDY, F.R.H.S., offers fine strong and healthy autumn-struck Plants of the following :—

GERANIUMS, Vesuvius and other best scarlets, from single pots, 2s per dozen; stores, 12s. per 100. Master Christine and Madame Vaucher, single pots, 2s. 6d. per dozen, 15s. per 100. New Life, Crystal Palace Gem, and May Queen, from single pots, 3s. per dozen.
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DAHLIAS, fine named Show varieties, in single pots, 4s. 6d. per dozen.

Terms cash. Package free, and extra Plants for carriage. A reduction made for quantities. CATALOGUE free by post.

STOUR VALLEY SEED GROUNDS,
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The set of 3 varieties for 24s. The usual discount to the Trade.
Woking Nursery, Surrey.

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ALTERNANTHERA, amœna, 8s. per 100, 70s. per 1000.
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„ magnifica, 7s. per 100. 65s. per 1000.
„ amabilis latifolia, 7s. per 100, 65s. per 1000.
„ paronychioides major, 7s. per 100, 65s. per 1000.
„ versicolor, 7s. per 100, 65s. per 1000.
„ spathulata, 7s. per 100, 65s. per 1000.
MESEMBRYANTHEMUM, cordifolium var., 8s. per 100, 70s. per 1000.
COLEUS, Verschaffeltii, 10s. per 100.
IRESINE, Lindeni, 8s. per 100, 70s. per 1000.
LEUCOPHYTON, Brownii, 10s. per 100.
HERNIARIA, glabra, 5s. per 100, 40s. per 1000.
LOBELIA, West Brighton Gem, 5s. per 100, 40s. per 1000.
MENTHA PULEGIUM GIBRALTARICUM, 5s. per 100, 40s. per 1000. All the above are well established plants.
New LIST of other kinds free on application to
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**Gardenia intermedia.**

MESSRS. JOHN STANDISH AND CO. have to offer a very extensive stock of GARDENIA INTERMEDIA of all sizes, every plant being in the most robust health, and guaranteed perfectly clean. Nice plants in 6-inch pots at 2s. 6d. each ; larger, 3s. 6d. to 10s. 6d. each. Specimens, fine bushy plants, with plenty of bloom-bud on them, 1, 1½, 2 and 3 guineas each.
Royal Nurseries, Ascot, Berks.

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FOR SALE, FLOWER of SPRING GERANIUMS, the best Silver-edged variety; strong autumn-struck plants, 12s. per 100 for cash, package free.
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BEDDING GERANIUMS.—Ten dozen, in ten of the most popular Bedding kinds, strong plants, from single pots, for 15s.
HUSSEY AND SON, Mile End Nursery, Norwich.

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TWELVE RARE AMERICAN HARDY FERNS, 12s. Large, strong, imported, but now established plants of Osmunda cinnamomea, O. Claytoniana, Woodsia obtusa, W. ilvensis, Adiantum pedatum, Asplenium ebenium, Ostrich Plume, Sensitive Fern, &c. All distinct, and strong enough for open-air rockwork. Package gratis for cash. J. H. LEY, Royal Nursery, Croydon.

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**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted Cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000 ; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.

EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

## CRANSTON'S NURSERIES.
(Established 1785.)

CATALOGUE
OF
*New English and French Roses*
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DAHLIAS, CLEMATIS, PHLOXES, and CHOICE BEDDING PLANTS,
*Free on application to*
CRANSTON'S NURSERY & SEED CO.
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Ferns a Speciality.
## EXOTIC AND BRITISH FERNS,
IN great number and variety, suitable for Stove and Greenhouse cultivation, for Outdoor Ferneries and other purposes.
*Intending Purchasers before buying elsewhere should send for our SPECIAL LIST of CHEAP FERNS, which will be forwarded free on application.*
W and J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

PRIMULA. CINERARIA. CALCEOLARIA.
Wm. Cutbush & Son's
Strain of these cannot be surpassed. They are sold in Packets, 2s. 6d., 3s. 6d. and 5s. each; but quality is the same.
HIGHGATE, LONDON, N., and BARNET, HERTS.

## SEEDLING PLANTS
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## CHOICE FLORISTS' FLOWERS.
Guaranteed from the Finest Strains only.
*All carefully Transplanted, Strong and Healthy.*
POST OR CARRIAGE FREE AT PRICES QUOTED.

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| *ANTIRRHINUMS, very choice mixed | 7 6 | .. | 1 0 |
| AURICULAS, choicest Alpine | 10 6 | .. | 1 6 |
| CARNATIONS, from named flowers | 10 6 | .. | 1 6 |
| ,, Perpetual or Tree, from named flowers | — | .. | 2 6 |
| ,, Yellow-ground vars., choice | — | .. | 3 6 |
| CALCEOLARIAS, Daniels' Prize | 10 6 | .. | 1 6 |
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| *DIANTHUS HEDDEWIGI, flowers large, brilliant and beautiful | 7 6 | .. | 1 0 |
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| *PANSIES, Show and Fancy | 7 6 | .. | 1 0 |
| * ,, Prize Blotched, splendid | 10 6 | .. | 1 6 |
| * ,, New Striped, fine | 7 6 | .. | 1 0 |
| PRIMULAS, Choicest Red, fringed | 10 6 | .. | 1 6 |
| ,, ,, White, fringed | 10 6 | .. | 1 6 |
| ,, ,, Mixed, fringed | 10 6 | .. | 1 6 |
| *PENTSTEMONS, from named flowers | 10 6 | .. | 1 6 |
| *PETUNIA HYBRIDA GRANDIFLORA, magnificent varieties, mixed | — | .. | 2 6 |
| PICOTEES, from Stage Flowers, fine | 10 6 | .. | 1 6 |
| POLYANTHUSES, fine gold-laced | 7 6 | .. | 1 0 |
| SWEET WILLIAMS, Daniels' Superb Strain | 7 6 | .. | 1 0 |

Those marked (*) will bloom this year.

*Not less than fifty supplied at the rate per 100, or six at the rate per dozen.*

Cheques or Post-office Orders to
## DANIELS BROTHERS,
TOWN CLOSE NURSERIES,
NORWICH.

## Hybrid Perpetual and Tea Roses
IN POTS.
*Strong Healthy Plants,*
Fit for Immediate Planting, or Flowering under Glass.
*List of Sorts and Prices on application to*
CRANSTON'S NURSERY & SEED CO.
(LIMITED),
KING'S ACRE, HEREFORD.

NEW ROSES IN POTS.
TEA and NOISETTE ROSES, in Pots.
*Pot Rose LIST, for present summer, now ready.*
EWING and CO., Eaton, Norwich.

Special Offer of Bedding Plants.
W. G. CALDWELL and SONS, The Nurseries, Knutsford, have large stocks of the following, in extra strong plants:—
CALCEOLARIAS, 1s. per doz. | LOBELIAS, 8s. per 100.
GERANIUMS—Crystal Palace Gem, Flower of Spring, Master Christine, Vesuvius, 15s. per 100.
ASTERS, MARIGOLD (French), PHLOX DRUMMONDI PYRETHRUM AUREUM, STOCKS, 2s. per 100.
Package extra.

BEDDING PANSIES.
SUNBURST, best and finest red, 20s. per 100.
PILRIG PARK, fine white, 14s. per 100.
IMPERATOR, finest purple self, 14s. per 100.
EMPRESS, excellent yellow, 12s. per 100.
BRILLIANT, golden-yellow, 16s. per 100.
CLIVEDEN, purple, 2s. 6d. per dozen.
POLEMONIUM CŒRULEA VARIEGATA, 3s. per dozen.
RODGER McCLELLAND and CO., 64, Hill Street, Newry.

NEW DOUBLE WHITE BOUVARDIA, "ALFRED NEUNER."
*The following is the Raiser's Description:*—"This is a gem of the first water, equal, if not superior, in profuse blooming quality and vigorous healthy growth to the valuable single white variety, Davidsonii, of which this double white one is a sport. The flowers are rather larger than those of the single-flowering, and composed of three perfect rows of petals of the purest waxy-white colour, each floret resembling a miniature Tuberose. The trusses are large and perfect, and are freely and without interruption produced, even on the small side shoots, which generally make no flowers on the single one, and, according to our observation and experience for the last two years it will bloom more freely and constantly than the single variety. This double Bouvardia will prove a standard flower, indispensable in all fine cut-flower work."
Orders now being Booked for Execution in strict Rotation, on arrival of our Supplies from America. Stock very limited. Price, in 3½-inch pots, 21s. each; in 2-inch pots, 15s. each. Trade price on application.
Sole Agents in Great Britain:—JAMES CARTER and CO., The Queen's Seedsmen, 237 and 238, High Holborn, W.C.

CALCEOLARIA BURBIDGEII.—This beautiful plant is a cross between C. Fuchsiæfolia and C. Pavonii, and is exactly intermediate between the two parents. The foliage is downy, about one-third that of C. Pavonii in size; the habit of the plant is free and branching, and, unlike C. Fuchsiæfolia, not at all subject to sunscorch; the flowers are the same colour as the latter plant. It flowers during the autumn and winter months. It was raised by Mr. Burbidge, of the College Botanic Gardens, Dublin.
Trade price, strong plants, 36s. per dozen.
RODGER McCLELLAND and CO., 64, Hill Street, Newry.

FLOWERING BEGONIAS.—Twelve large strong plants for 21s. These are the finest varieties grown, and will produce many hundreds of magnificent red, rose, and white flowers for five months at a time. Succeed equally well in a Greenhouse or planted out in a Garden. Plants are starting well in 4-inch pots. Hamper gratis for cash.
J. H. LEY, Royal Nursery, Croydon.

GERANIUMS.—The best of the New, all that took Prizes or Certificates.—Denny's Romeo, Dudu, &c., eight varieties, post-free, for 6s.; Catlin's (Carter & Co.), five varieties, for 4s.; Cannell's, ten varieties, for 7s. 6d.; Pearson's, ten varieties, for 7s. 6d.; Cuttings half-price. All the best Doubles in Cultivation. Also PELARGONIUMS Regal and others. See CATALOGUE.
RICHARD PANNETT, Nurseryman, Chailey, Sussex.

NARCISSUS CLUSII, or CORBULARIA MONOPHYLLA
(the White Hoop Petticoat Narcis).
Of this elegant and much desired bulbous plant an important consignment has just arrived, in excellent condition. We send out bulbs, prepaid, and no charge for packing, at the following prices:—One dozen, 6s.; twenty-five, 12s.; fifty, 21s.; 100, 42s.
Special offer to the Trade on application.
E. H. KRELAGE and SON, Haarlem, Holland.

Carnations.
HEATH and SON beg to offer the following sorts, for delivery in September, out of pots:—
BRIDE, "Hodge's," 30s. per 100.
PRINCE of ORANGE, 35s. per 100.
MISS JOLIFFE, 35s. per 100.
DR. ABERCROMBIE, deep yellow, a great improvement on "King of the Yellows," £5 per 100.
Special quotations per 1000.
Exotic Nurseries, Cheltenham.

Cheap Plants.—Special Offer.
WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in twelve choice sorts, 8s.; or in twenty-five sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius, 15s. per 100; Dr. Denny, nearest to blue, fine, 5s. per dozen. Pelargoniums, in twelve best varieties, 5s. per dozen, 30s. per 100.
,, TRICOLORS—Mrs. Pollock and Sir R. Napier, 2s. 6d. per dozen, 18s. per 100.
,, SILVER VARIEGATED—May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra, Prince Silverwings, and Waltham Bride, 15s. per 100.
,, GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
,, DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 15s. per 100; Madame Amelia Baltet, very fine white (the best), 18s. per 100.
,, BRONZE—Maréchal McMahon and Black Douglas, the best for bedding, 18s. per 100.
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CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

Bedding Geraniums, &c.
B. R. DAVIS offers strong plants, from single pots, in ten good varieties, at 10s. 6d. per 100, package free. MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM, extra strong, 10s. 6d. per 100. COLEUS VERSCHAFFELTII, extra strong, 12s. per 100. Cash with order.
B. R. DAVIS, Yeovil Nurseries, Yeovil.

CHOICE SUMMER FLOWERS, 1881.
The LAWSON SEED and NURSERY CO. (Limited), Edinburgh, are booking Orders for the leading
BEDDING-OUT PLANTS,
viz., Verbenas, Geraniums, Calceolarias, &c., for present delivery. CATALOGUES may be had on application.

Come and See.
THE DOUBLE BOUVARDIA (Alfred Neuner), splendidly in flower; and also our Collection of PELARGONIUMS, BEGONIAS, PETUNIAS, PYRETHRUMS, VIOLAS, &c., which are probably the best and the most complete ever brought together. Send for our "Floral Guide."
Plants transmitted to all parts of the world at the very lowest price consistent with quality and correctness.
All the New Plants and Novelties of the year are fast developing their respective qualities, and a Catalogue of the same will shortly be ready and sent post-free.
Mr. W. Pearson, *Lincoln, Christchurch, New Zealand, April 21, 1881.*
"I have received the plants by post. Your mode of packing is even better than last. They all had made young growth *en route*, and two are now flowering. I am delighted."

THE HOME FOR FLOWERS
SWANLEY KENT

GARDEN REQUISITES.
COCOA-NUT FIBRE REFUSE,
3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
H. G. SMYTH,
17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1s.; 15 bags, 12s.; 30 bags, £1, bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15s.; truckload of about 250 bushels, £1 3s. (truckload free on to rail).—J. STEVENS and CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons. Invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1s. each; 15 Sacks, 12s.; 30 Sacks, 20s. (all Sacks included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (equal to about 300 bushels when dry), free on rail, 25s. Terms cash with order.
CHUBB, ROUND and CO.,
Fibre Works, West Ferry Road, Millwall, London, E.

FOR SALE, fine Yellow Fibrous LOAM, in any quantity, on London and North-Western, Midland, or Great Northern Railways. Price and Sample free on receipt of 1s., to be remitted on purchases. Apply to
GEO. P. DAREY, Hertfordshire Seed and Plant Establishment, Watford, Herts.

PEAT.—Superior Black or Brown Fibrous PEAT, for Rhododendrons, Azaleas, Orchids, &c., same as supplied to Messrs. John Waterer & Son, and other noted growers, 6 tons, loaded on trucks at Camberley Station, S.W.R., £4 4s.—Address,
Mr. W. TARRY, "Golden Farmer," Farnborough Station.

PEAT.—Best in England, Brown Fibrous, 7 inches thick. Sack, 5s.; Cask, 10s.; Truck, £5 10s.
W. SHORT, Landscape Gardener, &c., Redhill, Surrey.

Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.
Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.
Fresh SPHAGNUM, 10s. 6d. per bag.
WALKER and CO., Farnborough Station, Hants.

TOBACCO CLOTH and PAPER, Best and Cheapest.—PAPER, 7d. per pound; 28 lb. 15s. CLOTH, 8d. per pound, 28 lb. 18s. Best ROLL, 9d. per pound, 28 lb. 18s.
J. DENYN, Manufacturer, 73, Rendlesham Road, Clapton, E.

KEEL'S NEW AND LOW-PRICED
## BLIGHT DESTROYER.
(William Gurney Keel, Twenty-two years Head Gardener at Newton Park, Somerset, and Royal Botanic Gardens, Kew.)
NO MORE TOBACCO SMOKE. A CLEAR FLUID, WITHOUT SEDIMENT OR SCUM.
3d. per Gallon (Concentrated).
PAMPHLET, by post, free on application to Mr. A. HAWES, Walcot Parade, Bath.
Now used by Gardeners of the Nobility and Gentry. Lists and Testimonials enclosed with Pamphlet.
THIS PREPARATION, used at Proper Strength, and according to Method recommended, PREVENTS and CURES THE PEACH TREE DISEASE.

WEEDS, HOW TO DESTROY THEM.—Gentlemen can have the Weeds, Moss, &c., destroyed on their Garden Walks and Carriage Drives, without disturbing the gravel, by using SMITH'S WEED KILLER, a liquid preparation, which when mixed with cold water and applied with an ordinary watering-can, will prove thoroughly destructive to all vegetable growth. Full particulars and price on application to
MARK SMITH, Manufacturing Chemist, Louth, Lincolnshire.

*HURRY'S*

**PLANTAIN and DAISY EXTRACTOR.**

*The most Simple Invention before the Public.*

**Over 2000 Sold last Season.**

Plantain, &c., removed Without Destroying the Lawn.

**Carriage Free of the Patentee, 4s. 3d. and 5s. 3d.**

A. F. HURRY, Pampesford, Cambridge.

Wholesale Agent: THOS. TILLEY, 12, Walbrook, London, E.C.; BEALE AND CO., Cambridge.

GISHURST COMPOUND.—Used by many of the leading Gardeners, since 1859, against Red-spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 oz. to the gallon of soft water, and of from 4 to 16 oz. as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. In Boxes, 1s., 3s., and 10s. 6d.

AMERICAN BLIGHT on APPLE TREES CURED by rubbing a wet hard Painter's brush on Gishurst Compound, and working the lather into the infected part.

GISHURSTINE keeps feet dry, softens hard boots, preserves leather, takes a polish. In boxes, 6d. and 1s. each.
Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited). Retail by Seedsmen and Oilmen.

**Lithographic Coloured Plates of Vegetables, Fruits,** FLOWERS, &c., or ORNAMENTAL COVERS for CATALOGUES.

MR. G. SEVEREYNS, LITHOGRAPHER to the Royal Academy, 15, Rue du Boulevard Brussels. Established 1829. Especial attention paid to subjects in Botany and Natural History. Copies of Coloured Drawings can be reproduced of any size that may be required, and Estimates will be furnished on full particulars being addressed to his London Agent,
Mr. JAMES TEDDER, 149, Kingsland Road, London, E.

**PIPES and FITTINGS,**
FOR HEATING APPARATUSES.
The largest stock in the Kingdom. 4-inch pipes. 1s. 7d. per yard.
**SILVESTER & SAINSBURY,**
Castle Hill Foundry, Newcastle, Staffordshire.

ECONOMY IN FUEL.

**Toope's Asbetos Covering Company**
(LIMITED)

Manufacture an easily fitted and removable Patent Covering for Hot-water Pipes of any diameter, which effectually prevents any loss of heat in pipes passing from the boiler to the Glass-houses, no matter what the distance.

*It will be found invaluable where used.*

**Price 10d. per superficial foot.**

NUMEROUS TESTIMONIALS.

Send circumference of pipe, and length required, to the Factory,
1, BEN JONSON'S ROAD, STEPNEY, LONDON, E.

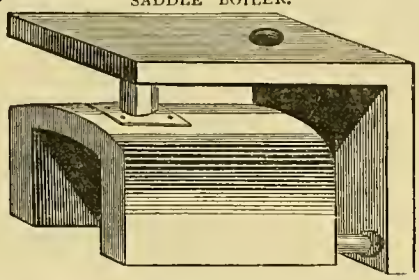
**ADIE'S PATENT LAWN EDGER.**

THIS Machine constantly employed will pay itself in two days. Dr. Hogg, in the *Journal of Horticulture*, says—"This Edge Clipper we have tried, and know not which to admire most—its simplicity or efficiency." Mr. Moore, in the *Florist*—"This new machine does its work rapidly and admirably, the grass being cut with precision, and" he further adds, "the use of it willl, we have no doubt, become general." Prices 25s. and 30s.
LAWN EDGER CO., 15, Pall Mall, London, W.

**2-WHEEL HAND GAPPING DRILLS.**
Will sow every description of Farm and Garden Seeds.

There is no spring and slide to get out of order and damage the seed, being worked by a brush. The rows can also be put in at equal distances without a line.
Price, with 2 wheels, 20s. each.
" with 1 wheel, 16s. each.
" to sow 2 rows, 34s. each.
For larger Manual and Pony Drills, see Illustrated List free from F. BIRD & CO., 11, Great Castle St., Regent St., London, W.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. | | | To heat of 4-in. Pipe. | Price. | | |
|---|---|---|---|---|---|---|
| High. | Wide. | Long. | Feet. | £ | s. | d. |
| 20 in. | 18 in. | 18 in. | 300 | 7 | 0 | 0 |
| 20 " | 18 " | 24 " | 400 | 8 | 0 | 0 |
| 20 " | 18 " | 30 " | 500 | 9 | 0 | 0 |
| 24 " | 24 " | 24 " | 700 | 12 | 0 | 0 |
| 24 " | 24 " | 30 " | 850 | 14 | 0 | 0 |
| 24 " | 24 " | 36 " | 1000 | 16 | 0 | 0 |
| 24 " | 24 " | 48 " | 1400 | 20 | 0 | 0 |
| 28 " | 28 " | 60 " | 1800 | 25 | 0 | 0 |

Larger sizes if required.

*From* Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.
"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

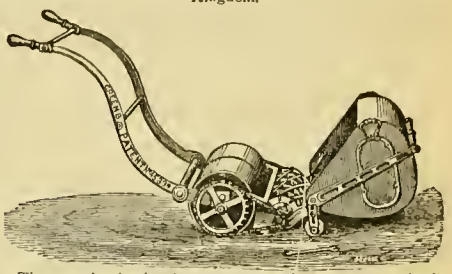
**Lawn Mowers — Lawn Mowers.**

THE GREAT SUPERIORITY OF
**GREEN'S**
**PATENT "SILENS MESSOR"**
AND
**"MONARCH" LAWN MOWERS**

Over those of all other Makers is universally acknowledged.
**They will Cut**
**Either Short or Long Grass, Bents, &c., Wet or Dry**
These advantages no other Lawn Mowers possess.
They are the only Mowers which have been in CONSTANT use from 15 to 20 years in the Royal Gardens, Windsor,

| | |
|---|---|
| Buckingham Palace Gardens | The Hyde Park Gardens |
| Marlborough House Gardens | Hampton Court Gardens |
| Royal Horticultural Society's Gardens, South Kensington | The Zoological Gardens, Regent's Park |
| The Royal Botanic Gardens, Regent's Park | The Dublin Botanic Gardens, |
| The Crystal Palace Company's Gardens, Sydenham | The Liverpool Botanic Gardens |
| The Winter Palace Gardens, Dublin | The Botanic Gardens, Brussels |
| | The Hull Botanic Gardens |
| | The Leeds Horticultural Gardens |

And in most of the Principal Parks and Squares in the United Kingdom.



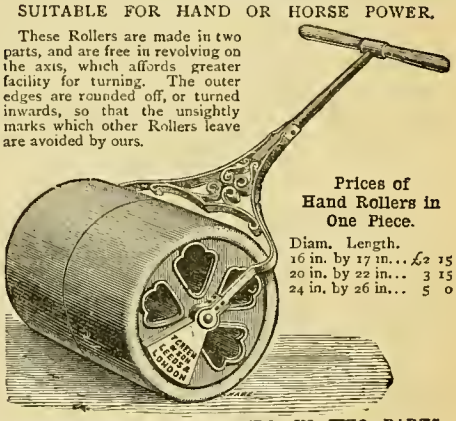
They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant. The above machines have proved to be the best, and and have carried off Every Prize in all cases of Competition. Every Lawn Mower is guaranteed to give entire satisfaction, otherwise they may be returned AT ONCE, free of cost to the purchaser.
The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

| | | | £ | s. | d. |
|---|---|---|---|---|---|
| To cut 6 inches. | Can be worked by a lady .. .. | | 1 | 15 | 0 |
| " 8 " | " " .. .. | | 2 | 10 | 0 |
| " 10 " | Can be worked by one person .. | | 3 | 10 | 0 |
| " 12 " | " " .. .. | | 4 | 10 | 0 |
| " 14 " | " " .. .. | | 5 | 10 | 0 |
| " 16 " | This can be worked by one man on an even lawn .. .. | | 6 | 10 | 0 |
| " 18 " | By man and boy .. .. .. | | 7 | 10 | 0 |
| " 20 " | " " .. .. .. | | 8 | 0 | 0 |
| * " 22 " | Two men .. .. .. .. | | 8 | 10 | 0 |
| * " 24 " | " " .. .. .. .. | | 9 | 0 | 0 |

* If made stronger, suitable for donkeys, 30s. extra.
Prices of Horse, Pony, and Donkey Machines, on application.
They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.
Carriage paid to all the Principal Railway Stations in the United Kingdom. Illustrated Price LISTS free on application.
N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

**GREEN'S PATENT ROLLERS**
**For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.**
SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks which other Rollers leave are avoided by ours.



**Prices of Hand Rollers in One Piece.**

| Diam. | Length. | |
|---|---|---|
| 16 in. | by 17 in... | £2 15 |
| 20 in. | by 22 in... | 3 15 |
| 24 in. | by 26 in... | 5 0 |

**PRICES OF HAND ROLLERS IN TWO PARTS.**

| Diam. | Length. | £ | s. | d. | Diam. | Length. | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|
| 16 in. | by 17 in. .. | 2 | 15 | 0 | 24 in. | by 26 in. .. | 5 | 0 | 0 |
| 20 in. | by 22 in. .. | 4 | 0 | 0 | 30 in. | by 32 in. .. | 9 | 0 | 0 |

Prices of Rollers fitted with Shafts suitable for Horse and Pony, on application, and special quotations for Rollers 3 feet, 3½ feet and 4 feet diameter.
They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,
**THOMAS GREEN AND SON (Limited),**
SMITHFIELD IRONWORKS, LEEDS;
And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.
Carriage of Rollers Paid to all the Principal Railway Stations in Great Britain.

# THURSDAY NEXT.

## ODONTOGLOSSUM KRAMERI, LÆLIA AUTUMNALIS, CATTLEYA IMPERIALIS (GIGAS).

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. SANDER, on THURSDAY NEXT, June 16, at half-past 12 o'Clock precisely, an importation of ODONTOGLOSSUM KRAMERI—this is a lovely species, very rare in its native habitat, flowers violet, crest golden-yellow, spotted red, lower half of lip violet; LÆLIA AUTUMNALIS, in very finest varieties, and in grand masses, probably the finest consignment ever received; CATTLEYA IMPERIALIS, the best form of GIGAS, and a truly fine Cattleya; CYPRIPEDIUM CAUDATUM and SCHLIMII, ODONTOGLOSSUM LONDESBOROUGHIANUM, O. MACULATUM SUPERBUM and other Importations.

*May be viewed the morning of Sale, and Catalogues had.*

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

# THE GENERAL HORTICULTURAL COMPANY

## (JOHN WILLS), LIMITED.

### ADIANTUM LATHAMII.

A very fine Maidenhair Fern, of great beauty and free vigorous growth, resembling much in general appearance the well-known A. Farleyense, on account of the drooping character of the fronds, which, however, support themselves. The pinnules are much larger than in A. scutum, which they resemble, being a seedling from that plant. The colour of the fronds is also much like A. scutum, but the habit of the plant is entirely different, partaking more of the character of A. Farleyense. Price, 10*s.* 6*d.* each.

### CYPERUS LAXUS VARIEGATUS.

A remarkably handsome plant, and one which is sure to become a general favourite for decorative purposes. In its general character it is identical with C. laxus, but differs entirely from that variety in the variegation of the foliage, which is green striped with white. In a young state they resemble very much a well coloured small plant of Pandanus Veitchii, and in such a state of growth are most valuable for baskets or other similar purposes. If grown in 48-size pots the plant forms a tuft, carrying its grass-like blooms well above the foliage, which are also beautifully variegated, the plant then becomes an object of great beauty. The variegation is constant and the growth of the plant very free. Price, 21*s.* each.

### DRACÆNA BELLA (concinna × Chelsoni).

A distinct and very elegant small-growing variety, the leaves of which are about one foot long and 2 inches broad, of spreading habit, and of a bronzy-green colour, with crimson margins. The young leaves are rosy at the edge, within which is a line of cream-colour passing to yellowish-green, the coloration being evenly laid on. This and the other small-growing sorts will be highly useful for table decoration. Price, 21*s.* each.

### DRACÆNA COUNTESS OF LATHOM (terminalis × Chelsoni).

A very handsome variety, of medium size, and stocky habit, with long stalked leaves, which are erect, somewhat spreading, of a bronzy green; the lower ones edged with carmine, some partly or wholly coloured with the same; the younger or uppermost are of a rosy-carmine. The plant is very free, and the colouring being very lasting, it must on that account become a general favourite. Price, 21*s.* each.

### DRACÆNA GIGANTEA (excelsa × regina).

One of the largest growing of all the Anerley hybrids. Of a bold and widely spreading but loose habit; the leaves large, oblong, shortly accuminate, recurved, of a dark bronzy-green with coloured footstalks. The young leaves have a creamy variegation flushed with pink, changing as it acquires age to a deep bright rose, through varying shades of magenta-pink. The mature leaves are fully 7 inches broad. It is a plant of noble aspect, with bold, semi-drooping foliage. Price, 31*s.* 6*d.* each.

### DRACÆNA MASTERSII (nigrescens × regina).

A handsome variety, of dense stocky habit, with broad leaves, of ovate outline, measuring 5 inches across, recurved or drooping, of a bronzy-green—the older leaves having the dark purple margin and costa characteristic of D. nigrescens, but having the younger leaves handsomely margined with bright purplish-magenta, which latter colour is also well developed upon the leafstalks. Price, 31*s.* 6*d.* each.

### DRACÆNA ROSSII (magnifica × terminalis).

A fine-habited, stocky-growing variety, having the leaves spreading, of a light bronzy-green, beautifully marked with sectional streaks of a bright rosy-red; some are entirely of that colour—the upper or younger ones are somewhat of a lighter shade. The footstalks are also conspicuous, being of a deep rosy-red. The plant is remarkably free in growth. Cultivated in small pots it will prove one of the very best and highly coloured varieties which can be used for decorative purposes. Price, 31*s.* 6*d.* each.

### DRACÆNA STRICTA ALBA (nigrescens × regina).

This variety has the habit of D. stricta, but with white variegation. The plant is erect in habit, of medium growth, with an open disposition of the leaves, which are stiff and erect, of a clear green, with a well-defined but irregular white margin. It has the merit of colouring well while the plant is yet of small size, and will in consequence be highly valuable for decorative purposes, and for market. Price, 21*s.* each.

### GLOXINIA ANERLEY WHITE.

A large flower, of fine form and good substance, of a pure white colour, except the base of the throat, which is of a yellowish-white, slightly speckled with violet. A first-class flower, belonging to the erect section. Price, 5*s.* each.

### GLOXINIA COUNTESS RENARD.

Without exception a first-class erect flower, of enormous size and great substance. The colours are pure and regular, the lower part of the throat being white, speckled with reddish-violet, and the upper portion entirely of that colour. The surface is evenly marked with dark red, with an even edge about half an inch wide of pure white. Dwarf, robust, and quite distinct. Price, 7*s.* 6*d.* each.

### GLOXINIA GEORGE SMITH.

A very fine, semi-erect flower, of a pale blue colour, broadly edged with greyish white, the lower portion of the throat being beautifully marked with dark blue, and spotted with white. A very distinct flower, of great substance and fine form, very robust aad free. Price, 5*s.* each.

### GLOXINIA HENRY GRAY.

A very fine, semi-erect flower, of great substance and enormous size. The lower portion of the throat is white, speckled with violet-purple; the upper part is marked with the same colour and a ring of dazzling red. The growth is remarkably free and robust. Price, 5*s.* each.

### GLOXINIA REV. J. HALSEY.

A very fine, semi-erect flower, of great substance and good form. The outer portion is of a flesh colour, and the top of the throat is marked with an even ring of vivid red. The upper part is of a reddish-violet tinge, the lower part is white, speckled with the same reddish-violet. The growth of the plant is also very free and distinct. Price, 7*s.* 6*d.* each.

### GLOXINIA MRS. ABBEY.

A remarkably handsome, large, erect flower, of fine form and great substance. The lower portion of the throat is white, suffused with violet. The surface of the flower is beautifully marked with a circle of deep pink and a blotch of white on each lobe, broadly edged with pure white. A dwarf and very robust variety, quite distinct. Price, 7*s.* 6*d.* each.

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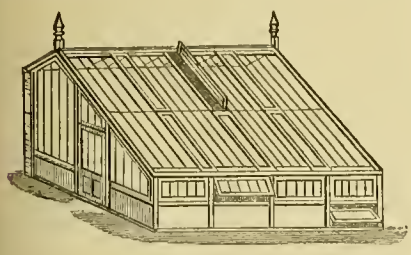

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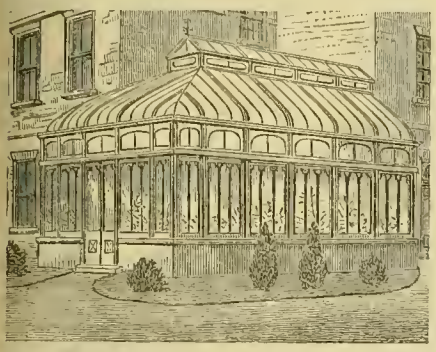

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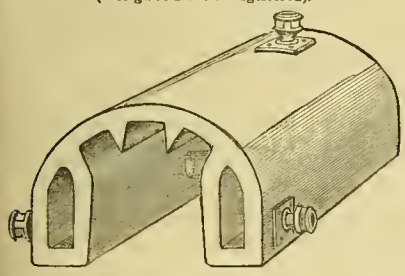

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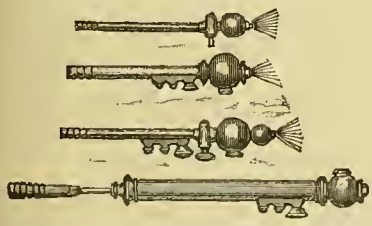

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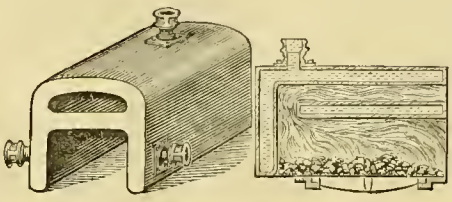

THE
Gardeners' Chronicle.
*SATURDAY, JUNE* 11, 1881.

## LAMORRAN.

TO many readers of the *Gardeners' Chronicle* the name of the Hon. and Rev. J. T. Boscawen is familiar as one fired with zeal for the advancement of gardening, an enthusiastic lover of plants, which he knows well, a clever hybridist, and a man of great natural taste cultivated by constant practice. His garden at Lamorran, near Probus in Cornwall, is so picturesque and so full of interesting plants, that a slight notice of it will be of interest to our readers, and will appropriately accompany the engraving we give of a view in the garden.

The hill on which the house and grounds stand slopes to the south and south-west, looking down on a branch of the tidal river Fal, perpetual water being secured by means of a dam across the narrow part of the valley forming a freshwater lake (well supplied with trout), with a pretty bend in it, and of about a quarter of a mile in length.

The present shrubbery was, up till 1850, a bare field, subject to the usual courses of tillage, with only two trees in it—a Lime and an Elm. After choosing the site, Mr. Boscawen determined to try to do what landscape gardeners say is difficult of accomplishment—*i.e.*, to make one hill look well from another. To do this he planted groups of Pinus insignis and Thuya Lobbi or gigantea; the insignis especially have grown wonderfully well, and are most of them now forest trees in height and character of stem, &c. The most notable plant, however, is a Chamærops excelsa, which was planted out in 1852. It has resisted many severe winters without protection, and now rears its head on high unscathed by the fearful frosts of the last two winters. This is nearly, if not quite, the largest in England. There are several others planted in various aspects. Near it is a very fine specimen of Sequoia sempervirens, the red stringy bark of which is well shown, the lower branches having been cut away. Passing some good Hemlock Spruces a good specimen of the beautiful Dacrydium Franklinii, with its long pendent branches, is seen. Close to this is a self-sown plant of Pinus insignis. These are in the lowest part of the shrubbery, interspersed with Rhododendrons of every hue of the later hardier sorts, which can resist the intense frost. The Sikkim and rarer species of Rhododendrons are planted at a higher elevation on the hill, sheltered by Conifers from the spring frosts and morning sun. In this higher part there is a passage cut out of the hill (like an "adit") intended for alpines and plants of like character; the earth from this is thrown up in a mound covered with stonework, which Mr. Boscawen has endeavoured to make mouse-proof to protect a rare collection of Crocuses given to him by Mr. Maw, of Benthall. From this mound the view of the valley (shown in our illustration) is obtained. On the opposite side are the Tregothnan woods, below are the varied groups of Pinus insignis, Thuya gigantea, and Thuyopsis borealis, mingled with Rhododendrons and other shrubs, with peeps of the lake between, and in the distance on the horizon may be seen the cairn

of an ancient British king, Gerennius, who governed this part of the country under King Arthur, about 1400 years ago. His sarcophagus was found there, and covered in again some twenty-five years since.

To return to the shrubbery, the most striking little tree in the garden, close to the mound, is the Japanese Maple, Acer polymorphum atrosanguineum, the brilliant red leaves of which look in the sunshine like bright seaweed. Close to it is the Eulalia zebrina, a present from poor Mr. Arthur Veitch; and the tufts of blue Crocus speciosus, make up a lovely group of colour in the autumn. Winding paths with steps made from the Pinus insignis lead higher up the hill, passing luxuriant plants of Andromeda formosa, with its Lily-of-the-Valley-like blossoms, and Erica codonodes, till the "Musa" garden is reached, Mr. Boscawen having lately planted a specimen of M. Ensete, which he hopes in the autumn will throw out its magnificent leaves. In this little amphitheatre are varieties of Sedum, Saxifrage, Auricula, and many rock plants, including a variety of Gentiana verna with a white eye—a fine belt of Rhododendrons surmounting them, amongst which are R. Aucklandii, R. fulgens, and the rare and beautiful R. campylocarpum, with its delicate pale lemon bells. These are commented upon by Mr. Mangles in another column.

Descending a few steps from the Musa garden the "Lily Walk" is entered, fine specimens of that genus being planted at intervals with Camellias. It has been said that Lilium auratum will not flourish after the second year, but clumps of them may here be seen flowering beautifully after five or six years Passing on towards that part of the hill which has a western aspect, "Australia" is reached—so called on account of the many Australian. plants here grown—Eucalyptus, of various sorts, Mimosas, &c. Retinosporas, Bambusa, and the new Japanese Hamamelis here flourish—surrounded by some large Abies cephalonica, Nordmanniana and others. In this part of the hill there is greater dampness than anywhere else, and Mr. Boscawen considers it especially adapted for Lilies of all sorts.

Winding down the hill, passing large beds of Crocuses and clumps of Azaleas, the visitor comes upon the lovely westward view of the lake, which stretches up between the woods showing in the distance a swan upon her nest, among the sedges and Iris leaves.

On the terrace below stand twelve magnificent Irish Yews, which were planted by Mr. Boscawen to disconnect the "wild garden" from the formal arrangement necessitated by the French bedding system, which for so many years was the rage, but which is now in a measure given up. A beautiful pattern of bedding lies on this terrace, once a rich mosaic of colours, now devoted to a motley collection of herbaceous plants, many of them "curios," but often, as the ladies complain, somewhat colourless.

Mr. Boscawen's father was one of the first to carry out, if not the originator of the French system of bedding-out, and his son, as a boy, deeply regretted doing away with the old flowering shrubs at his home and the substitution of the French garden, but later in life he carried it out in perfection at Lamorran. He has now, however, gone back to his old love for herbaceous plants, and renewed his practice of thirty years ago of imitating Nature's "wild garden."

And now we take leave of the "happy valley," the beauty of which inspired Henry Martyn, the missionary (when visiting his sister, the wife of the former rector of Lamorran). Later in life, in India, his toil-worn spirit was refreshed by the recollection of the sweet sights and sounds of Nature in the valley of Lamorran. *X.*

### Rhododendrons at Lamorran.

A journey from London to Truro is no joke, but I determined to take it a fortnight ago for the purpose of seeing Mr. Boscawen's Rhododendrons. Apart from his kind and very hospitable invitation, I felt that I was bound to pay my respects to one who had long preceded me in the culture of our favourite plants—who "had been collecting the species and hybrids for nearly forty years," and who was, doubtless, able to show me many interesting specimens, and give much valuable information. Fresh from the Rhododendrons of North Britain, I was well pleased to see those of Cornwall also.

I broke my journey at Exeter, where I visited the very excellent flower show. Mr. Robert Veitch took me over his nursery, which carried off at Kensington the other day a First-class Certificate for R. Exoniense ×. Of this hybrid (R. ciliatum crossed by R. Veitchianum) I saw a plentiful young stock. I had previously seen the show plants in town, and hailed the award as an encouragement to Rhododendron growers. If my opinion is of any value, I can testify to the accuracy of the description, having myself raised seedlings of the same cross. The size of R. Veitchianum is lost, but the plant is compact, neat, and very floriferous, and the foliage is highly ornamental.

Mr. Boscawen lives some eight miles from Truro. My drive from thence lay through woods blue with Bluebells, and hedgerows pink with the red Lychnis, and then through Lord Falmouth's park. A steep dip through woods brought me to the house, which stands near the bottom of the narrow valley, with a sheet of purest water, famed for trout, below. The Rhododendrons and the Pinuses clothe the steep slope behind the house, and the former fringe the wooded heights on the other side of the water. This narrow wooded valley opens into the valley of the river Fal, and the sea is a mile or two away.

The soil is not naturally favourable for Rhododendrons, but Mr. Boscawen has found, as I have, that leaf-mould and cow-dung can do wonders. Good peat is scarce and very expensive, and yet many of the plants seemed to be models of health and vigour, with very little peat, I fancy, to grow in. The winters, too, are not so gentle, nor the spring frosts so infrequent, as some, dwelling further north, are apt to think.

Thirty odd years ago excellent Barley grew where Pinuses and Rhododendrons now lord it over the valley. The first thing done was to plant a belt of Laurels, so as to break the wind rushing along the valley and over the water. Thus screened, I found giant specimens of the best of our well-known hardy hybrids, and many a seedling of my host's own raising. Some of these had grand trusses and striking foliage, and several seedling yellow Azaleas were very brilliant. Here and there large bushes of R. (Azalea) album indicum proved that this plant is with Mr. Boscawen, as it is with me, as hardy as any shrub. In a quiet nook I found R. glaucum in bloom. Above rose what may well be called the hanging gardens of Lamorran, and below lay the clear water, crisped by a slight breeze, and with its Water Lily plants glancing in the sun.

My first lesson was soon learnt, and that was, not to hybridise indiscriminately with R. campanulatum. My host had been exterminating many of this breed, and the faggots lay around.

Winding up the hillside, through a wild garden strewn with patches of Lilies of the Valley in full bloom, and perennials and bulbs sprouting through the grass, which had buried innumerable Crocuses, and shaded now by a lofty Taxodium sempervirens, and now by an 80 feet Pinus insignis, and now again by a Copper Beech, we slowly made our way up through the Rhododendron and Azalea jungle. It has been my fortune to wander through many a jungle, but here was a jungle with a plan. Every plant had a history and a pedigree, and the owner was at hand to name the children of his own rearing and point out their virtues with a parent's just enthusiam. Among the seedlings I noted Bluegown, of a blueish tint, which flowered first when Bluegown won the Derby, and Ben, a brilliant crimson. That very fine white, Mrs. Townsend Boscawen, which won a First-class Certificate two years ago, was not in bloom, but a sister seedling in the same style deserved and received much praise.

Shaded by a tall Pine from the morning sun (that fatal morning sun which plays such havoc among frozen shoots and blossoms) stood a stout plant of R. barbatum, which I was very anxious to see. A melancholy interest attached to the spot, for poor Mr. Arthur Veitch had described to me in glowing terms his visit to it in March of last year, when this Rhododendron was ablaze with fiery blossom. The plant this year had refused to bloom at all, but the winter had not destroyed its vigour, nor the spring frosts cut the shoots. I hope to see it another year in all its glory. Mr. Boscawen mentioned distinctions between this plant of R. barbatum and another growing elsewhere in the garden. We had not time to examine them, but let me refer my host to tab. 5120 in the *Bot. Mag.*, representing R. Smithii, a species discovered by Mr. Booth, in Bootan, and having much affinity with R. barbatum. When will other owners of rare Rhododendrons take the trouble to get observed and recorded all such interesting variations, without the accumulation of which and their history the species of this genus can never be properly worked up?

Still winding up the grassy slope, where the Rhododendrons and Azaleas were ever and anon varied by a Palm, a crimson Maple, or clumps of Lilium giganteum, with last year's flower-stalks towering aloft, we reached R. fulgens, in great beauty, not of blossom but of foliage, the young shoots brilliant with crimson bracts. The plant was a picture of health, although no fine blossoms were visible, nor the curious plum-coloured capsules so characteristic of the species. For the former I was too late, for the latter doubtless too early. Alongside, to my utter horror, stood the blackened skeleton of what I had long hoped to see, that plant of R. Aucklandii, over trusses of which the editorial pen of this journal (May 18, 1878) had indulged in unmeasured ecstasies. The classic plant seemed not absolutely dead, but blasted and black. Was it the frost?—was it an untimely removal?—was it lack of nourishment? My host seemed in doubt. Who can describe our lamentations over the ruins, which I am to try, however imperfectly, to replace out of my home nursery?

A consolation was at hand. Hard by I spied the most charming little bush of R. campylocarpum I ever beheld. No wonder that Sir J. Hooker fell in love with the species! About 3 feet high, I think, the bush was covered thick with its primrose bells, not quite so yellow as those I had seen in Edinburgh, but exquisitely lovely. This sight alone well rewarded me for my long journey, and I must impress upon my readers that this species seems to be exceptionally hardy. With me the young shoots, often tenderer than the blossoms, have resisted frosts before which those of R. Thomsoni, its nearest ally (the sheep browse on both on their native mountains), have succumbed. Still I must beware of falling into the common error of generalising from an experience of only four or five plants of either species. I cannot too often repeat, that seedlings from even the same batch of seed greatly vary in point of hardiness, and that different years affect different plants in an inscrutable manner. One is taken and another left, we scarcely know why. The moral of course is, "Grow plenty of specimens, and plant them in different situations."

Two plants of R. Thomsoni were next examined, and various smaller ones of Sikkim and Bootan species, but I saw no more in bloom. Mr. Boscawen has much valuable lore on the early history of Rhododendron culture in this country, and I daresay the garden at Lamorran will often furnish me with a fact or an illustration in a future paper, but I feel I must not now trespass longer. As we retraced our steps I was able to identify for my host a flowerless branch of R. Fortunei, obtained in the neighbourhood (which I hope next year to explore with him), and I was astonished to learn that R. formosum had weathered many winters in the open air.

A word on this before I close. R. formosum is, be it observed, a native of comparatively low mountains in a hot climate (I am now hunting up in Griffith's *Itinerary* and journals and elsewhere all I can find about it), and I have always assumed it to be a tender species. It never rains, however, but it pours, for on my return from Cornwall I found a plant, almost leafless, but blooming, in a Torquay garden, and in the pages of a contemporary I saw last week the species recorded as hardy in Argyleshire. Moreover, Mr. Charles Smith, jun., of Guernsey, famous for his Ixias, and a most intelligent young man, to whom it was a real pleasure to show my plants, informed me that R. formosum was hardy in his island. It would be very interesting to obtain, and I should be grateful for any further information tending to show the hardiness of this species, which is sometimes called R. formosum and sometimes R. Gibsoni; but let informants be careful to identify the species. I was once mightily amazed to hear that R. Maddeni was hardy; on enquiry and inspection it turned out that the plant was not R. Maddeni at all, but a hardy variety called Madden's argenteum! *J. H. Mangles, Valewood, Haslemere.*

## Orchid Notes.

The Cervantes Odontoglot.—A tiny plant of Odontoglossum membranaceum, with five bulbs, in a little thumb-pot, is just now flowering in our collection, and the enormous size of the flowers as compared with the size of the plant producing them is the subject of general remark. I am very fond of this pretty little species, which has slightly compressed pseudobulbs the size of a sparrow's egg, speckled with brown likewise, and a solitary lance-shaped leaf, 2 to 3 inches in length. In its native country the bulbs are as big as blackbirds' eggs, and bear spikes of five to ten flowers; but even when producing only two flowers on a scape it is a lovely little thing—pure white with concentric brownish markings. In a cool house its delicate blossoms endure for a month, or even longer, in a fresh state. I like it better than O. Ehrenbergii—indeed, of the smaller Odontoglots I consider it the best if we except O. Rossii majus and its variety Warneri. The flowers of O. membranaceum are borne from the base of the fully developed last made pseudobulbs, whereas in O. Rossii and its varieties the scapes push out from the half-developed young growths, as in O. citrosmum. One of the most charming points in the plant here illustrated (fig. 134) is the beauty of its concentric markings, which lend an indescribable charm to its crisp-edged, snow-white flowers. A cool moist atmosphere suits the plant best, and it likes a shaded position near the glass. As is the case generally with Orchids this species is apt to vary considerably—the fine form, O. Cervantesii decorum, exhibited by Sir Trevor Lawrence at South Kensington some years ago to wit. That form had flowers nearly three times the size of the typical variety, and I did my best to figure it faithfully in the *Floral Magazine* at the time (*F. M.*, t. 254), but fine as that variety undoubtedly was, the exquisite effect of its concentric markings was well-nigh lost, the purity of the lip being likewise invaded with colour. Well and vigorously grown this plant is very beautiful, and a compost of fibrous peat and living sphagnum moss seems to suit it best. Care must be taken to drain the pot thoroughly, and to give abundance of water when the plant is growing. *F. W. B.*

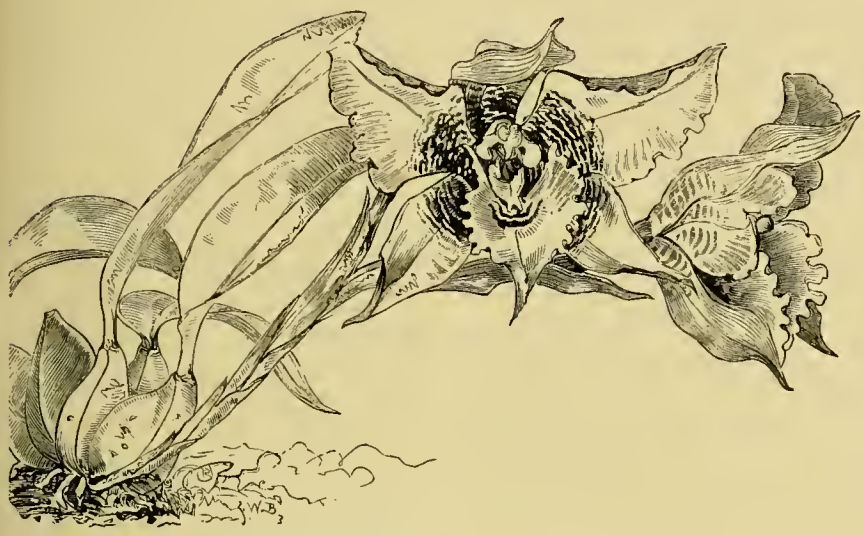

Fig. 134.—Odontoglossum membranaceum.

### Cattleya Mendelii pulcherrima.

Mr. Bullen, at p. 694, referring to Mr. Thomson's letter as to the history of the valuable Cattleya Mendelii, asks the question, whether it is superbissima or pulcherrima? In reply I have to state that in the original proof-sheet of my catalogue the Cattleya is entered as superbissima, and a copy of that proof was sent to Mr. Veitch, who bought a considerable parcel of plants from me out of Mr. Boyd's collection, and among them was the best plant of Cattleya Mendelii superbissima, so-called. When correcting the proof, I thought pulcherrima would be a better designation for this most beautiful variety, and I substituted pulcherrima for superbissima. There were three plants of the same variety in the collection—one went to Chelsea, another to Mr. Smith, Brentham Park; and the third to the Right Hon. J. Chamberlain, Birmingham. I think I mentioned the matter to Mr. Thomson (but it has evidently escaped his memory), who was the first to tell me that one of my plants had changed hands at 200 guineas. The price has evidently given Mr. Thomson some courage, for I am glad to see that he has been able since to realise a similar sum for a superb variety of Cattleya Mossiæ. All this goes to show what varietal distinctions will command, and the necessity for keeping their designations decided. Our good friend, the Doctor of Bridge of Allan, naturally is very fond of a good Orchid, and especially of a good variety of Orchid, but I recollect him looking aghast at me when I asked 25 guineas for Cattleya Mendelii pulcherrima. He thought I was a wonderfully expensive fellow to deal with; I have no doubt he has changed his opinion now. *James Anderson.*

### Treatment of Orchids after Flowering.

This will depend much upon the species. There are some that do not make any attempt at growth for some time after the flowering period is over; others start into growth at once, or are probably growing even before the flowering period is over. No one can be at all successful in the culture of any class of Orchids who does not study the season of growth and that of rest, and treat the plants accordingly. It should not be forgotten that there is a long season of drought in the countries from whence most of the exotic Orchids come, and that this is the resting period. This season of drought is followed by a corresponding one of hot moist weather, which is the growing period, and we ought, as far as we can, to imitate the natural conditions under which the plants are found in a wild state. I remember on one occasion a gentleman visiting here who had been some time in India; he happened to go into the plant stove after it had been shut up in the afternoon when the air was charged with moisture. His involuntary exclamation was that it was "exactly like Bengal in the rains." If possible the plants should be removed to another house and be kept in a higher temperature with a very moist atmosphere, and all plants that require repotting should be seen to at once; it may not be desirable to repot some of the species when they start into growth, because many of them make some growth before fresh roots are emitted. Dendrobium nobile I would repot, if the plants require it, as soon as the flowering period was over. D. Wardianum would be better to make a little growth after flowering; but the plants should be repotted or basketed as soon as it is seen that the roots are starting from the base of the young growths. The plants should be kept on growing steadily all through the growing period, and when growth is consolidated they gradually enter into the period of rest. Dendrobiums seldom suffer in any way by a lengthened dryness if they are dried at the right time; the mistake is sometimes made of allowing them to suffer for want of water when growth is being made. Some of the slender growing varieties, such as D. Devonianum and D. Falconerii, should be syringed every day, or even twice a day, in hot dry weather, to keep down red-spider.

Lælia purpurata, if it requires repotting, should be seen to immediately after flowering, and many of the Cattleyas may be treated in the same way; but do not pot them unless they really require it. This class of Orchids succeeds best when you can lift the whole plant and pot together by taking hold of the pseudo bulbs; a healthy plant has generally the largest proportion of roots firmly fixed to the inside of the pot. A gentleman asked me to look at his Cattleyas on one occasion, and a most unsatisfactory lot of plants they were. It was easy to see what was the matter; they had been too often repotted, and almost every plant had to be supported with sticks to keep it upright. It may be taken as a rule in Orchid culture, that the plants must be firm in their pots. If they sway about with a touch, they will not do well until they have taken firm hold of the pots, pans, or baskets. *J. Douglas.*

## GARDEN STRUCTURES, IMPLEMENTS, Etc.

In an exhibition sense this department of the recent show of the Royal Horticultural Society was beyond question a great success. For the nonce all that part of the garden which abutted upon the big tents presented the appearance of a miniature agricultural show, with the exception that in almost every instance the things shown were of purely a horticultural character. Conservatories and greenhouses, novel and otherwise, patent and simple, elegant and the reverse, summer-houses of all descriptions, garden tents and seats, lawn-mowers in infinite variety, garden tools, watering engines, and novelties, pottery, boilers, rollers, and all the etceteras of garden requisites made up an unique display. Perhaps we may doubt whether the business done by the exhibitors was equal to their anticipations or their efforts, for the general public either found more attraction in the tents or listening to the music, and seemed to avoid the external show as of little interest. Perhaps Londoners as a rule have little use for garden requisites, hence the comparative inattention shown by the majority of the visitors.

The catalogue of exhibits comprised fourteen classes, in each of which medals were awarded, and the bestowal of which presented a labour of no small moment to those gentlemen who were charged with the duties of censors. The most prominent class was that which included hothouses and greenhouses, modes of glazing, &c., in which section there were some seventeen exhibitors. Chief of these were Messrs. Foster & Pearson, of Nottingham, who exhibited a fine span-roof house, well fitted for the growth of large specimen plants, or as a detached conservatory. This structure, which was fitted with crank appliances for giving top and side ventilation of the simplest kind, was constructed so as to need only a plinth of brickwork just above the ground level. Whether opinions may differ or not as to the merits of shape and style, none existed as to the high-class work shown in the construction. Their span frames in various sizes shown were valuable for any purpose, and specially so for the culture of Auriculas or alpine plants, and for the quality of workmanship displayed exceedingly cheap. This firm also had samples of their patent valves and junctions for hot-water pipes.

Next came a well-known firm, Messrs. Rosser & Russell, of Charing Cross and Hammersmith, who had erected a large conservatory with a fountain grotto attached, and further had examples of their patent system of glazing without putty, which consists of a zinc rider fastened on to the sash-bar, and holding the glass in firm grip. This was the only firm exhibiting a new system who submitted it to actual test, as on the section erected water was kept constantly running, as would be the case in heavy rains, and no drip was to be found. They also had saddle, chambered, and conical boilers.

Mr. Helliwell, of Parliament Street and Brighouse, Yorkshire, had erected a very light and elegant span building without sides, constructed on the curvilinear

principle, well adapted for orchard-house or vinery, showing his patent mode of glazing by zinc side laps and brass clips at the bottom of each pane of glass to hold it in its place, that seemed to possess considerable merit.

Mr. S. E. Wheeler, of Nottingham, had the "Nottingham" £10 greenhouse for amateurs for erection against a wall; it is 12 feet in length, and 6 feet in width, with an excellent elevation, and just such a structure as myriads of amateurs would delight to possess. This exhibitor also had a handsome square span house, to which was fitted his improved method of ventilating—that for the giving of top air being governed solely by the rising or falling of a handle, and which a child might almost work. He also showed a collection of span and single light frames of good construction.

Mr. Henry Hope, of Birmingham, had erected a section end of a vinery, constructed of metal, as seen at Frogmore; also iron tree covers or protectors, glazed without putty, to shelter wall trees, and the same glazed with putty as well as samples of simultaneous ventilation of a most admirable kind.

Messrs. Tracy & Sons, of Ilford, Essex, put up a section of roofing for railway stations upon a system of glazing somewhat akin to that shown by Messrs. Rosser & Russell.

Mr. B. W. Warhurst, of 33, Highgate Road, showed a three-quarter span-roof house fitted with the Paxtonian system of ventilation, some of the side ventilators being fixed on hinges, and others entirely elevated, but worked simultaneously. The plan seems to be specially valuable when applied to Peach and Fig-houses and cool vineries.

Somewhat novel were examples of buildings constructed from corrugated iron shown by Mr. T. C. Humphreys, Albert Gate, Knightsbridge. One was a large building suitable for a small church or coffee tavern or cottagers' lodge, &c., and others useful as tool-houses, root-stores, or various garden uses. These were neat, simple and durable.

Perhaps one of the most interesting examples of a patent system of glazing was that shown in the lobby by Messrs. Fletcher, Lowndes & Co., of Westminster, who exhibited a small section of their system, already fully alluded to in these columns. This was without exception the simplest and neatest, the capping of zinc fitted on to the sashbars seeming to hold the glass firmly in place without undue pressure.

Messrs. Weeks & Co., of Chelsea, put in, evidently not in competition, a big specimen of their famous Duplex tubular boiler, and, of even greater interest, a sample of their hydrocaloric coil for warming and ventilating greenhouses, halls or rooms. It is at once handsome, and without doubt efficient.

Those noted builders, Messrs. Boulton & Paul, of Norwich, had a giant collection of subjects, prominent amongst which was a handsome conservatory, showing improved methods of ventilation, also span and single garden frames of solid construction. They had many varied designs in wirework and in garden and field fencing, Rose arches, poultry-houses and enclosed run, seats, tables, awnings, garden engines, boilers, &c.—indeed a fine collection of exhibits.

Messrs. Johnson Brothers, of Fulham, had an iron Peach-house on the semi-rounded style, showing also their patent glazing and swing trellis, so as to shelter or cover Peach trees in a moment.

Mr. C. Causeley, of 19, Down's Park Road, West Hackney, had interesting examples of extending wood trellis fencing. Lengths 4 feet high and same in length when closed would open out to 12 feet lengths 2 feet in height, and be useful for the enclosure of chickens or for many simple purposes.

Mr. Wagstaff, of Dukinfield, Manchester, showed his patent saddle and conical boilers, the former a powerful thing, which should be most effective in the heating of extensive ranges of glasshouses.

The stand of articles shown by Messrs. Dick Radclyffe & Co., High Holborn, supplied a remarkable isplay of garden requisites, from greenhouses to tools, nd included water-barrows and hose and reels, mowing machines of several patterns, amongst which was decided novelty in the shape of an endless cord attached to a larger wheel, with handle fixed near the steering handles, and a small wheel fixed to the knives. With one hand the machine is driven, and with the other the larger wheel is revolved. There are but two cutters, and these are thus made to revolve with great rapidity. Then there were garden pottery, seats, tables, wirework, summer-houses, window-boxes, &c., in endless variety.

Mr. T. Clark, representing the Chadborn and Coldwell Manufacturing Company, Upper Thames Street, had on view their patent Excelsior lawn mowers, simple in principle, easy to work, and making good work at the same time.

A decided novelty in the shape of grass mowers was that shown by Mr. W. Clark, of 232, Oxford Street, whose grass cutter was based on the principle of the reaping machine, and worked with ease with a pair of handles. For cutting the grass round lawn trees or next shrubs, or in places where mowers cannot reach, such implements must be invaluable. Their combination turf cutter and raiser, being simply driven in front of the operator, seems a useful article.

Mr. J. Watson, of St. Alban's, had on view his patent wedge saddle boiler, a saddle in shape, but with a gigantic wedge of boiler depending from the centre, thus presenting a largely increased surface to the fire, and fairly cutting it in two.

In wirework the finest display came from Messrs. J. J. Thomas & Co., of the Edgware Road, and their collection of garden seats, with and without movable awning, was of great merit. They also had Green's, the Excelsior, and the Acmé lawn mowers, garden tents in variety, chairs, wire arches, and fencing of all kinds, plant stands, huge dove or song-bird cages and houses, in infinite variety, and of elegant make.

Mr. R. Holliday, of Beaufort Street, Chelsea, also had a good display of wire stands, aviaries, Rose arches, &c., all strong and substantial.

Of *bonâ fide* novelties in the irrigating sense was Deverill's patent irrigator. The exhibitor, Mr. J. Deverill, of Slough, has in this article fixed a long iron pipe upon a light wheeled support, and to this pipe are attached on the side three jets or spreaders, and also one at the end. The irrigator must be fed by means of hose from stand-pipes where there is constant pressure. When at work, and proper nozzles or roses are fixed to the jets, a large flower-bed, or portion of kitchen garden border, may be watered evenly and effectively without further attention than the simple placing of the irrigator where it is needed. The force and method of distribution can be regulated with the greatest ease. We saw this at work, and found it to be all that it was described by the patentee.

In the way of pottery Mr. J. Matthews, the well-known potter of Weston-super-Mare, was *primus*. His stand included pots of gigantic dimensions to some as tiny as a wineglass. There were vases of great elegance and endurance, stout artistic pedestals, pots with handles and pots full of holes for Orchids; also baskets for those epiphytes, flower-boxes, and indeed all that in a garden sense can be evoked out of clay. The Messrs. Doulton & Co., of Lambeth, showed vases of elegant design and *jardinières*.

In the matter of garden tents, the firm of Messrs. B. Edgington, of Duke Street, London, was well represented; they had garden tents of many sizes and patterns, cheap and costly—a garden-cot with movable awning most delightful for those able to indulge in idleness, or for an invalid; also garden seats. Mr. J. Unite, of Edgware Road, had a good display of tents for various purposes, shading materials, fruit nettings, &c.

The collection of rustic summer-houses shown by Mr. J. Cavan Fox, of South Kensington, attracted much attention, and some bore a near resemblance to Swiss châlets, and were roomy enough for lodges. All looked as though they would be as enduring in the Australian backwoods as in a gentleman's garden.

Messrs. Thomas Green & Sons, of Blackfriars Road, London, had a large collection of boilers, garden rollers, mowers, &c., all of first-class make and of the best designs.

Messrs. Samuelson, of Banbury, had their capital lawn mowers, to which can be fitted the patent edge clipper; also the Favourite and Villa mowers for small gardens.

Messrs. Nettlefold & Sons, 54, High Holborn, showed the Coventry lawn mower, which is credited with having won the 1st prize at the Sydney Exhibition. It is simple in construction. They also had a very fine lot of well-made and highly-finished garden tools; and their galvanised iron shoe-scrapers, most useful things for gardens and outside houses.

Mr. A. Maclaren, of Upper Thames Street, exhibited tents, and seats with awnings, in several patterns.

Messrs. Ransomes, Head & Jefferies of Ipswich, had their excellent lawn mowers, well known high-class machines. They also introduced a novelty in the form of a new contrivance for clearing the collecting box of grass without stopping the machine. This was applied only to the horse machines, and is an excellent addition to them.

Messrs. Wrinch & Sons, of Ipswich, had their novel garden shears for clipping hedges, garden drills, tents, seats, water-barrows, &c. Some of these seats were markedly comfortable and of substantial construction.

Of garden tools there was a large display made by Mr. J. Thornton, of Turnham Green, who had an extensive assortment, with several novelties in hoes and rakes.

Messrs. Saynor, Cooke & Ridal, of Sheffield, had a fine show of garden cutlery in the Council-chamber, and specially noticeable was the Gardener's Roll, which encloses a good handle fitted to contain a small saw, a large pruning-hook, a good cutting blade, a pair of stout scissors, &c. This would be to any gardener a most acceptable present.

Messrs. Corry, Soper, Fowler & Co., of Finsbury Street, had erected a handsome stand, showing various manufactured articles, insecticides, tobacco paper, barometers and thermometers, fumigators, labels, tools, and many other things.

Messrs. Joseph Davies & Co., of Kennington Park Road, were large exhibitors of meteorological instruments of all kinds and descriptions for domestic and hothouse purposes, including their Polytechnic barometer. The Panklibanon Company, 56, Baker Street, had an elegant assortment of garden seats, chairs, &c., of serviceable make.

Messrs. Arnold & Sons, of West Smithfield, had in frequent work their patent Simplex garden pump for watering and washing wall and other trees. It is very easy to work, needing no packing, and contains a stout wire spring which throws the handle back with ease. It would force water well to a height of 30 feet and 50 feet horizontally. We thought it to be a capital pump where there was plenty of water at hand.

Another novel thing was the Pall Mall lawn edger, which has but one handle, and the clipper is set in motion by means of a small roller which runs on the margin of the paths or beds. It seems to work with ease and rapidity.

Of special interest to amateurs who wish to heat small greenhouses is the Lux-Calor, exhibited by the Patent Gas Burner Company, Kirkwood Road, Peckham. The article is a kind of gas stove with flame enclosed and the products of combustion are conducted down iron columns and condensed: the heat emitted appeared to be considerable.

Messrs. Morris & Griffin had a large stand of their various horticultural manures, including "Florein" fertiliser, and various insecticide compounds. There were various displays of fancy china and glass articles for house and table decoration, but nothing that calls from us for special notice.

We append a list of the judges' awards:—

Class 1. *Garden Cutlery.*—Silver Medal: Messrs. Saynor, Cooke & Ridal, Sheffield.

Class 2. *Garden Pottery.*—Silver Medal: Mr. John Matthews, Royal Pottery, Weston-super-Mare.

Class C. *Garden Tools.*—Silver Medal: Messrs. Nettlefold & Sons, 54, High Holborn, W.C. Bronze Medal: Mr. R. Thornton, Turnham Green. Certificate of Merit: The Standard Manufacturing Co., St. Alkmund's Churchyard, Derby, for the Standard Tree Pruner.

Class 4. *Wirework.*—Silver Medal: Messrs. J. J. Thomas & Co., Edgware Road, W. Bronze Medal: Mr. R. Halliday, Beaufort Street, Chelsea, S.W.

Class 5. *Garden Seats, Chairs, &c.*—Silver Medal: Messrs. Boulton & Paul, Rose Lane Works, Norwich. Bronze Medal: Messrs. J. J. Thomas & Co., Edgware Road, W.

Class 6. *Meteorological Instruments.*—Silver Medal: Messrs. Joseph Davis & Co., 6, Kennington Park Road, S.E. Bronze Medal: Messrs. Corry, Soper, Fowler & Co., 18, Finsbury Street, E.C.

Class 7. *Ornamental Flower Stands, Vases, &c.*—Silver Medal: Messrs. J. J. Thomas & Co. Bronze Medal: Messrs. Dick Radclyffe & Co., 129, High Holborn, W.C.

Class 8. *Tenting and Shading Materials, &c.*—Silver Medal: Mr. Benjamin Edgington, 2, Duke Street, S.E. Bronze Medal: Mr. J. Unite, Edgware Road, W. Certificate of Merit: Mr. W. Cains, Fish Street, Poole, for portable tent.

Class 9. *Mowing Machines.*—Silver Medal: Messrs. Thomas Green & Son (Limited), 54, Blackfriars Road, S.E. Bronze Medal: Messrs. Ransomes, Head & Jefferies, Orwell Works, Ipswich. Certificate of Merit:

Messrs. Ransomes, Head & Jefferies, for new delivery apparatus applied to horse machines.

Class 10. *Garden Engines, Syringes, &c.*—Silver Medal: Messrs. Boulton & Paul, Norwich. Bronze Medal: Messrs. Arnold & Sons, 35, West Smithfield.

Class 11. *Rustic Adornments.*—Silver Medal: Mr. J. C. Fox, Royal Horticultural Society's Gardens, South Kensington, S.W. Bronze Medal: Messrs. Dick Radclyffe & Co.

Class 12. *Heating Apparatus.*—Silver Medal: Messrs. Thomas Green & Son, for a low saddle with diagonal tubes. Bronze Medal: Mr. B. W. Warhurst, 33, Highgate Road, N.W., for Ben's Ribbed and Flued Saddle.

Class 13. *Hothouses and Garden Structures, Modes of Glazing.*—Silver Medal: Messrs. Foster & Pearson, Beeston, Notts, for span-roofed greenhouse, portable frames, &c. Bronze Medal: Mr. T. W. Helliwell, 19, Parliament Street, S.W., for greenhouse. Certificates of Merit: Messrs. Johnson Brothers & Co., 6, Waterloo Place, Pall Mall, for patent system of glazing; Mr. T. A. Bickley, 7, Thorp Street, Birmingham, for Bickley's patent horizontal sashbars; Mr. C. Causley, 19, Down's Park Road, West Hackney, for patent system of glazing without putty; Messrs. Tracey & Son, Ilford, Essex, for patent system of glazing.

Class 14. *Miscellaneous Subjects.*—Silver Medal: Messrs. Dick Radclyffe & Co., for fountains, rockwork, table decorations, porcelain flowers, Fern cases, &c. Bronze Medal: Messrs. Corry, Soper, Fowler & Co., for garden requisites. Certificates of Merit: Pall Mall Lawn Edger Co., 15, Pall Mall, S.W., for Adie's Patent Lawn Edger. Highly Commended: Messrs. Soane & Smith, 200, Oxford Street, for flower glasses and china; and Messrs. Battam & Co., 160, New Bond Street, W., for china and glass.

*Gold Medals.*—For the best general display: Messrs. J. J. Thomas & Co., and Messrs. Boulton & Paul.

The judges were Sir Charles W. Strickland, Bart., Mr. Shirley Hibberd, and Mr. Stevens, Trentham.

## CLEVELANDS, BIRKDALE.

The neighbourhood of Southport is hardly the place one would look to for a model garden, yet here it is at the establishment of R. P. Percival, Esq., Clevelands, Birkdale, that we may see what perseverance, skill, and good taste, backed by abundant means, can accomplish in transforming a barren spot into a beautiful scene, or, rather, series of scenes, so cleverly arranged as to make a moderate-sized garden appear really beautiful and extensive, the whole possessing so many points of originality as to call forth special notice. The chief attraction of the place is the Orchids, and to them we will proceed at once. The collection, which has only been a short time in existence, contains a greater number of well-grown specimens of the rarest and showiest Orchids than any other of recent date I have seen. All are healthy, all are thriving, and rooting well. Here and there some newly acquired rarity may be seen looking rather poorly, but evincing by its general appearance a due appreciation of the care and skill bestowed on it, but only in two instances did I see bad plants, and they were two plants of Oncidium sphacelatum, which had in days gone by succeeded in gaining admittance into the goodly company in which they now are, but in which they cannot be induced to look happy. The principle on which Mr. Percival commenced and carries on the formation of his collection of Orchids is the only satisfactory one. Too many commence by obtaining anything they can get, insignificant or otherwise, sickly or healthy, no matter so long as they are cheap, and by the time such collectors know anything about Orchids they have succeeded in filling the allotted space with poor, sickly, and dirty plants, only to be a trouble to them to weed out to make room for better things. Mr. Percival will not have an unhealthy or insignificant flowered plant at a gift, his object is to collect numbers of each of everything that is really showy, pretty, or extraordinarily curious, and when he has obtained all he can of such it will be time enough, he thinks, to turn his attention to botanical curiosities.

The Orchid-houses are nearly all new, and specially built for Orchids; everything that the study of these plants could suggest or persistent inquiry glean has been acted on for their comfort. They are for the most part span or three-quarter span-roofed structures, from 25 to 40 feet in length, and (except the large Cattleya and Dendrobium-houses) only just high enough over the middle walk to allow a tall man with the conventional tall hat to move about without inconvenience. They are all carefully shaded on both sides, a lighter shading being used for the shady than for the sunny side of each house. The stages are double, the lower ones being made watertight and filled with white spar to assist in evaporating the water with which these stages are charged, and to present a clean dry surface when the water is run off these lower stages as the occupants of the house may require at any particular season. The upper stages on which the plants are arranged are made of open wondwork; they are in some cases higher at the back than in front, but generally about 4 inches above the watertight stage. This double arrangement is the perfection of Orchid-house staging. The ventilation is ample top and bottom, the bottom ventilators being, as they should be, covered with perforated zinc. The flooring (as with Mr. Lee, of Leatherhead) is of stable brick, which, in consequence of its surface being composed of small raised squares with channels between, may be constantly flooded without the visitor even damping his shoes. This is a very important feature, as many ladies are prevented from visiting the Orchid-houses as often as they could wish, on account of the puddles so frequently to be found there. To complete the sanitary arrangements of these model houses, a hose is attached to the water main in each, so that the back walls, underneath the stages, and other dry surfaces may be constantly flooded in a most effectual manner without the labour of carrying water, which so often prevents the work being properly done in busy times. The heating of all the houses is effected by having a greater quantity of piping than is generally supposed to be required, and always keeping very slow fires; thus a proper and even temperature is ensured, instead of the flushing and cooling so noticeable where a small quantity of piping and brisk fires are employed. Cleanliness, neatness, and order prevail throughout the whole establishment; nothing likely to benefit a plant is neglected for a day, and an amount of pains is exercised to get over the peculiarities of those plants generally reputed to be difficult to manage, which convinces me that before long many an old Orchid grower will have to thank Mr. Percival and his energetic and enthusiastic young gardener for valuable hints as to the management of some of them.

The first and coldest house contains from 500 to 600 of the finest varieties of Odontoglossum Alexandræ and O. Andersonianum, numbers of O. Pescatorei, O. triumphans, and quantities of all the rare and showy Odontoglots and other showy cold-house Orchids. Here also are some fine specimens of the best variety of Disa grandiflora, triumphs of culture, with their numerous flower-spikes and rich green foliage. On the other side the Masdevallias are well represented, making the house bright with their brilliant flowers, M. Wageneri showing well for bloom. For these plants a new house has been erected, and is now in process of filling; when full it will be one of the most complete houses of the kind in the country. Next comes a rather small house of intermediate temperature almost filled with magnificent specimens of Odontoglossum vexillarium (not made up), all in splendid condition, grown without a speck on the foliage. They are now all either in bloom or bud, some of the plants with only eight or ten pseudobulbs having from ten to fourteen spikes of splendid flowers, good in quality, size, and colour. Next we come to the Oncidium-house,, which contains grand specimens of Oncidium macranthum, O. Marshallianum, &c., and beyond it to a cool-house or rockery under glass, planted with Ferns, foliage Begonias, &c., a very pleasant place, particularly in summer time.

In a central position among the Orchid-houses is the flowering plant lobby, a cool, airy, shady house, where the plants are kept in bloom to the greatest extent of their natural duration. At present it is more like an Orchid stand at a flower show than anything else, the most notable plant in it perhaps being a splendid one of the fine old dark yellow variety of Anguloa Clowesii, with many of its vase-shaped flowers each about 4 inches in its greatest diameter. From the flowering plant house we enter the Dendrobium-house, where quantities of all the best kinds are to be found in good order, D. Wardianum alone being represented by about fifty good plants. Then come two small compartments, the first for the warm-house Cypripedium, Odontoglossum Roezlii, O. Phalænopsis, &c.; the second for the varieties of Phalænopsis: all these are quite at home, and they show it. The Cattleya-house, which is a light span-roof structure, 30 feet long by 20 wide and 12 feet high in the middle, with middle table, stage round, and ample provision for suspending plants, contains a vigorous and valuable lot, every one of them in the best possible condition, and some of them sending up an immense number of young growths; one fine plant of C. Skinneri has over fifty of them, C. Mossiæ several with twenty-five each, Lælia anceps with over thirty leads. Here may be found scores of C. Trianæi, C. Mendelii, C. Mossiæ, C. labiata, C. Warneri, &c., many in full bloom, and several each of the new and promising C. regalis, and the extremely rare, sweet-scented C. Wallisii, which bears for such a long time its lovely pure white flowers with orange lip; also C. Eldorado. The Lælias are equally good and numerous. All the plants, no matter how large, are from single pieces—plants made up of a number of small ones not being tolerated.

A couple of greenhouses, which are very useful for resting Orchids in, and the pretty ornamental conservatory, complete a very compact and cleverly arranged set of houses, in which the spirited proprietor takes the greatest part of his pleasure. Through the conservatory, which contains some grand specimens of Lilium auratum, we enter the billiard-room and the master's den: here are some priceless oak carvings of battle-pieces, said to be 400 years old, and some rare and valuable paintings, which, together with the numerous objects of art scattered profusely throughout the house, amply testify that other than floral beauty and worth are sought after. And now let me notice the garden, which Mr. Percival considers his chief triumph.

The natural soil at Clevelands as everywhere else in the neighbourhood is sand, without any other ingredient to assist vegetation; it was therefore necessary to get sufficient good balmy soil to cover the whole piece to a good depth, or give up all thought of outdoor gardening. Soil was therefore brought in great quantities, and from distant parts, the cost of doing so being enormous. The result is, however, satisfactory, and so the cost is not reckoned. The inner garden, which is nearly 5 acres in extent, is arranged in terraces on different levels (no stone or other formal work being used), the whole of them being sheltered by a high grassy promenade in front of the sea, between which and the garden nothing but the beach and the said promenade intervenes. The wisdom of this arrangement is evident, as it ensures two or three climates in a small space at the same time. On the sea promenade and high terraces there is a good breeze, even on the hottest day, and when the breeze is too strong there it is calm and still in the lowest levels, one of which with its close cut turf makes an excellent bowling and croquet ground. At the front and one side of the house are pretty raised lawns, without flower-beds or anything to mar their even verdure. Round the lawns runs a good belt of pretty shrubs, edged with hardy herbaceous perennials and interspersed with fine clumps of Lilium auratum. These latter are managed very well at Clevelands, part of the success being attributed to their being annually mulched or surfaced with old Orchid stuff, into which they root well in spring. This, with a liberal supply of liquid manure when the growths are coming up, induces them to bear large flower-heads in summer, and also serves as a protection to the dormant bulbs in winter.

A terrace runs along the back of the house, and the plant-houses and another raised promenade extends from the middle of it to the third raised walk at the end of the garden facing the sea; thus the lower gardens and terraces are divided into two parts. The sides of these raised promenades are utilised as a wild garden; on them the furze, white and yellow Brooms, Poet's Narcissus, and numbers of other beautiful plants, native and foreign, are luxuriating and blooming beautifully. On these the forced Hyacinths and other bulbous plants, when out of bloom, are planted annually there to make a beautiful display instead of being cast to the rubbish heap, as is their common lot in most gardens. These natural banks look lovely both from above and below, but the limits of their wild luxuriance is carefully restricted—they are not allowed to encroach one foot on the trim terraces and gardens below. A shady winding walk in the wild garden leads from the upper to the lower garden: so skilfully arranged is this that the visitor is at a loss to know how he is to descend until the secret is shown him. In the lowest garden the Roses are beautiful, herbaceous perennials well represented, and bedding plants nowhere. I do not recollect seeing the slightest provision for them, bedding (as it is

generally understood) and all its cumbrous appendages being tabooed at this establishment. To complete all, I must add that at Clevelands will be found a vigorous, clever and genial host, whose greatest treat is to show any intelligent visitor his gardens and his Orchids—to recount to him his hopes, his fears, his struggles and his successes in matters pertaining to the gardeners' art. *James O'Brien.*

## THE VICTORIA AND PARADISE NURSERY.

This noted nursery, unlike some of the older ones in the neighbourhood of London, has not a history of several generations attached to it; yet it stands as an evidence of the advancement of horticultural pursuits in this country during the last quarter of a century, and of what it is possible for the enterprise and perseverance of a single individual to accomplish within this period. This is about the time that has elapsed since Mr. B. S. Williams commenced business, first in the Seven Sisters' Road, from which he removed on acquiring the site now occupied by the well known Holloway establishment, so justly celebrated for the extent and rarity of the plants therein assembled, especially Orchids, as a most successful grower of which Mr. Williams' name has long been associated, and is familiar to the lovers of these most interesting plants in every country where they are cultivated. New plants of all descriptions, hardy and tender; Palms, Ferns, succulent plants, Cycads, Camellias, Azaleas, stove and greenhouse plants, hard as well as soft-wooded, in all sizes, from large, full-grown specimens down to the small usual trade examples, go to fill the numerous houses which have kept on increasing in numbers until they have reached the extent of a good-sized village.

Those who have traversed the Holloway Road to the foot of Highgate Hill cannot fail to have noticed the handsome conservatory, 100 feet by 40, in front of the nursery, always gay with flowering plants. Entering this the attention is attracted by the assemblage of lofty Tree Ferns, Palms, and other representatives of the vegetation of warmer but temperate climes. Standing immediately in front, right and left of the spacious central path, is a noble pair of Chamærops Fortunei, 18 feet high, with fine heads, their stout, fibre-clothed stems showing the character of this handsome decorative Palm when it has attained age and size. Near them, standing similarly on each side of the path, are a pair of Seaforthia elegans 16 feet high. This also is an excellent Palm in either a large or small state for room or hall decoration, now so much in fashion, as the tough nature of its leaves admits of much rough usage without injury; it also stands the effects of gas better than most plants. Then come match pairs of the elegant Tree Fern, Cyathea Smithii, with clean stems 12 feet high, and a couple of C. princeps with their wide-spreading fronds. Next another pair of Palms—Latania borbonica—14 feet across, and Dicksonia squarrosa, having stems 12 feet high. This is one of the handsomest of Tree Ferns, and presents the additional advantage for using in many positions, of not occupying so much room as other species through not forming so large a head, the fronds being smaller, and proportionally shorter. This brings us to the middle of the house, wherein is an open circular space, in the centre of which is a terra-cotta basin, in which stands a vase composed of several tiers, filled with Ferns, fine-leaved plants, and drooping Lycopodiums. Here are also two of the largest and handsomest Tree Ferns—Dicksonia antarctica—that have ever been imported; their stems are thick, straight, and some 14 feet in length up to the fronds, which form proportionate heads, spreading close up to the roof. The stems of these and several other arborescent Ferns in this house are being covered with the compact, close-growing Ficus repens, planted at their base in the tubs in which they grow, and in this way it clings to the trunks like a clothing of Ivy.

The opposite end of this centre path, which leads up to the seed-shop and offices, to which the conservatory is attached, is occupied by similar match pairs of Tree Ferns. Amongst them are beautiful examples of the rare Cyatheas, C. Burkei and C. Dregei, and a couple of the handsome Palm, Corypha australis. Then come fine pairs of the scarce Dicksonia Youngii, an elegant-habited species, in the way of D. squarrosa; Cycads, with their rugged surface stems surmounted by ample heads of spreading, formidable-looking foliage; Palms of various kinds, and many more Tree and other Ferns, amongst which is the singular Alsophila capensis, having a 10-feet stem, with the remarkable Hymenophyllum-like growth it makes, independent of the ordinary fronds of which the head is composed. Another distinct species of Fern, Marattia elegans, is represented by a fine specimen. Of the elegant, spreading-habited Cibotium, C. regale, there is an immense plant, its arched fronds stretching wide out overhead. A match pair of the beautiful Norfolk Island Conifer, Araucaria excelsa, one of the most commanding plants for a large house that can be grown. Of Palms not already named there is a grand example of Areca sapida, some 12 feet high; Araucaria Goldieana, a distinct drooping-habited plant in the way of A. Rulei; several pairs of the singular Beaucarnea recurvata, and of Dracæna lineata, a handsome plant intermediate in habit between Cordyline indivisa and Dracæna australis. Amongst numerous large specimens of the silvery-fronded Tree Fern, Cyathea dealbata, is one of very distinct habit; the stem is some 10 feet high, and not more than 4 inches in diameter, the pinnæ more finely divided and altogether of more slender growth than the ordinary species. A fine Dasylirion acrotrichum is also a commanding object here, and a good example of Buonapartea juncea, a distinct and handsome decorative plant of moderate growth. The above are a few of the many fine things that go to fill this handsome structure, along with Camellias, Azaleas, and other hard-wooded plants, which are brought in as their blooming season comes on, together with a succession of soft-wooded subjects of the various kinds that help to keep up a display, and maintain a gay appearance throughout the year. Rustic cork baskets suspended from the roof are freely used, filled with flowering and other suitable plants.

Leaving the conservatory, and following the road which leads down to the numerous other plant structures past the dwelling house and premises connected with the seed department, may be seen, fronting the latter, a considerable piece of rock-work thrown up and planted with shrubs and other things, which has much improved the general appearance. This brings the visitor to the warm Palm-house, 100 by 25 feet, which has a division in the middle and is filled with an assemblage of many different species. Amongst grand examples of heat-requiring Palms most noticeable are Cocos Weddelliana, 10 feet high, in fruit; Cocos Wallisii, an elegant habited plant; Areca lutescens, Astrocaryum mexicanum, the handsome Kentia Lindeni, Dæmonorops Susianus, Thrinax elegans, a splendid plant; Kentia australis, 8 feet high; K. Belmoreana, Phœnix dactylifera, Areca rubra, Chamædorea Wendlandii, Cocos flexuosus, a slender-stemmed kind, and one of the most elegant of all the tall growing Palms; Astrocaryum rostratum, showing flower on a 6 feet stem, with a head 12 feet in diameter. In this house was a plant of the rare Cibotium pruinatum, one of the most distinct of Tree Ferns, the rachis thickly clothed with black hairs like the young stems of Cyathea medullaris. Alsophila lunulata, a handsome and distinct species of spreading habit from the Fijis. Near this is a fine example of the angular-looking Sadleria cyathæoides, a Tree Fern, differing in character from all other Ferns. The principal plants in the adjoining division consist of Cycads, Encephalartos, &c. Amongst these are E. caffra, a splendid plant, with a handsome head of its singlar leaves borne on an immensely stout, thick trunk; E. latifrons, a distinct and extremely rare plant, supposed to be the finest example in Europe; E. villosus and E. Lehmannii, both handsome examples of fine species. Besides these there are the strange-looking E. Frederici Guilielmi, a newly introduced species, with stout, erect leaves, differing much in appearance from most others of the genus; a splendid example of Cycas media, hundreds of young specimen Palms of all the best kinds, Cocos Weddelliana, Geonoma gracilis, and others of like character, along with a number of specimen stove plants, such as Allamandas and Bougainvilleas just beginning their season's growth. Amongst Ferns is a grand plant of Davallia elegans, 5 or 6 feet across, the creeping stems almost hiding the pot. This is an excellent Fern for cutting, independent of its handsome appearance in a growing state. These are high hip-roofed houses; the space near the back wall answers well for starting newly imported stems of Tree Ferns, Encephalartos and Cycads, of which a stock is constantly in hand coming on.

Near the western end of this structure is a large block of span-roofed houses from 55 to 60 feet long by 18 wide, devoted to the growth of various descriptions of plants; the first of these is principally occupied by Ferns; the centre bed is filled with all the best kinds, many of which are large specimens. Here are the Gleichenias, including G. semi-vestita, G. rupestris, G. rupestris glaucescens, G. Mendelii, G. flabellata, G. speluncæ, G. microphylla, G. dicarpa, and G. dicarpa longepinnata, a distinct, new, and very elegant kind, of slender habit, but a free grower; Asplenium caudatum, Rhipidopteris peltata, Hypolepis tenuifolia; all the best Adiantums, including A. Williamsii, Asplenium novæ-caledoniæ, A. Sandersonii, Pteris internata, a distinct-looking kind; Lastrea membranifolia, and quantities of others, amongst which are several species of Trichomanes, including T. trichoideum, T. Luschnathianum, T. auriculatum, T. maximum, T. venosum, T. pyxidiferum, T. reniforme, T. humile, Hymenophyllum polyanthos, H. flexuosum, H. hirtellum, H. asplenioides, H. demissum, &c. A number of pieces of trunks of dead Tree Ferns are being used for growing the creeping-stemmed Ferns on, such as Davallia Tyermanii, Niphobolus lingua corymbifera, N. sinensis, Pleopeltis pustulata, Polypodium lycopodioides, and Lycopodium ulicifolium. At the north end of this house is a division filled with Todeas, and a few others of like character; there are quantities of beautiful plants of T. superba, T. intermedia, T. pellucida, T. Wilkesiana, Hymenophyllum demissum, and Trichomanes radicans.

Another of these houses was filled with flowering plants, such as Amaryllis, Primulas, and Cyclamens, for all of which this nursery is so celebrated. Amongst the Primulas was a lot of the new alba magnifica, a fine variety that bears immense heads of bloom. Here also was a quantity of greenhouse Rhododendrons, of which a collection of all the best kinds are grown; Epacrises, winter-flowering Heaths, Leschenaultias, Tropæolum tricolorum, and T. pentaphyllum, along with perpetual-flowering Carnations not yet so generally grown in private establishments as they deserve to be, but which are amongst the best of all plants for keeping up a succession of flowers through the dull season of the year. At the north end of this house is a select collection of Agaves and other succulents of a kindred description.

The next house is devoted to a portion of the immense quantity of Orchids grown in this establishment. I should suppose there are few who have any acquaintance with these plants that need to be told that Mr. Williams has long stood in the first rank as a successful grower and exhibitor of them. Many there are who have been able to reach the top of the tree in cultivating one or other of the sections of the Orchid family—the hot, cool, or intermediate divisions; but Mr. Williams appears to succeed alike with all. There is a compartment in which are kept the flowering plants of the Mexican and cooler species.

At the time of our visit (in the second week in March) there was a beautiful display of bloom, consisting of the following kinds:—Dendrobium Farmeri aureo-flavum, D. Wardianum, D. Freemani; a beautiful kind; D. luteolum, in flower since Christmas, D. Devonianum, D. crassinode; Cœlogyne cristata, C. ocellata; Cattleya Trianæ, many forms; C. Warscewiczii delicata; Odontoglossum Cervantesii, O. Rossii majus, O. Roezlii, O. Roezlii album, O. Phalænopsis; Pleione Hookerii, Cypripedium villosum, C. Boxalli; Lycaste Skinneri, many varieties; Cymbidium eburneum, Dendrochilum glumaceum, Oncidium sarcodes, O. pubes, and Lælia anceps. The temperature is kept up to about 55° in the night during the winter, and here a number of plants are located through this season that are often supposed to require more warmth. The stock of Aerides crispum is grown here altogether, and found to do much better than if hotter. Dendrobium clavatum is here in the winter, D. Schröderii, 2 feet across, with immense stout bulbs; Odontoglossum Phalænopsis, a large plant, not in bloom; quantities of O. vexillarium, many of which are fine specimens, were brought in as soon as they showed flower.

Adjoining this is the principal Cattleya-house, which, in addition to many hundreds of ordinary sized plants in excellent order, contains a number of grand specimen Cattleyas and Lælias. Down the middle of the high raised centre stage, well up to the roof, are about thirty large examples of Lælia purpurata, some of the largest 3 feet across with from

eight to ten flower-sheaths each; C. Mossiæ, equally as large; C. amethystoglossa, C. Trianæ rosea, C. Trianæ aurea, each 2 feet across; C. Warscewiczii, in quantity; C. labiata, C. Mendelii, C. crispa superba, C. Skinneri, C. gigas, unusually fine; C. Morganæ, a white Mendelii; C. Dowiana; Lælia elegans, L. elegans Turneri, L. elegans alba, L. gigantea, in the way of L. elegans; L. Perrini, L. Perrini major, L. flava, L. peduncularis. Over the paths are hung up a fine lot of Oncidium sarcodes, showing flowers. Dispersed through the house are Cypripedium Sedeni, C. Druryi, and C. caudatum, splendid plants; Calanthe Dominiana and C. veratrifolia, large specimens; Cymbidium eburneum, Dendrochilum filiforme, Oncidium Marshallii, Masdevallia macrura and M. Trochilus, both of which like more warmth than most of the other species; with more Odontoglossum vexillarium.

*(To be continued.)*

## AGAVE FILIFERA VARIEGATA.

The illustrations we give of this plant (figs. 135, 136) were taken from a specimen in the possession of W. B. Kellock, Esq. The green form (fig. 137) is not uncommon in gardens, and was botanically described by Mr. Baker in his monograph of the genus Agave, *Gardeners' Chronicle*, March 10, 1877, p. 303. Mr. Baker, however, makes no mention of this variegated form, the leaves of which are dark green with silvery stripes, and with

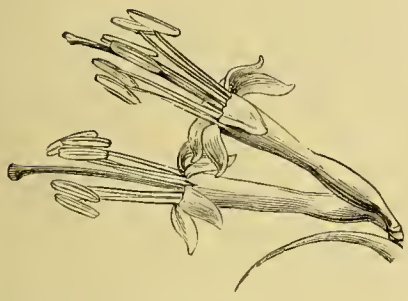

Fig. 135.—Agave filifera variegata: flowers pale purple. Nat. size.

free threads of the same description on the margins. The tips of the leaves end in a deep purple spine. The flower-spike was about 11 feet in height, the individual flowers pale purple, not greenish, as in the species.

## Florists' Flowers.

Florists' Specialities.—Mr. Dodwell writes to disclaim the correctness of the interpretation we put upon his words, and challenges us to show in what way the florists' code may be improved in its application. This would lead us into greater detail than we have space for. We can only deal with general principles. Follow and develope the indications manifested by the particular flower, and do not make it assume a form which belongs to some other. Do not break away from the lines laid down by Nature, and turn a pentagon into a circle, or a circle into a pentagon. Consider the conformation of each particular flower, and the reasons for its particular form, rather than build up some abstract conception which might apply to the artificial product of the designer's art, but which is out of place in the case of a flower, where every separate part has a distinct purpose to fulfil, and is shaped accordingly. Mr. Dodwell will probably object to this principle. No one questions his right to do so. On the other hand, his patience must not fail at the criticisms of those who claim the right to look at flowers from a different standpoint from his own. And here we must for the present take leave of the subject. We shall have ample means of discussing the applicability of the principles as circumstances arise. No doubt we shall be in accord with Mr. Dodwell in many points, in others we must agree to differ. Out of our agreements and our differences may spring in time what we are not alone in thinking is wanted—a revised code.

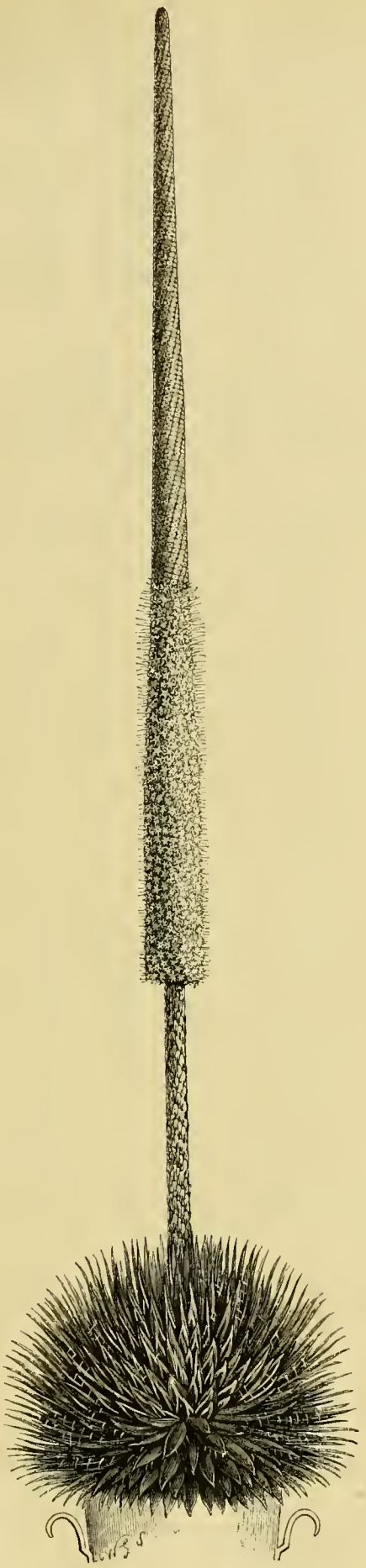

Fig 136.—Agave filifera variegata.

## Notices of Books.

**A Manual of the Coniferæ**; *containing a General Review of the Order, a Synopsis of the Hardy Kinds Cultivated in Great Britain, their Place and Use in Horticulture, &c.* With numerous woodcuts. (James Veitch & Sons, King's Road, Chelsea.)

That a manual of the Coniferæ for practical use, at once trustworthy in detail and popular in treatment, is one of the requirements of horticultural literature few can have better opportunities of knowing than ourselves. It was, therefore, with special interest that we looked for the publication of the book whose title is above quoted, and now that we have it before us, and have examined its contents, we are in a position to say that the requirement above-mentioned is well fulfilled. We are not about to bestow indiscriminate praise, indeed we shall have to allude to certain defects, as we deem them, but we may at once say that it is a book compiled with great industry and care, and specially valuable in those portions in which is set forth the experience and observation of the writers themselves. The plants are named and described on definite principles, with constant reference to authoritative statements of well-known authors, or to type specimens, either of which can be consulted, so that, a standard of reference being thus afforded, it is easy to test the accuracy of the descriptions given, and to

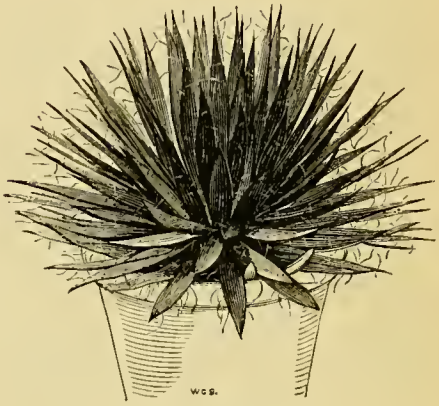

Fig. 137.—Agave filifera.

form an idea of the range of variation of particular species.

The present work was suggested by the synopsis of the coniferous plants prepared many years ago for Messrs. Knight & Perry, the predecessors of Messrs. Veitch at Chelsea, and which was at the time of publication the best and most useful work of its kind. We have used the expression "suggested by"—Messrs. Veitch themselves say "founded upon"—we venture to think our own phrase is the more correct of the two, for, except in the arrangement of the tabular list there is little in common between the two publications. And what strides have been made since the time of Knight and Perry. Their list contains no Wellingtonia, no Libocedrus decurrens, no Thuya gigantea, no Retinospora, no Cupressus Lawsoniana, no Sciadopitys. The Japanese Conifers made known and introduced by the late John Gould Veitch were of course not included. And, in the interval how much knowledge has been gained as to the hardiness, the rate of growth, the value for timber or ornament of the several species. Much of this information is digested for us in the present volume.

In analysing its contents we must point out that its object is "to supply the demand for practical information . . . which is not contained in scientific works on the subject, or is but cursorily touched upon in them." It would, therefore, be out of place to apply the same critical standard to the volume that we should do to one of a professedly scientific character, not but what it would bear the test much better than some of our books on similar subjects. The first part comprises a general review of the structure and conformation of the Coniferæ, their properties, the diseases and injuries to which they are subject, and the geographical distribution of the plants of the order. We may say at once that this section pleases us least of any. It is too meagrely treated. In a book of this

character we should have preferred greater expansion given to the sections on timber, economic uses, and the diseases and injuries to which the plants are subject, even at the expense of those relating to structure, conformation and geographical distribution, which latter are treated correctly so far as they go, but are, perhaps necessarily, very brief and imperfect. For instance, the Larch disease is only cursorily treated on, and the peculiar deformity of the Abies nobilis, arising from a grub, not mentioned; nor even the curious deformities caused by the Chermes abietis, which misled even so acute a botanist as Lindley into describing a new genus, Veitchia. On the other hand, as an illustration of the kind of information which practical men alone can give, and which is so specially valuable, we quote from p. 11 the following passage relating to cuttings:—

"The power of forming roots by pieces detached from the parent plant or by cuttings is very considerable, but differs much in the different tribes. It appears to exist nearly in the same ratio as that of producing leaf-buds; thus in the Cypress tribe, in which the branchlets ramify repeatedly and produce lateral shoots very freely when the leaders are, in garden phraseology, 'headed back;' cuttings take root very readily when placed in circumstances favourable for their development. In the Sequoia and Yew tribes the power of rooting from cuttings is almost as great as in the Cypress and its allies. It is much weaker in the Fir and Pine tribe; some of the Araucarias possess it in a high degree; Spruce and Hemlock Firs less so; it is feeble in the Silver Firs, and wanting or nearly so in the true Pines."

We should have liked to have seen the points relating to the leader-shoots similarly treated, for most growers know how difficult it is to get some species to form leaders, *e.g.*, P. amabilis, when the primary one is destroyed by disease or accident.

In Part II. we have a synopsis of the genera and species suitable for cultivation in the open air in Great Britain, arranged under the four divisions of, 1, Abietineæ, the Fir and Pine tribe; 2, Taxodieæ, or deciduous Cypress tribe; 3, Cupressineæ, or Cypress tribe; and 4, Taxineæ, or Yew tribe. The Firs (Spruce, Silver, and Hemlock) are all ranged under Abies, with the following sections:—Piceæ, or Spruce Firs; Sapini, or Silver Firs; and Tsugæ, or Hemlock Firs. We do not glean who is responsible for this arrangement, but as this is a matter of scientific rather than practical importance, we refrain from comment. Larix, Cedrus, and Pinus, we are glad to see retained on both scientific and popular grounds. Wellingtonia is so bad a genus that we should have preferred relegating it to its proper place in Sequoia, reserving the name Wellingtonia as a popular or garden name not likely to be displaced (if it were desirable, which it is not) by any considerations of botanical impropriety. Retinospora is kept up as a separate genus, though it is admitted that many of the plants so named are mere forms of Thuya or Biota. In reference to this matter it seems to us it would have been a preferable course to have given at p. 57, instead of the present list, one founded upon Mr. Bentham's latest revision of the genera as that is likely for years to come to be the accepted standard. This, too, is more in accord with garden usage than that of Parlatore, which is cited on the previous page. In the preface the authors allude to the difference of opinion among botanists as to the limits of genera and species; but they say it is out of their province to enter into any discussion on such controverted subjects. We shall not quarrel with Messrs. Veitch for their decision, but none the less we think their reticence a matter to be regretted. They have opportunities of forming an opinion which the cabinet botanist well may envy. Where the latter sees a few more or less mutilated specimens—cones detached from foliage, foliage of different character though belonging to one tree referred by error to some other, and so forth, the nurseryman sees hundreds and thousands of specimens in the course of his business. He has the opportunity of seeing them in all stages of growth, from the seedling to the full-grown tree, and under a great variety of circumstances. An expression of opinion, by so competent witnesses, on controverted points, as to the description and limitation of species, would therefore be valuable. Take, for instance, Cupressus Lawsoniana; if a botanist were to see isolated specimens of the very numerous varieties which come up in the same seed-bed, and were, as in most cases he would perforce be, ignorant of their origin, he would be inclined to make different species of half at least of the forms which the nurseryman knows to have originated from the seeds of one and the same species. And, again, what botanist with only the ordinary facilities at his disposal could hope to trace the real origin of the extraordinary and beautiful Retinosporas of our gardens? We merely mention these points to show what valuable evidence might have been expected from Messrs. Veitch had they felt disposed to give it, but they have adopted the plan of giving "names of kinds which for arboricultural and horticultural purposes are sufficiently distinct to require special notice, and without in any way indicating our belief or disbelief that they are species in the ordinary acceptation of the term." In the tables the species are arranged in alphabetical order, the name occupying one column, the synonyms a second, the popular name a third, the habitat a fourth, and the average height a fifth. This table is followed by the detailed account of the species, arranged in the same order. An extract will best suffice to convey an idea of the manner in which this portion of the book is treated:—

"Abies orientalis is a smaller tree than the common Spruce; it is rather dense in habit, owing to the numerous branchlets and their ramifications, all of which are clothed with foliage much appressed to them, so that they appear more slender than those of other species. The leaves are close set on all sides of the branchlets, stiff, obtusely pointed, and when mature of a deep glossy green; the brightest in colour of all the Spruces. The cones are small, sub-cylindrical, pointed at the apex, and from 2 to 3 inches in length.

*Habitat.* — "Mount Taurus and the Caucasian region, where it forms dense forests. It is abundant in the neighbourhood of Trebizond and the south-eastern shores of the Black Sea.

"Introduced into Great Britain in 1839.*

"Not much is known of the economical uses of Abies orientalis. Its wood is remarkably durable and tough,† and is doubtless applied to similar purposes as that of the European species.

"Abies orientalis is one of the most ornamental of the Firs. Although the habit is of the same pyramidal character as that of the other Spruces, it has its formality much diminished by the projection of many of its slender branches, which makes the outline peaked and pointed. The colour of the foliage is not only distinct but also attractive; when the buds first cast off their scaly protection, and burst into growth in spring, they are bright yellow, the tender shoots as they lengthen become a soft delicate green, forming a beautiful contrast to the rich colouring of the mature foliage. A. orientalis should have a place in every collection of Conifers; it is quite hardy, but of rather slow growth in dry soils.

"The specific name, orientalis, 'eastern,' was given by Tournefort in reference to its habitat."‡

The information here given is just what an amateur wants; but it might have been usefully supplemented by an indication of the book or memoir where either the original or the most complete description may be found, together with references to figures.

Part III., which might usefully have been extended, treats of the various purposes for which Conifers are planted—for ornament, for hedges, shelter-belts, winter bedding, or timber. Scattered throughout the book, as occasion serves, are brief biographical notices of the collectors who have been principally instrumental in the introduction of Conifers to this country, such as W. Lobb, Douglas, Hartweg, Jeffrey, and Menzies. Among these the name of John Gould Veitch—at least equally deserving of like commemoration—is, we regret to see, not included. The book is copiously illustrated, and well got up, but the index should have been as complete as that of Knight and Perry's *Synopsis*. The plan of the work renders it difficult to find any particular species—a difficulty which would have been removed at once by a full index.

We have spoken at some length of this volume, and have not overlooked its weak points, but as a whole we are bound to commend it most heartily to the notice of our readers, and congratulate Messrs. Veitch and Mr. A. H. Kent, who has largely assisted them in its production, on the issue of a work so useful and so trustworthy that it should henceforth find a place in every garden library.

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Selenia aurea.—In the herbaceous ground at Kew this somewhat rare and very pretty Crucifer is now in flower. It has nicely cut leaves and corymbs—afterwards lengthening into racemes—of fragrant golden-yellow blossoms. It is a neat habited little plant, about 6 inches high, and would doubtless succeed well grown in pots for cool greenhouse work and for balcony decoration. A native of the wet prairies of Arkansas and Texas.

* Lawson's *Pinetum Brit.*, *Abies orientalis*, p. 3

† *Ausgezeichnet dauerhaft und zähe;* Henkel and Hochstetter, *Nadelhölzer*, p. 193.

‡ The application of the word "orientalis," in this instance, is indefinite. By the law of relativity it implies an "occidentalis," or western, a name that has not been given to any of the Spruce Firs.

## PLANT PORTRAITS.

Anthurium Andreanum, *Revue Horticole*, May 1, 1881.—See *Gard. Chron.*, vol. xiii., p. 497.

Anthurium Scherzerianum var. Rothschildianum, *Flore des Serres*, t. 85.—The form with the white spathe dotted with crimson spots.

Aretia Vitaliana, *Gartenflora*, t. 1039.—A dwarf Primulaceous herb, with tufts of narrow leaves and bright yellow 5-parted flowers ½—¾ inch across. Native of the Alps of Southern Europe and Tyrol.

Clematis coccinea, *Garden*, March 12, 1881.—The scarlet-flowered Clematis from Texas, at one time confounded with C. Pitcheri—a purple-flowered species. C. coccinea in cultivation appears to vary in colour; that shown at South Kensington had pale pink flowers—the one here figured is scarlet.

Cypripedium occidentale, Elwes, *Gartenflora*, t. 1036.—See *Gard. Chron.* 1877, p. 727.

Delphinium hybridum, *Belgique Horticole*, Jan. 1881.—A group of double-flowered varieties. The text gives a list of the species and varieties in cultivation.

Erythræa pulchella var. diffusa, *Gartenflora*, t. 1038.—A beautiful hardy perennial of tufted habit, erect stems, small obovate leaves, and terminal pink flowers ¾ inch in diameter.

Eulophia guineensis, *Garden*, March 26, 1881.—Leaves broadly lanceolate, purple-spotted; flowers racemose, each about 2½ inches in diameter, outer segments lanceolate, dull purple; lip three-lobed, lateral lobes small, whitish, central one large, orbicular, lilac with darker stripe.

Fuchsia fulgens pumila, *Revue Horticole*, April 16.—A fine variety with large, coarse, ovate-oblong leaves, with red veins and pendulous trusses of long trumpet-shaped scarlet flowers.

Hellebores, Hybrid Varieties, *Revue de l'Horticulture Belge*, May, 1881.—A group of new hybrids grown in pots in the nursery of M. Auguste van Geert.

Hibiscus schizopetalus, Veitch Cat., *Flore des Serres*, t. 2397.—See *Gard. Chron.*, August 30, 1879.

Hyacinthus, Nimrod (*Flore des Serres*, 2399, 2400), single, blue; Reinwardt, single, dark violet, white eye.

Hydrosme Hildebrandtii, Engler, *Monatsschrift des Vereines z. Beford. des Gartenbaues*, April, 1881.—A fine Aroid, with solitary erect leaves, 6 feet high, lamina two to three furcate, each division lanceolate pinnatisect; spathe 3 feet long, convolute below, open above, pale flesh colour, with violet spots. Madagascar, Hilldebrandt.

Ixora alba, L., *Gartenflora*, t. 1037.—An old stove shrub, with broadly lanceolate leaves and compact trusses of white flowers.

Jasminum gracillimum, Hook. f., *Bot. Mag.*, t. 6559.—See *Gard. Chron.* 1881, p. 9.

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# Garden Operations.

### *FLOWER GARDEN.*

Bedding Plants of every kind should now be in position—any sorts that are too tender to bear exposure by this date should be altogether discarded. With reference to this matter—a few Alternantheras excepted—we have this season endeavoured to exclude every variety of plant that will not bear a few degrees of frost, and the Alternantheras which we have used as sparingly as possible are in beds that are mainly filled with hardy Sedums and Saxifrages, so that even after the frost has cut the former off the beds will be comparatively well furnished, and the work of substituting another plant—hardy Heaths, for instance—in lieu of the Alternantheras to stand the winter, will be an easy matter. As a matter of course, through the exclusion of brilliantly coloured Alternantheras there is less summer brightness in the garden, but this is more than counterbalanced by the prolonged season of effectiveness. The same rule should, as far as possible, be applied to what is known as "subtropical" planting; that is, the hardiest kinds only should be used. For this kind of bedding there are numbers of hardy graceful foliaged plants that might be pressed into service, such as the Acacias, Sumachs, Ailantus, Maples, Yuccas, &c. A garden consisting of this class of plants alone would doubtless be as much admired as the best "subtropical" arrangement that

was ever made. Tall growing plants in this class of garden should at once be tied; our rule is to tie as soon as planted, they then can root unchecked by wind-waving; the under-growth, too—for neatness sake—requires to be regulated by pegging, and if the weather continues hot and dry the surface should be mulched, the best material for this purpose being cocoa-nut fibre refuse. Ordinary bedding plants need also to be pegged into form in the beds; they have this season started into growth more quickly than usual, and unless the growth be at once regulated it may be difficult to get them into anything like proper trim. Verbenas, Heliotropes, Petunias, in fact all straggling growers, ought to be done immediately; and, if the flowers can for the present be sacrificed, the permanent well-doing of the plants will be the better secured.

Climbers, Roses, Shrubs, &c.—Climbers of the annual section, such as Nasturtiums, Canary Creepers, Convolvulus, and Maurandyas, require to be regulated as to training at least once each week; all these are useful for forming a thick summer screen to unsightly walls or corners, and for the latter purpose there is no more effectual means of training than over Pea-sticks. Clematis and Climbing Roses are at the present time in most rampant growth, and delay as to securing them to supports will end in injury; both need abundant supplies of water, particularly when planted under verandahs, or projecting eaves of buildings where rain cannot well reach them; in such cases, an occasional wash overhead with the garden engine is also necessary. As regards the general stock of Roses, keep them well supplied with water, the best preventative of mildew; and rub off suckers the moment they are perceived. In these parts the plants are exceptionally clean this year; no parasites, except the leaf-rolling maggot, have yet appeared, and the only remedy for this is hand-picking. The seed vessels from Rhododendrons and Azaleas that have done flowering ought to be removed, and all dead, or partially dead shrubs yet remaining as remnants of the severe winter, be cleared out. Box edgings should be cut in dull and showery weather, and also Yew, Privet and Holly hedges, that have not yet been cut. Specimen Yews, Portugal Laurels, and shrubs of that class should be knifed, not clipped, into shape.

General Work now consists in the maintaining of neatness by mowing the lawn at least once in ten days, clipping the verges, weeding, and keeping the walks smooth and hard by rolling after heavy rain. The shrubbery clumps and borders should also be kept free of weeds by hoeing, and any flowering plants round the margins of the same have timely attention as to tying and staking. Any vacancies there may be should be utilised for the planting out of Everlastings, Sweet Williams, and Wallflowers or Gladiolus, that have been started in pots. *W. Wildsmith, Heckfield, Hants.*

## *KITCHEN GARDEN.*

Although the beautiful rains which we had on Whit Sunday and the following day had the effect of marring the pleasure that hundreds and thousands of holiday and pleasure-seeking people would otherwise have enjoyed, it has nevertheless produced most beneficial and needful results in this and other outside horticultural departments, as well as in the agricultural districts—results which, let us hope, may in another shape, although perhaps not individually felt, be such as to amply compensate those who were "on pleasure bent" for any disappointment they may have experienced. Owing to this favourable change in the weather, Cauliflowers, which have never before been so late with us, are turning in nicely, and well-podded Peas are becoming plentiful, and salading more crisp; in short, vegetation has resumed its wonted activity. Leeks.—This in some places is an important crop, and in many gardens it might be rendered so by giving it more attention, and consequently better cultivation than it generally receives, and which its merits as a culinary root unquestionably entitles it to. There are various ways of transplanting the Leek: the following is the mode practised by ourselves, and which we have found to answer very well indeed, viz.:—In an open, well-manured, and deeply-dug piece of ground drills are drawn similar to those made for Peas, about 16 or 18 inches apart, and in these holes of 2 or 3 inches in diameter are made, 9 or 10 inches asunder in the rows; in these the plants are placed upright, and at the time of planting sufficient earth is allowed to fall into the holes to cover the roots, and subsequently the soil is gradually washed into the holes by the rain, and by frequently Dutch-hoeing between the rows, care being taken not to bury the hearts of the plants in doing so, until the holes are filled. When the Leeks are planted water should be given them, and occasionally afterwards until the plants have taken hold of the soil. Thus grown, large and well-blanched stems are obtained. We have also grown the Leek satisfactorily in trenches prepared similarly to Celery trenches, and the soil drawn to the plant as they increase in growth and until the trenches are made level with the rest of the ground. Make another sowing of Broad Beans and Canadian Wonder French Beans (the best all-round dwarf Bean in cultivation), also Endive of the broad-leaved and green-curled type, and Cauliflower (Walcheren) should be sown, and about Midsummer Day make another sowing of Scarlet Runners on the south side of the preceding row, assuming that it runs east and west, and in the event of the row running north and south the next sowing should be made on the west side, but the former position (respecting which full particulars were given in your issue for April 16, and at p. 503) is unquestionably the best, inasmuch as the first row protects the second row. Make frequent sowings and plantings of Lettuces of the Cos and Cabbage varieties, and see that good successional plantings of Early London and Veitch's Autumn Giant Cauliflower are made, and protect the heads of those now coming into use with the leaves from the full force of the sun as a means of retarding the crop. Mustard and Cress and Radishes, as previously recommended, should be sown every fortnight or three weeks during the summer, in order to maintain a good succession of these essential salading compounds. Make another good sowing of the late varieties of Peas for use from the middle to the end of September. And about a week later a sowing of any of the second early varieties should be made to supplement the gatherings from the preceding sowing; and for this purpose Dickson's Favourite and Laxton's Supreme are two suitable varieties. Sow Turnips for succession in a cold moist situation, and thin out sowings previously made.

General Work.—The labour which for some time back had been occupied in the watering of Peas, Cauliflowers, Lettuce, Celery, &c., will now have to be directed to the killing and keeping down of weeds, which just now, when the gardener's force is fully occupied in other and various pressing ways, seem to make a most strenuous effort to enforce their joint right to grow and flourish in the land—a claim that must be peremptorily disallowed by the frequent use of the Dutch hoe and hand weeding. Attend, as formerly directed, to the earthing-up and sticking of advancing crops of Peas; clear the ground of early ones as soon as the crops have been gathered, and manure and dig it for French Beans or other crops, also attend to the thinning and stopping of Vegetable Marrow and ridge Cucumber plants. *H. W. Ward, Longford Castle, Salisbury.*

## *FRUIT HOUSES.*

Peaches and Nectarines.—Early houses in which the fruit is ripening should be very freely ventilated on all favourable occasions, plenty of light and air being essential to the production of high-coloured, fine-flavoured fruit. Very little fire-heat will now be required, except on dull, wet, and cold days. The hot, sunny weather we have had has brought them on very fast, and has also been very favourable to the growth of red-spider. As soon as a tree is cleared of its fruit have it thoroughly washed with syringe or engine, or hose-piping if pressure enough can be obtained to do it effectually, and any wood not required for next season's fruiting may be taken out at once, to allow a free circulation of light and air, and expose the foliage to the free action of the syringe. The second house should now be thoroughly soaked with tepid manure-water, as the fruit will be swelling off and colouring fast; expose the fruit to the sun and light, to get them well coloured and full flavoured. Tie down and stop gross shoots in succession-houses, and see that the roots are well supplied with water. Trees in late houses may be well mulched with some good half rotten manure, if not already done. Ply the syringe freely twice daily, to keep in check red-spider and greenfly. For the latter I have used 2 oz. of quassia chips and 2 oz. of soft-soap, well boiled, to 1 gallon of water, with very good effect. *J. Wallis, Keele Gardens.*

### Orange-house.

One of the most interesting features in connection with Orange culture is the fact that the fruit can be obtained at almost any season of the year. Certainly out of a dozen small trees the fruit may be obtained in every month of the year, and three varieties are sufficient for all purposes, viz., Tangierine, Maltese Blood, and the very excellent variety St. Michael's. We have now this variety with fruit nearly ripe, and a crop of fruit had been gathered from the same tree early in the year. The question arises here, whether it is desirable to give the trees a season of rest after the fruit has been gathered. It seems only reasonable that they should have a quiet time of it, by being placed in a cool airy house for a season. I have done this more than once, and the leaves have become rather yellow in some instances, and the ultimate benefit has not been apparent. The finest and most productive Orange tree we ever had, was one of the St. Michael's variety. It carried one crop after another for three years—one crop being set always before the other was gathered; and the tree remained all the time in an 11-inch pot, nor was it ever outside the Pine-house the whole time. It must not be forgotten that when the trees are kept in a high temperature continually, they are very liable to be attacked with scale, or, what is more serious, mealy-bug. In either case I find a soft sponge, soapy water, and patience the best cleansing elements. Artificial heat is not necessary now. Shut the house up early in the afternoon, and regulate the temperature, so that a maximum of 85° or 90° is reached. If the thermometer reaches the highest point after the house is shut up, about 4 P.M., it will probably not fall below 65° before the sun touches the house in the morning. Use rich surface dressings if the trees are loaded with fruit and they require a stimulant. *J. Douglas, Loxford.*

### Orchard-house.

In the earliest house the fruit will now be very near the ripening stage; and in that case syringing must be discontinued. If previous instructions have been attended to the trees will be quite free from insect pests of any kind, and the leaves in a healthy green state, so that if water is judiciously applied to the roots the fruit will ripen off, of full size and excellent quality. The fruit in the late house has entered into the stoning period, and will not move much until the stones have completed their growth. If the surface dressing has not been applied it should be seen to at once. A handful or two should be spread thinly and evenly on the surface; we have tried different composts for the surface of the soil in the pots, but have not found any so good as that previously recommended—that is, equal parts of short fresh stable manure, loam, and malt or kiln-dust; throw them up into a heap to ferment—but it must be watched to see that the mass does not become too much heated—and when the heat has subsided the compost may be used at once. Syringe and water freely during the present hot weather. Inattention to any of the details of the work at this season may be fatal to a crop of good fruit. The fruit is now beginning to change colour on the earliest Strawberries; most cultivators know how liable these are to be attacked by red-spider; but this pest can also be kept off the leaves by well syringing them underneath before the fruit begins to colour. *J. Douglas, Loxford.*

### Melons.

The various operations connected with Melon culture have been so fully described in former Calendars that little remains to be said at this genial season that has not been frequently repeated. It is, however, important to mention (especially to those whose experience is somewhat limited), with reference to the change of weather which has taken place, that mischief may be caused by a sudden fall of temperature should the depression continue for long. Ventilating and watering will require more strict attention in all cases, but more especially where there are no hot-water pipes which could be slightly warmed to dispel a cold damp atmosphere, which is very prejudicial to the welfare of Melon crops in all stages. Crops in unheated pits or houses, or indeed those that are grown under more favourable conditions, had better be kept on the dry side in dull damp weather, and when water is applied it should be given upon the mornings of bright clear days, so that there may be full opportunity of closing in the house, pit, or frame, with a healthy volume of dry warm air for the night. Much codling, or in other words shade, is not necessary, except in case of very bright sunshine succeeding a period of dull weather, in which case a slight protection from the burning rays of the sun will be advantageous until the tissues of the leaves grow firm by gradual exposure to sun and air. In the northern parts of the kingdom this is a good time to sow for late crops, and, by carefully selecting two or three kinds to succeed each other, will come in during October and the early part of November. Whatever kinds succeed best as early crops are usually the best for late crops also, and with regard to seeds I give preference to those that are new as possessing more vigour and vitality than old seeds. I have cut good fruits in November from seeds taken from fruits ripened the previous June, and I repeat that long kept seeds means loss of vigour. *W. Hinds, Canford.*

### Cucumbers.

Assuming that plants which have borne heavy crops for some time back have been treated as recommended in my last Calendar, they will now be making young wood and growing vigorously. It is the nature of the Cucumber to exhaust itself by fruiting, therefore the look-out of the cultivator should be to regulate the crop according to his own requirements. Pinch and train the young growths into their proper places at least twice weekly, and watch the action of the roots and the condition of the soil, in order that progress may be sustained. Young plants that have been planted specially for summer fruiting in pits or frames should receive constant attention in shading, watering, and ventilating. If the nights are cold, close in early in the afternoons and cover the glass with some thick shading to prevent the escape of heat by radiation as night approaches. *W. Hinds, Canford.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | June 13 | Sale of Established Orchids at the Auction Mart, by Protheroe & Morris. |
| Tuesday | June 14 | Royal Horticultural Society: Meeting of Fruit and Floral Committees at 11 A.M.; Scientific Committee at 1 P.M. |
| Thursday, | June 16 | Meeting of Linnean Society at 8 P.M. |

FROM time to time we have called attention to the desirability of ascertaining as fully as possible the effects of the last two extraordinarily Severe Winters on Plants. A generation may elapse—we all hope it may—before similar wholesale destruction may come upon our plantations again. No one will doubt the exceeding value of a carefully compiled report: our only fear is lest in the press of business that the present spring has involved observers may not find the time to record their observations. The matter has been taken up by the Royal Horticultural Society, and we trust gardeners in general will do their best to aid the Society in drawing up a report which will be of so much value to them. Illusions will be dissipated, erroneous notions will be corrected; we shall know on what we can rely and what we must mistrust; we shall be guided as to what to plant and what not to plant. The information is specially wanted in the case of what we may term commercial or economic plants, rather than those that are of a purely ornamental character. We want both, of course; but the loss that may accrue from the destruction of plants of the former character is a more serious matter than that which results from the loss of ornamental plants. Timber trees, fruit trees, vegetables—we are more concerned to know how these have fared than about the purely ornamental denizens of our grounds. True, it is deplorable to lose, say, a noble Pinus insignis, which we have planted and watched with loving care; it is sad to see that avenue of Deodars which we hoped would make such a feature, crippled; it is grievous to see those fine Rhododendrons seared; but in these cases there is consolation in the fact that we have had these plants and enjoyed them.

"'Tis better to have loved and lost,
Than never to have loved at all."

Moreover, we can replace them with less difficulty, or we can avail ourselves of others more readily and effectually than in the case of economic plants in general, the loss of which is more than a sentimental grievance. The drawing up of a list is not so easy a matter as might at first blush be thought. Not only are some plants hardy in one place and tender on the other side of the road, but even individuals of the same species growing in the same garden are affected differently. A curious case of this kind is observable at Kew. In gardens Osmanthus Aquifolius and O. ilicifolius are grown, as well they may be, as distinct shrubs. Nevertheless, as we have shown (*Gard. Chron.*, February 24, 1877), the two are but forms of one and the same species. But that the difference is not the merely superficial one of the lobing of the leaf, but is more deep-seated and physiological, seems evidenced by the fact that at Kew, where the two forms grow near to one another, on the same wall, in the same border, in the same aspect, the one is hurt by the frost the other is intact. Every grower, too, knows that seedlings from the same seed-pod vary in degree of hardiness. The effect of grafting on a hardy stock is also remarkable. We have seen specimens of Ceanothus, for instance, on their own roots killed, but safe when worked. At Eridge, the other day, we noted that all the Peach trees on the walls were killed except Thames Bank. What virtue has this variety that renders it so much hardier than its fellows? Is it as hardy elsewhere? There is, however, nothing surprising in these cases when we remember how differently human beings are affected by precisely like conditions, and these individual differences will not materially affect the general result.

The influence of protection, especially that afforded by a coating of snow, has, we believe, been very marked. In some cases the snow was blown off, and left the plants unprotected, to fall a prey to the frost; in others the snow melted, and the plants were exposed to a fresh access of cold, without the protection afforded by a coat of non-conducting material. These are illustrations which show the many circumstances which have to be taken into account in drawing up a proper report. There ought, however, to be no deficiency as to material, the digestion and elaboration of which may be left to the committee appointed by the Royal Horticultural Society, and which may be carried out possibly on the same lines as those on which the report of the effects of the frost in 1860 were based. The collecting of material would form a very proper and useful task for local horticultural societies. We have often to regret that the whole of their energies seem to be expended on the organisation of one or two flower shows in the year, to the neglect of other equally important if less showy matters. The National Rose Society, which has already done such good work in the publication of meteorological data, might also advantageously co-operate in the formation of a report which should be useful for all time. Already the French, who suffered far more severely than we did, have brought out their report, drawn up by M. Duchartre, and which is full of valuable information, but which is difficult to consult, because not provided with an alphabetical index of the species mentioned.

The publications of the Royal Horticultural Society have experienced one of their numerous arrests of growth for some time past. The Society could not more appropriately resume operations in this way than by the publication of the report which the Rev. Geo. Henslow has in preparation, and in the accomplishment of which task he requires the co-operation of all who can lend effective aid.

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—— Zandvoort.—A new bathing establishment, with hotel and the usual accompaniments, has been opened lately and connected with Amsterdam and Haarlem by a line of railway. Messrs. Krelage & Sons, of Haarlem, have established there an emporium for horticultural products of all descriptions. A special feature is a public reading room provided with horticultural periodicals in all languages. Zandvoort is in the midst of the Hyacinth growing district of Holland.

—— Catalogue of Roses.—The National Rose Society propose to issue a catalogue of exhibition Roses with information as to the section, correct name, date of introduction, raiser's name, form of flower, colour of flower, habit and distinguishing characteristics. No doubt such a catalogue will be useful, but unless further details be added it will hardly give more information than is afforded in a good trade list. It need not be confined to exhibition Roses, and it might give useful information as to the sorts that do best in particular localities and for special purposes, the stocks on which they do best, and so forth. The National Rose Society has shown a desire to be useful to gardeners in general, and not to move solely between the blinkers of specialism, and we trust such tendencies will be followed up as thoroughly as possible.

—— Bamboo Paper.—A copy of the *Journal of the Society of Arts* now before us is printed on Bamboo paper, the manufacture of which Mr. Routledge is endeavouring with praiseworthy zeal to develope. The paper contains the report of a lecture on British Burma by General Sir Arthur Phayre, and in the course of the discussion upon it Mr. Routledge gave some very interesting details concerning the collection and utilisation of the Bamboo for paper-making. It is worthy of remark that Mr. Routledge was the first to make use of Esparto for paper-making, of which 200,000 tons are now used annually, so that it is getting scarce and dear. Sir Rutherford Alcock, who was in the chair at the meeting we refer to, made the remark, that in China, where rags abound, the Chinese never use them for paper-making, but depend entirely on Bamboo; while in Japan, where they had plenty of rags and plenty of Bamboo, the paper-makers make use of the bark of the Paper Mulberry (Broussonetia). The "India paper" used by artists and engravers for their proofs is made from Bamboo, and really comes from China. Mr. Routledge's Bamboo paper was superior to that of the Chinese. The Chinese were rocked in Bamboo cradles when young, fed with Bamboo, and beaten with it when they were growing up; they lived under it in their houses, and, in fact, without Bamboo one could scarcely understand how a Chinese population could exist.

—— Platycodon grandiflorum Mariesi.—This is a compact growing form of the old P. grandiflorum, which flowers freely in a small state. We saw a week ago a nice lot in Messrs. Veitch's Coombe Wood nursery; the shade of blue in the handsome blossoms—some of which measured more than 3 inches in diameter—is perhaps nearly the same in the type and in the form which bears the above mentioned name. Fortune introduced P. grandiflorum from China during the period he was collector for the Horticultural Society.

—— English Fruit Trees in Central Africa.—A correspondent of the *Times* writes:—"It may interest some of your readers to know that a small selection of English fruit trees, Apples, Pears, Apricots, Cherries, Figs, Plums, &c., despatched to Central Africa last December to one of the upland stations of the Universities' mission, bore the three months' journey so well as to show signs of life and growth within a very few days of their being planted in their new home."

—— The Parrot Tulip.—Mr. Price sends us a flower of this old variety, in which the spurs on the flower-segments are more developed than usual. Fritillaries and Tulips and Cyclobothras are near akin, and we suspect these spurs are but indications of the honey pores and tubes of the plants we have mentioned.

—— Botanical News.—We quote the following from the *Journal of Botany*:—"The death was announced last month of Dr. R. W. Falconer, of Bath, the author of a *Catalogue of Tenby Plants*, published in 1848.—Mr. Ronald Campbell Gunn, F.R.S., died in March last, at Launceston, Tasmania, at the age of seventy-three. To Mr. Gunn's exertions we are largely indebted for our knowledge of the Tasmanian flora; a notice of his travels, coupled with a high eulogium of his collections and botanical attainments, will be found in Sir J. D. Hooker's *Flora of Tasmania*, p. cxxv.—Dr. Anton E. Sauter died on the 6th of April at Salzburg. He was born at Grosearl, in Salzburg, in 1800, and early manifested an interest in various branches of natural history, more especially of botany. Besides his work upon the flora of Salzburg, he was the author of various botanical papers, contributed for the most part to the *Flora*, the first appearing in 1824. He had a large herbarium, estimated to contain 20,000 specimens.—The extensive moss-herbarium of the late Dr. Ernst Hampe, who died at Helmstedt in November last, has been acquired by the Botanical Department of the British Museum.—The herbarium of M. Génévier, containing the types of the numerous Rubi described by him, has been added to the herbarium of the University of Cambridge.

—— The Winter in Russia.—A correspondent at Sitchereska, in the Smolensk Government, writes, under date of June 1: "In this part of Russia we have had a long and severe winter. From November 20 to May 2 the mercury never rose above the freezing point, and on three different nights it was as low as 28° below zero, but with a light covering of Fern and the usual 2 feet of snow dwarf Roses and bushes have come through the winter safely. In the flower garden many plants stood the 60° of frost this winter, with their covering of snow, better than last winter with only 34° of frost and little snow. A dry winter with hard frost is not so much feared here as a cold damp winter with occasional frosts. To-day we have

had 7° of frost, and Kidney Beans and Potatos are cut to the ground. Fruit trees in full bloom look happy where not exposed to the early sun."

—— Salvia Columbaria.—Not the least desirable of a somewhat showy genus is the species now noted. It is a compact plant of about a foot in height, with prettily cut leaves and blue flowers, which, though not particularly large, are produced so freely as to render the plant a desirable one for the wild border of even limited extent. No figure has been published of this species, which in all probability is very rare in cultivation. According to the *Botany of California* it is the "Chia" of the aborigines; the seed-like nucules infused in water form a pleasant mucilaginous drink, which is largely used. A native of California, Nevada, and Arizona. It is now in flower at Kew.

—— Japanese Oranges.—It is stated that the Orange crop in Kinshui, Japan, "has been unusually large this year." About 20,000 boxes of Oranges have been sent daily from the townlands of Arita and Unami to the Osaka and Kobe markets. The sizes of the boxes are generally fixed, but the number of Oranges they contain depends upon the size of the fruits; the average, however, is estimated at 150, at which rate the consumption of the Kobe and Osaka fruit eaters would amount to some 3,000,000 per day.

—— Borago laxiflora.—This is an annual or biennial herb, about 1 foot in height, with pendulous, sky-blue, bell-shaped blossoms. It is a native of Corsica, and probably other spots in the Mediterranean region. Notwithstanding the ease with which it may be grown the species is certainly rare in gardens. Considerably more than half a century ago it was figured in the *Botanical Magazine*—the then editor stating that "We first saw this plant in flower at the Royal Gardens at Kew in July, 1814." It is at the present time in bloom in the Kew herbaceous department.

—— Scottish Pansy Society. — The thirty-seventh annual competition of this Society will take place in Edinburgh on Friday, June 17. The schedule is a lengthy one, and as the Northern bloom is known to be late this season, Southern growers would seem to have a fine chance of distinguishing themselves by carrying off most of the honours. Those who are desirous of competing should communicate with Mr. W. M. Welsh, 1, Waterloo Place, Edinburgh.

—— Chinese Vines.—M. Planchon makes mention in the last number of *La Vigne Americaine*, a journal for Vine cultivators, of the circumstance that M. Romanet du Caillaux had discovered in the North of China two curious Vines; one, spiney, bears the name Spinovitis Davidi, the other that of Vitis Romaneti. The Vines in question grow in about 34° N. latitude, where snow remains on the ground for a long time. It is to be presumed, therefore, that the Vines in question may be hardy in various parts of Europe.

—— Foxy Grapes.—We are most of us familiar at least with the name Fox Grape, as applied to a section of North American Vines, derived from Vitis vulpina, and we are even more familiar with the fox and the Grapes of the fable; but it is a novelty to learn, as we do, from M. Planchon, that the Cissus quadrangularis is known by the negroes of Senegal as the Fox (or Jackal) Vine.

—— Gladiolus augustus.—Very many Orchids highly esteemed and valued would have, in the opinion of unprejudiced critics, to yield the palm of beauty to this Cape bulb. It grows about a foot high, has snowy-white flowers, the three lower perianth segments each bearing a bright crimson blotch in its centre. How many of the lovely Cape plants which were grown and highly appreciated a generation or so ago have disappeared from cultivation or are only to be found here and there in some botanic garden! The present species is now in flower at Kew.

—— The Meteorological Society.—At the ordinary meeting of the Society, to be held at 25, Great George Street, Westminster, on Wednesday, the 15th inst., at 7 P.M., the following papers will be read:—"The Use of Synchronous Meteorological Charts for Determining Mean Values Over the Ocean," By Charles Harding, F.M.S. "The Climate of Fiji." By Robert Langley Holmes, F.M.S. "Note on the Formation of Hail." By J. A. B. Oliver. "Note on a Comparison of Maximum and Minimum Temperature and Rainfall Observed on Table Mountain, and at the Royal Observatory, Cape Town, during January and February, 1881." By John G. Gamble, M.A., M.Inst.C.E., F.M.S.

—— Bloom or Mildew.—We were somewhat reminded at South Kensington on Friday last of the famous dispute which arose between certain veracious observers as to the colour of the chameleon. A dish of Strawberries presented a somewhat pallid aspect, much as a fine lady might do who had been too free with the powder-puff. Some asserted that this tint was bloom, others that it was mildew; but no authority arose to set the important point at rest, although the majority held that the bloom was not that of health but of decay. In that sense, perhaps, both were right. Good as the fruits were, it was evident that too long keeping had sicklied them over with the pale cast of decay. In this respect how much they differed from the beautiful fruits shown in the prize dishes, rich in colour, fresh, and glossy; there was no bloom there, and though some kinds may perchance show that feature, it is not one to be encouraged in the Strawberry, which is tempting only when its colour vies with the painter's brightest pigments in glow, richness, and beauty.

—— The Richmond Horticultural Society. —This important suburban society is, we regret to learn, about to lose the valuable services of Mr. A. Chancellor as its Honorary Secretary. That gentleman has not only from the first held that important position, but has been its most energetic guide and supporter throughout. Within the few years that have elapsed Mr. Chancellor has succeeded in creating not only perhaps the finest of suburban shows, but also one of the largest constituencies possessed by any similar Metropolitan society. The stern pressure of business alone seems to be the motive which induces Mr. Chancellor to forego the position he has so ably held. We can but hope that the society will find another able officer to succeed Mr. Chancellor, and keep it in its present high position; whilst that gentleman may find in years to come, in the continued prosperity of the society, the truest testimonial to his earlier labours.

—— Pentstemon ovatus.—Though surpassed in some respects—size of flower, for instance—by many species, and particularly by the host of the garden hybrids raised in late years, this can still fairly claim the praise bestowed on it when its flowers were first produced in this country. The deep purple of the outside of the corollas, and the beautiful azure-blue of the inside, yield in beauty of colouring to perhaps no other species of the genus. It was first discovered by Douglas on limestone rocks of high mountains about the grand rapids of the Columbia River, and sent by him to the Horticultural Society in 1826. It is now in bloom at Kew.

—— School Gardening.—This interesting topic continues to crop up, its latest appearance being made in connection with the Royal Agricultural Society, where the views we have expessed upon the subject seemed to be generally entertained. It was added that where any school teacher had the ability, taste, and convenience to instruct his school children in practical gardening, it would no doubt be productive of a beneficial result. But the other day we learnt from one of Her Majesty's Inspectors of Schools that one of the schools under his examination had a master who taught the boys elementary gardening, being himself an enthusiastic amateur gardener; "and," said the inspector, "that is one of the best schools in my district." Of course, it is not to be assumed that this increased intelligence grew solely out of the gardening teaching. The same results would no doubt have followed from the teaching of any other useful trade or vocation, simply because the half-hour now and then devoted to such work becomes not only relaxation from mental studies, but acts on a diverse set of intellectual organs, thus recreating yet instructing. It is the exceeding monotony of our present modes of inculcating knowledge that turns so many fairly intelligent children into dullards. With a desire to rearrange these existing methods, especially in the lower standards, so as to give the children more real interest in what they were taught, a deputation but the other day waited upon the heads of the Education Department urging that object lessons should be largely introduced into our elementary curriculum. Objects of any kind, if used to teach little ones, must exercise the same influence that pictures do—they bring nearly all the brain organs into equal play, and the risible as well as the intellectual are often equally excited. It is put in this way, that much might be done in imparting to children a knowledge of plants, fruits, seeds, insects, birds, vermin, and myriads of things that it would be of real value they should know something about, and especially those whose vocation in after-life may be associated with the soil.

—— The Chinese Arbor-vitæ.—In some of the nurseries about London young stocks of this shrub and of several of its pretty varieties have suffered much from the severity of the past winter. In one establishment where large numbers were annually propagated, both from cuttings and by grafting, and specially grown for Covent Garden furnishing work, fully three-fourths were so injured that they are absolutely useless for the purpose for which they were intended, and the last two or three seasons have inflicted so much loss that the proprietor states he will have to cease growing such stock. In villa gardens about London the golden Chinese Arbor-vitæ has escaped in some localities with but the loss of a branch here and there; in other and apparently sheltered spots it is quite killed. The following extract will show in what estimation the common Biota orientalis was held nearly a century and a half ago; it is taken from a letter dated February 1, 1743, and addressed by the Duke of Richmond to Mr. Collinson:—"I am sorry to find by Miller that I am not likely to have the Chinese Thuja. I own, if it belonged to anybody that would sell it, I should be foolish enough to offer ten guineas for it, because it is the only one in England that can match that which I have already."

—— Liège.—The Royal Horticultural Society of Liège are organising a grand exhibition of plants, &c., to be held in that town from July 24—28, inclusive—the period of the Communal *fêtes*, when the presence of the King and Queen of the Belgians, and of H.R.H. the Count of Flanders, is expected. English exhibitors should make their entries before the 15th inst. More than 200 classes are mentioned in the schedule, for which 422 prizes are offered, equivalent to 11,265 francs. The President is M. Oscar Lamarche de Rossius, the Secretary M. Ed. Morren, Boverie 1, Liège.

—— Pratia angulata.—This little New Zealand Lobelia has withstood the past winter in the open air both at Kew and in the Coombe Wood nurseries of Messrs. Veitch. In a cool-house in the latter establishment a good pan about 18 inches across is now bearing quite a sheet of pure white flowers which contrast nicely with the bright lively green of the small leaves. The name under which the plant is generally seen is Lobelia littoralis, but in the *Flora of New Zealand* it is described under the name above given. Pratia differs from Lobelia in having fleshy fruits, and the reddish-purple ones of P. angulata are certainly attractive. In the Southern Alps of New Zealand it ascends to 5000 feet above sea-level, but is abundant in watery places and moist banks generally.

—— The Nursery Trade at the Cape.—We learn that Mr. Richard Johnson, who for some time so well filled the office of Superintendent of the Cape Town Botanic Garden, has resigned his charge, with the intention of establishing a business on his own account at the Metropolitan Nurseries, Rondebosch, Cape Town.

—— The New Park at Wolverhampton.—This large and ornamental park having been some time completed, was opened to the public by the mayor on Monday, the 6th inst. The occasion chosen for the opening being a recognised and universal holiday, a great assemblage was brought together. As this park has been fully treated on in a previous issue, we need only here allude to a few of the most noteworthy features, such as the rock garden, which has been most tastefully arranged, and where some 2100 choice hardy Ferns have been planted, together with upwards of 1000 dwarf alpine and rock plants. This rock garden is situate at the lower side

of the park, in the centre of which a pond has been formed, and in which a variety of aquatics have found a home. On emerging from this rock garden a most picturesque view of the park is obtained, the ground rising gently for some distance, while the town itself is seen to advantage beyond; a large lake is noticeable in this part of the park, some 8 or 10 acres in extent, and spanned at its narrowest point by a bridge. Some dells have been formed near the lake, and make a most pleasing and desirable change. A total of nearly 32,000 trees and shrubs, including herbaceous and rock plants, have been planted, the herbaceous and rock plants together forming an item of between 8000 and 9000: these are looking well, and those which were first planted have become well established.

—— Asimina triloba.—In the Cambridge Botanic Garden is a splendid specimen of this rare and interesting shrub. This season it is flowering profusely, and Mr. Lynch, the curator, notes an interesting fact which is deserving of record. The inner surface of the inner petals below the middle is thickly furnished with warty masses of glandular tissue, the secretion from which is attractive to flies and ants. The flowers are protogynous, that is, the stigmas are ripe before the anthers, and by means of insects cross-fertilisation is no doubt effected. In many of the flowers a small spider constructs a web, and lies in wait for the flies. Its instinct for securing prey in this particular manner appears perfect, as Mr. Lynch notices that the spider takes up a position, in some cases at least, while the flowers are still green, before any secretion is formed to attract insects, so that its movements are anticipatory. The spider can scarcely have made observations and adopted new habits on meeting with an exotic tree, and, therefore, it is probable that it is accustomed to subsist on flies which visit the flowers of native plants. At Kew in one of the stoves is a specimen of Goniothalamus Gardnerii, also belonging to the Anonaceæ, which has flowers of peculiar structure. The inner petals are connate, forming a dome over the stamens and pistils, to which the only approach is by means of three triangular apertures, left by an abrupt sloping away of the three petals on each side near the point of insertion. Here also it would seem likely that insects are attracted by secretion from the inner surface of the petals—curiously in this case within a cavity.

—— The "Orchidophile."—We welcome with cordiality the first number of a new journal published in French, and entirely devoted to the interests of Orchid culture. Count du Buysson, of whose work on the culture of Orchids we have already had occasion to speak in favourable terms, gives his co-operation to the publisher and proprietor, M. Godefroy-Lebeuf, of Argenteuil, near Paris. Each number will contain a notice of newly described species and varieties, announcements of sales, an original article, an exchange list, correspondence, questions and replies, &c. The publication is of large octavo size, and is to be issued monthly if sufficient support be accorded.

—— Acradenia Franklinæ.—This Tasmanian shrub makes an excellent evergreen bush for the cool conservatory. It forms a neat compact bush, and planted out, as at Kew, produces its white flowers in great profusion. The shortly-stalked, thick ternate leaves are fragrant. The species was named in honour of Lady Franklin.

—— Publications Received.—*The English Flower Garden.* By Henry A. Bright (Macmillan & Co.).—*Cloud Hill:* a paper written for the North Staffordshire Naturalists' Field Club and Archæological Society, on the occasion of their excursion to Cloud Hill, near Congleton, on May 20. By W. H. Goss, F.G.S. (Bemrose & Sons).—Dickens' *Dictionary of London* (26, Wellington Street).—*Report of the Metropolitan Board of Works*, 1880.

—— The Weather.—General remarks on the temperature, rainfall, and duration of bright sunshine, for agricultural and sanitary purposes, during the week ending June 6, issued by the Meteorological Office, London:—The weather during the first part of the period was very fine and warm in all places, but towards its close it became dull, cold, and unsettled, with thunderstorms and heavy rain and hail. The temperature was a little above the mean in all but the Irish districts. The maxima were very high over the greater part of England and Scotland, the thermometer rising to 84° at Nottingham and to between 80° and 83° in nearly all districts. At the close of the week the maxima in many parts of the same districts were below 60°. The minima occurred generally on the 6th, when the temperature fell to between 38° and 40° in many parts of the country. The rainfall was less than the mean in "Scotland, E.," but more in all other districts. Bright sunshine shows a decrease in the North and East, but an increase in duration elsewhere, the percentages varying from 69 in "England, S.W.," to 49 in "England, N.E." Depressions observed:—During the first few days the barometer was high and uniform, and the wind light and very variable in direction, but by the 3d pressure had given way considerably in the north, and a westerly breeze had set in over Scotland and Ireland, which subsequently backed to south-west and freshened. On the 5th a large depression, which had advanced from the westward lay off the west coast of Norway, and a shallow subsiding disturbance over England. The former filled up somewhat, but the latter travelled south-eastward, and grew deeper, causing fresh north-westerly or northerly winds all over our islands.

## TRAFALGAR HOUSE.

On the summit of an eminence of considerable altitude, within a few hundred yards of the river Avon, and nearly as many hundred feet above its level, surrounded by trees of the most luxuriant growth and diversity of foliage, stands Trafalgar House, the Wiltshire residence of Earl Nelson. Trafalgar and the illustrious and historic name of its owner are names which illustrate an important chapter in the pages of English history, more especially in that portion of it which relates to our naval engagements and achievements during the later part of the last and the beginning of the present century—achievements which then raised Britannia to the proud position which she still occupies of "ruler of the waves." No wonder, therefore, that a place associated with such illustrious names, and so picturesquely situated, should be an incentive in directing the footsteps of the tourist thither.

Trafalgar House, which is five miles south-east of Salisbury, on the Salisbury and Wimborne line of railway, and two miles north of the disfranchised borough of Downton—which, with the village of Charlton and sundry homesteads in the west, it overlooks—was built by Sir Peter Vandeput in 1733, and was purchased in 1814, under Act of Parliament, for the heirs of the conqueror of Trafalgar, Horatio, first Lord and Viscount Nelson.

The mansion, which is in the Italian style of architecture, consists of a central block and two wings (north and south of the former), designed by Dawkins. A portico by Revett, which is supported by fourteen circular columns, with a balcony and balustrade overhead with square piers surmounted by sixteen urns (one on each pier), was added to the east front in 1766. The mansion is built of red brick and stone, the corners, cornices, and window jambs being built of the latter material and filled in between with the former. The wings are built of red brick only, and have an ornamental balustrade in front of, and a few feet from, those portions of the edifice which connect the mansion with the wings, and which render the connection a graceful one. The lower part of the walls are, for the most part, covered with trained trees of Magnolia grandiflora, which seem none the worse for having been exposed to the severe winter of 1880-81. The entrance-hall, in which are several niches filled with antiquated trophies of battles won by ancestral heroes in different parts of the globe, is a cube of 30 feet, and is profusely decorated with carvings of fruits and flowers; and the ceiling of one of the adjoining rooms was painted by Cipriani. The walls of the principal rooms and passages are hung with valuable paintings and portraits. Amongst the former are several—some life-size, by J. Merton and J. Rigaud—of the great Admiral, together with a marble bust, which indicate the numerous engagements in which the utterer of "England expects that every man this day shall do his duty," took such an important part.

The flower-garden, which is opposite the west front of the mansion, and runs with a rapid descent towards the river Avon, is geometrically laid out, and has an ornamental fountain in its centre, which with its silvery spray playing in the sunshine produces a very pleasing effect when contrasted with the roaring and foaming waters of the cascades a little lower down. From the terrace, which descends to the flower-garden and grounds, as also from the latter, grand and distant views of hill and dale, wood and water, are obtained, which extend on the south and south-west to Ringwood, Wimborne, and other towns of more or less importance in Hants and Dorset. The landscape on the west, and which extends to the north, is a charming one, and embraces several miles of the Avon valley, with its rich water-meadows and beautifully wooded slopes, nestling amongst which are the village of Alderbury and Alderbury House, the residence of G. Fort, Esq. Westward thence, on the banks of the Avon, are Longford Castle, with its towers and minarets, and the spire of Salisbury Cathedral. In the distance is Claybury, an old Roman embankment, which is nicely wooded, and isolated as it is from other clumps, and at a considerable altitude above its surroundings, it forms not only an interesting object from Trafalgar, but also for many miles around.

In the grounds, which are contiguous to the flower-garden, are a few fine clumps and banks of Rhododendrons, &c., and several specimens of Cedrus Libani and C. Deodora, and Spruce Fir (the latter, owing to their great height, were a few years since used as landmarks by the Ordnance surveyor), Cupressus macrocarpa, &c. In the park, which is beautifully undulated and picturesquely wooded, are some fine groups and individual specimens of Oak, Ash, Elm, and Yew, as also Chestnut, Lime, Beech, &c., a few of which I measured at 4 feet from the ground with the following results in growth—viz., Lime, 11 feet; Yew, in and adjoining the churchyard, and having a solid and circular trunk, 11½ feet; close by an Elm 20 feet; and a Chestnut, having a uniformly shaped trunk, with the bark beautifully and regularly netted, 15 feet; and a Hemlock Spruce 7½ feet.

The kitchen gardens, in which are situate the vineries and other glasshouses, which were showing nice crops of Grapes, &c., cover an area of nearly four acres, and are in two divisions, each forming a square, and enclosed by a substantially built brick wall. The soil, which evidently suits its occupants, is a light loam about two spits deep, with a gravelly subsoil, and runs in a sloping direction to the west, and within a few yards of the banks of the river Avon, the waters of which, almost in a perpendicular line, are 20 yards beneath. On the brow of this cliff, which is a kind of slip, is a fine row of Filbert trees, whilst against the walls are planted, and nicely trained, different varieties of fruit trees. These gardens are well stocked with vegetables and fruit trees of the description usually met with in large gardens, and all bearing evidence of skilful management. In one of the houses I noticed a fine batch of well-grown and finely-flowered Calceolarias, Veitch's strain. In the same house I also noticed a novel, but nevertheless a successful, mode of Maréchal Niel Rose culture. It consisted in having a box about 3 feet long, 20 inches deep, and 16 inches wide at the top, and a little narrower at the bottom, made and fitted in the front stage, and resting on pieces of iron driven into the wall and resting crosswise on the hot-water pipes; and in this box, which was properly drained and filled with suitable soil, was growing and flowering freely one plant of the deliciously-scented and very accommodating Maréchal Niel Rose. A single shoot was taken up to the first transverse wire and then trained right and left, and subsequently, as the young shoots pushed forth, in an upward direction. From this plant Mr. Morgan informed me that he had been cutting freely during the spring months. Chrysanthemums frutescens Etoile d'Or, Mr. Morgan speaks very highly of as a furnishing plant, either in a cut or growing state, and for this purpose he is getting up a nice stock. Adjoining the kitchen garden is the frame ground—a necessary adjunct to all gardens—where, in sundry pits and frames, are the numerous bedding plants, including carpeting plants, with which Mr. Morgan, in his own good style and time, will embellish the flower-garden. The plants were at the time of my visit (the middle of May) being hardened off for planting out the following week. Amongst the bedding plants are principally the following good

sorts—viz., Master Christine as a pink, Vesuvius as a scarlet, Mrs. Pollock as a golden tricolor, and Maréchal MacMahon as a golden bronze; White Vesuvius does duty as a white, and Ida as a salmon. In addition to the above, Mr. Morgan grows several hundred plants of that pretty variety Happy Thought, which is spoken of as a free grower and flowerer.

In conclusion, I may be allowed to remark that adjoining the kitchen gardens, and within a dozen yards of the gardener's house, is the family chapel, of the seventeenth century—said to have been founded as early as 1147. In it is the family vault, in which rest the earthly remains of some of the present Earl's ancestors, and on the walls are inscriptions in memory of illustrious friends and ancestral heroes. Adjoining the park is Burford House, purchased by the late Earl Nelson, and formerly the residence of the Earl of Faversham. *Tourist.*

## A SYNOPSIS OF THE KNOWN SPECIES OF CRINUM.—I.

DURING the last few years an interest in the genus Crinum, which has pretty much slumbered for a whole generation, has revived, and a considerable number of new species have been discovered, and some of the old ones that were lost from cultivation, such as C. purpurascens and C. Forbesianum, have been introduced afresh. Most of the novelties that have been imported alive have been figured from time to time in the *Botanical Magazine*; several others, especially from Tropical Africa, which are still known from dried specimens only, have been named and described in the botanical journals. As there is no general account of the genus of later date than 1850, I propose in the present paper to attempt to classify afresh, and briefly describe all the species, so as to sum up what we know about them at the present day, and indicate which of them require further investigation.

A great many species and varieties are figured in the older volumes of the *Botanical Magazine* and *Botanical Register*, but Crinums are such huge plants that it is very difficult to deal with them in octavo or quarto plates. The first draft of Herbert's synopsis, which accompanies the plate of Crinum Broussonetii in the *Botanical Magazine*, tab. 2121, may be usefully consulted. This represents what was known about them in the year 1820. In Herbert's classical work on the Amaryllidaceæ, published in 1837, the species and varieties are reclassified and described. This latter account of Herbert's is adopted with little addition or modification by Roemer in his monograph of the Amaryllidaceæ, and thirteen years later by Kunth, in the fifth volume of his *Enumeratio Plantarum*, which is still the standard handbook for the genus. The only local Flora in which a large number of species are described in considerable detail is Roxburgh's *Flora Indica*, and there are excellent large-sized plates of most of his types (which were originally named without any accompanying description in his *Hortus Bengalensis* of 1814) in his unpublished collection of drawings, of which there is one set at Kew and another at Calcutta. Crinums are troublesome things to dry, so that they are avoided by travelling collectors, and are sparingly represented in herbaria. At best they make but poor herbarium specimens, and as a consequence all descriptions not drawn up from living plants are more or less unsatisfactory.

The genus is so well known and so clearly marked that I need not stop to dwell here on its generic characters. Several of the older authors restricted the name Crinum to the erect-flowering kinds, with narrow spreading perianth-segments, such as C. asiaticum and C. erubescens; and mixed up with Amaryllis those with a funnel-shaped limb with broad connivent segments, such as C. latifolium and C. giganteum. The extremes of the genus, say C. asiaticum and campanulatum, differ from one another widely in the shape of the flower, but they are so closely connected by intermediate stages of transition that there is at the present day a universal agreement amongst botanists as to the characters of the genus and its limits. Horticulturally it differs from the genera that come near to it in botanical characters by its persistent leaves. Crinums are found in the tropical and subtropical zones of all the three continents. The genus, it seems to me, may be best subdivided into three groups as follows, founded on the shape of the flower and the direction of the perianth-segments and stamens. As will be seen by the following outline, each of the three groups is represented in each of the three continents.

Subgenus I. STENASTER (type species, *C. asiaticum*).

Flowers usually quite erect, with the linear segments of the limb spreading or reflexing, not more than ¼—½ inch broad. Filaments suberect, diverging equilaterally on all sides from the ascending style.

| *Represented in* | |
|---|---|
| Tropical Asia by .. .. | *C. asiaticum* and *defixum*. |
| Australia and Polynesia by | *C. pedunculatum*. |
| Tropical Africa by.. .. | *C. bracteatum* and *Tinnéanum*. |
| Tropical America by .. | *C. crucentum* and *caribæum*. |

Subgenus II.—PLATYASTER (type species, *C. americanum*).

Perianth-tube straight or slightly curved, the lanceolate segments of the limb spreading or ascending when fully expanded. Filaments equilaterally divergent from the suberect style.

| *Represented in* | |
|---|---|
| Tropical Asia by .. .. | *C. amœnum* and *pratense*. |
| Australia by .. .. | *C. angustifolium* and *uniflorum*. |
| Tropical Africa by.. .. | *C. augustum* and *purpurascens*. |
| America by.. .. .. | *C. erubescens* and *americanum*. |

Subgenus III. CODONOCRINUM (type species, *C. latifolium*).

Perianth-tube almost more or less curved from youth to age, the limb horizontal or suberect, the oblong segments standing forward so that they are permanently connivent or imbricated in the lower half. Filaments declinate, brought close together so that they are nearly parallel with one another and with the declinate style.

| *Represented in* | |
|---|---|
| Tropical Asia by .. .. | *C. latifolium* and *zeylanicum*. |
| Australia by .. .. | *C. flaccidum*. |
| Tropical Africa by.. .. | *C. Careyanum, giganteum*, and *Broussonetii*. |
| Cape by .. .. .. | *C. lineare, campanulatum*, and *capense*. |
| America by.. .. .. | *C. longiflorum* and *scabrum*. |

*J. G. Baker.*

(*To be continued*)

## HYLANDS PARK.

THE residence of A. Pryor, Esq., Hylands Park, is the largest gardening establishment in the neighbourhood of Chelmsford, and being desirous of seeing the spring bedding in the flower garden our steps were directed thither. After calling upon Mr. Bowman, Mr. Pryor's gardener, &c., whose residence is pleasantly situated, with a good outlook on to the extensive park, and in front of which was a grand display of Myosotis, Wallflowers, Silene, and other spring bedding plants, we entered the flower garden, which was then in all its beauty, a particular softness of colour pervading the whole. The flower garden is beautifully sheltered on all sides by vigorous-growing evergreen and deciduous shrubs. To give an idea of the extent of the garden and bedding, Mr. Bowman informed us that about 1000 Belvoir Castle and Tom Thumb Wallflower were planted out, also about 2000 Myosotis dissitiflora, Daisies in great number, of various colours, white and red predominating, a very fine variety of Aubrietia purpurea, in great numbers, large beds of yellow Violas and Cliveden purple Pansies, splendid masses of that lovely spring flower, Silene pendula compacta. A newly made herbaceous border was also a great feature, in which were many nice things, the front of the border having a belting of Silene, &c. The plant-houses, which stand in almost the centre of the flower garden, consist of an ornamental conservatory, stove and greenhouses—these are used as show-houses, and contained some good and well-grown plants, which are grown in other houses adjacent in this large establishment.

Correspondents have lately been inquiring how to grow and flower the Bougainvillea: here it may be seen in perfection. Plants in pots are trained up to the roof, then allowed to grow at will, having enormous branches covered with most lovely blooms, some of the young growths having branches all 2 feet long covered with bloom. This is a far superior method of growing it than tying-in to a formal trellis. For decorative purposes nothing could exceed its adaptability; we counted over 200 trusses of its lovely bracts on one plant. Lapageria alba was also growing luxuriantly, and blooming freely. Gloxinias, Calceolarias, Pelargoniums and other decorative plants in great variety embellished their various compartments, and altogether were very effective—an air of neatness and order pervading the whole. We walked across the park, which is extensive and well wooded, to the kitchen and fruit garden, the extent of which is about 8 acres; the glass here consists of sixteen houses devoted to fruit growing. The vineries, which are four in number, have all been replanted, the roots being outside; in some of them the old Vines have been retained, having been lifted, all the old soil, which had become close and adhesive, having been removed, and good sound loam with mortar rubbish substituted. The Vines were in the most robust health, with abundance of fine healthy foliage and magnificent bunches; two smaller vineries filled with pot Vines plunged, with ripe Grapes, were remarkably good. A house for French Beans contained also Osborn's Prolific Fig in pots; this was bearing profusely, and the fruit was so fine that the branches had to be supported by stakes to hold up the weight of fruit. Of three Peach-houses, one was planted last year, and in the others the trees had done so well that they had covered the whole trellis. Mr. Bowman is a great advocate for extension both in Grape and Peach growing, and the success attending his practice is borne out by results. There are two Pine-houses and two Melon-houses, in one of which the fruit was ripe and in great numbers. There are also two houses for Strawberries, the fruit of which was fine and plentiful, President being the principal variety grown. The wall trees have nearly all been replanted, and are rapidly covering the walls; they were promising good crops of fruit.

The kitchen garden has also been replanted with young trees of all kinds, principally pyramidal Pears, which are doing well. The vegetable crops had suffered much from the severity of the winter. Seakale is grown extensively; the plants are grown on one of the best quarters, and removed when required for forcing.

After leaving the kitchen garden Mr. Bowman led us across the park to where he had planted an Apple orchard, at a rough calculation 4 or 5 acres in extent, with all the leading kinds. The ground had been well drained and prepared, the trees planted 45 feet apart each way, all of them carefully staked and protected from cattle and rabbits. The situation of the orchard is on an elevated portion of the estate, but sheltered by large trees from the west and south-west winds. The sorts planted are those most suitable to the neighbourhood, which, as a rule, is favourable for the cultivation of the Apple. If each proprietor of an estate were to plant an orchard it would eventually be a source of wealth, with little trouble attend-in it. *Essex.*

## WEEDS.

ALONG the roadsides and up the hills;
Peering demurely into the rills;
Lifting their faces up to the sky;
Throwing their kisses to each passer-by;
Trailing their gowns all over the grasses;
Waving their hands to a bird as it passes;
Calling the butterflies—laughing and gay,
Ragged and rollicking all the long day.

How the winds love them! How the bees linger!
How the birds woo them, each happy young singer!
How the sun kisses them, eager and warm!
How the grass shelters them safely from harm!
Who is so jolly, who is so free,
Of all the bright blossoms that grow on the lea?
Purple and azure, golden and red—
Some with big bonnets, and some with bare head;

Some with gold stars on their foreheads so sweet—
Some with green mantles straight down to their feet;
Some like a drift of May snow, pure and white—
Some that are dark as the middle o' night;
Some with shy eyes that are hidden 'neath lashes—
Some with the largest and gayest of sashes;
Some with lips sober and some with arch smiles—
All with the bonniest, gladdest of wiles.

Amber and rosy, snowy and blue—
Some that are false, but more that are true;
Yellow and crimson, sapphire and pink—
All are as fresh as the dews that they drink.
Along the roadsides, and by the brooks,
Hiding away in enchanted nooks;
Down in the meadows, always aglow—
Dearest of all the things that grow.

*Fanny Driscoll, in "Boston Commonwealth.*

# Home Correspondence.

**Fruit Prospects.**—With the advent of the present month I think we may fairly consider all danger past with regard to our fruit crops, which, generally speaking, bid fair to be above the average, most certainly so in this immediate neighbourhood. Apples, the first and foremost for general usefulness, are by no means behindhand in this respect; never do I remember the crop looking more promising, being comparatively free from blight or maggot, and with the glorious rains of the past day or two these favourable prospects have been fully maintained. Pears are not quite so promising, especially some sorts; while others are a fair crop. With the exception of the Morello Cherries are not much grown hereabouts; these are carrying an abundant crop. Apricots are thin in places, but upon the whole there is a fair average crop. Plums appear rather under the average, while Peaches and Nectarines are most abundant. Not within the past five or six years have those upon the open wall presented such a healthy and fruitful appearance; the branch I send is a fair representation of what the trees were here previous to thinning. Bush fruit of all kinds is likewise most abundant in spite of several threatening frosts during last month. Upon the whole I think the year 1881 will prove far above the average *E. Morgan, The Butts, Harrow-on-the-Hill, June* 7.

**Aralia papyrifera.**—We have a plant of this Aralia, about 12 feet high by 10 feet through, which annually throws up a grand head of flowers, but this year one of the strong shoots sent up what seemed to be a head of flowers, but which kept green, and on closer examination we found that instead of flowers it was all miniature leaves. I took the trouble to count them, and found no less than 514 perfect little leaves; is not this rather a strange freak of Nature? To-day we cut all the withered flowers off, but still the cluster of leaves keeps perfect. *Morgan.* [The production of leaf-buds in this plant in place of flower-buds has not, so far as we know, been observed before. Eds.]

**Bougainvillea speciosa.**—Many thanks to Mr. Summers for his statement as to the flowering of the above when planted out; his remarks, however, are not strictly to the point, still "half a loaf is better than no bread." It may be that I did not write with that amount of precision that I ought to have done, and yet I think, if he will kindly refer back to p. 669, he will there find that particulars as to treatment are invited from those who have succeeded in flowering it in pots. Its flowering under such conditions as it is now doing at Sandbeck I am well acquainted with, but to see it in flower even when planted out is not so common an occurrence as Mr. Summers would have your readers to think. *J. Horsefield, Heytesbury.*

**Ficus minima.**—It may be interesting to your readers to know that Ficus minima has proved quite hardy with me here during the past winter. I had it planted out (a small plant) in the autumn, and I find, although killed to the ground, it is now again showing signs of life. It is planted in an exposed situation, and did not receive the least protection in any way. I have also had a red Camellia planted out five seasons which now has commenced growing vigorously. The flower-buds this year have fallen; last spring many of them expanded. *Albert E. Ratcliff, Calthorpe Road, Edgbaston.*

**The Large Fires at Woolmer Forest,** alluded to in the *Gardeners' Chronicle* last week, proved very destructive to animal life. Hundreds of hares, rabbits, game of various kinds, and numberless little song birds perished in the flames. I was fortunately too far distant to hear the cries uttered by the hares and rabbits as the fire encircled them, but I saw the flames near Warren's Hill and Lea's Enclosure very plainly, as they played round the tall Pine trees, destroying every vestige of vegetation in their rapid course. Several foxes were found dead, having been suffocated by the smoke, and it is supposed that a great many young cubs were destroyed; but Reynard fared better than his usual victims, for a great many foxes emigrated to the neighbourhood of Hadley Wood, where they committed great havoc in different poultry yards in the nights following the fires. *H. E. W.*

**Veitch's Dwarf Late Curled Borecole.**—Too much cannot be said in praise of this valuable variety, as it undoubtedly is one of the few certain spring vegetables we have. This has been fully demonstrated here, as the late severe winter destroyed nine-tenths of the Broccoli, and those that have survived are little worth. Autumn Cabbage stumps, Brussels Sprouts, and tall Borecoles, which in ordinary winters afford a very important supply of spring vegetables, have been almost totally destroyed, whereas Veitch's Dwarf Late Curled Broccoli and Buda Kale have been giving us a good supply of sprouts, and they are the only kinds of vegetables we shall have until spring Cabbages are ready, which will be unusually late this year. *Rd. Westcott, Raby Castle Gardens.*

**Ixiolirion tataricum.**—This plant is now in full bloom and great beauty here in the open border, where it has stood all the winter without any protection. I am indebted to the kindness of Dr. Regel for the bulbs. *H. Harpur-Crewe, Drayton-Beauchamb Rectory, Tring, June* 4.

**Model Broccoli.**—I can confirm Mr. Horsefield's statement respecting the hardiness of this Broccoli. Here in a very exposed situation, on stiff, heavy soil inclining to clay, it is the only one of the following kinds from which we have been enabled to cut a single head:—Walcheren, Adam's Early, Snow's Superb Winter White, Cooling's Matchless, Cattel's Eclipse, Saunders', Goshen Late White, and Dalmeny May. Out of the 100 plants of Model we had seventy-two fair heads, and cut the last of them to-day. *J. Jaques, Davenham Bank Gardens, Great Malvern, June* 1.

**Gooseberry Caterpillars.**—Any of your readers who may be troubled with this pest can clear their trees in a short time by syringing with the following mixture:—Procure 5 lb. of quassia chips and a 3*s.* box of Gishurst Compound, put them in a tub and add enough boiling water to cover the chips, which should be tied in a bag and weighted to keep them under water. Let this stand one night, then fill up to the amount of 20 gals. This will effectually clear every bush syringed in two hours' time, and the fruit will be quite fit for use in a day or two after the operation. *W. B. B.*

**Lombardy Poplar: Populus fastigiata, P. dilatata.**—I would call attention to the effect of the last winter on this tree, stated by Loudon to have been introduced from Italy into Britain about 1758, and flowering in March and April. In this latitude (about 52½° N., the same as Yarmouth and Aberystwith), and at this place very few indeed of these trees have yet put forth any leaves whatever, more than nine-tenths at this moment (June 1) having a hopelessly dead appearance. I observe that Loudon notes its having attained a height of 70 feet at Braham Castle, in Ross-shire, and Messrs. Reid, of Aberdeen, include the species in their catalogue of forest trees. Platanus occidentalis, introduced before 1636, survived for a longer period before it yielded to the unseasonable frost of May, 1809. Can your correspondents give us data for fixing the southern boundary of the mortality of this Poplar in 1880-81? *Diss.* [About London it is not much if at all hurt. Eds.]

**The Effect of the Severe Frosts on Shrubs, &c.**—A sight of the kind more deplorable can scarcely be conceived than that afforded by many of the shrubberies in this locality at the present time. The past severe winter has so plainly left its mark, that it will be long before its effects will be wholly effaced. Some of the shrubs were killed outright; especially is this the case with Laurustinus and Berberis Darwinii; while some others were partially or totally defoliated, and now present an appearance pitiable to look upon. Even the common and Portugal Laurels, and that in sheltered situations, are almost destitute of foliage; but it is at least gratifying, after anxiously and rather impatiently waiting and watching, to see how they would behave at the commencement of the growing season, to find that with few exceptions they are apparently breaking freely into healthy growths. Not only are the buds on the young shoots moving, but the old stems which have been bare for years, now that the light and sun can play about them with but little obstruction, owing to their branches being almost leafless, are also pushing shoots from every side, which will quickly impart to the shrubberies a more life-like and pleasing spectacle than they now possess. If we had acted upon advice given in the early part of the spring, many of our specimens would have been cut down to the ground, thus causing blanks and nakedness in parts of the pleasure-grounds, where they are most needed for shelter and good effect. Some standard Portugal Laurels in an exposed situation are affected in a manner quite different to anything I have previously experienced. The stems, which are about 4 feet in height, are split in some cases their entire length. Of course these are dead, as are also specimens of Ceanothus Veitchianus situated on a wall facing the west: these were also split in a similar way to the Portugal Laurels; Escallonia macrantha, also placed on a west wall, is likewise dead. Why is it that the frost has so much more influence on some individual plants than on others of the same variety when placed under similar conditions in every way? That it has is well known, and is seen frequently. We have an instance of this in two Brown Turkey Figs, which grew side by side on a south wall, and under identical conditions; they were both protected with mats during the winter, yet one is killed, while the other, beyond losing a few young shoots, is but little injured, and is showing fruit plentifully. I am sorry to find that with us that excellent new Strawberry, Loxford Hall Seedling, is more tender in constitution than some other kinds; it is the only variety out of a good number that has suffered here from the severe weather, and both old and young plants are alike injured, yet not to such an extent as to cause us to discontinue growing it. The past winter was exceptionally trying, and Loxford Hall is far too valuable a late Strawberry to be discarded because it did not pass through such a trying ordeal unscathed. It would interest me to know how it has fared in other places under more favourable conditions; our soil is tenacious and cold, and the situation is low. *Thos. Coomber, Hendre Gardens, Monmouth.*

**Rose of Castile Fuchsia.**—What lovely plants are the free flowering varieties of Fuchsias, such as Rose of Castile and Madame Cornellisen, for covering the walls of conservatories, greenhouses, and other structures that would present a hideous interior but for the embellishment of creeping plants! The plant under notice is a very old variety, but its freeness of growth and profuse flowering habit are still unsurpassed by any other existing variety. Planted out they flourish amazingly, but they also do very well in boxes, and with the assistance of an annual surface-dressing and liberal supplies of liquid manure, will continue in robust health for years. *Cultivator.*

**School Gardening.**—I trust to your sense of fairness to allow me to reply to some of your criticisms on my pamphlet, '*The School Garden.* The tenor and drift of the article altogether pooh-pooh's the scheme advocated. I did not expect this. Looking to the Editor of the *Gardeners' Chronicle* for bread he pelts me with stones. Now there is an old adage (especially applicable to the case which I need not quote; but it seems from the remark, that "it will probably raise a smile," that the somewhat elaborate castigation was well intended, and I prefer to be taught by one who evidently has thought over the matter than to submit to the faint praise which blesses not. The pamphlet was written, not with the intention of teaching farmers farming, or gardeners gardening, but for the purpose of showing that a portion of the valuable time spent in elementary schools on such subjects as grammar and history, drawing, electricity, or whatever subject the taste or whim of the teacher may lead him to take up, might be more profitably employed in showing the future farm labourer that his work demands the exercise of intelligence and skill, and that the application of these qualities would certainly make his services more valuable. The very fact, admitted on all hands that the most intelligent lads from the rural schools invariably look towards or to other employments for more profitable occupation, shows that there is about the farm labourer's training and circumstances something radically wrong; and that the result of this does tell upon the prosperity of the farmer no reasonable man can doubt. Hundreds of the most sensible and intelligent labourers are leaving our shores weekly, some because they can see a much better opportunity of earning their living in the colonies or United States, and others because of the sheer incapacity of the farmer to employ them at a fair wage. But I am diverging from the point at issue. Is the school garden worth thinking about—worth trying? Some time, perhaps before this century has closed, the vast, overgrown centres of manufacturing industry will begin to feel the pressure of foreign competition, and an anxious Legislature will awake to the consciousness that there are millions of acres of land absolutely barren, and that even the land under cultivation might be brought to yield twice as much as it does at present, through more sensible and thorough cultivation. Pardon me for the reference to raising a smile. Immediately before this remark you have mentioned the extent of the plots of ground to be attached to the school garden as from 5 to 8 poles, and then you say "that it is seriously proposed to teach elementary agriculture and gardening on a plot of 1 or 2 rods in extent." What is contended is, that something of the nature of soils and their improvement, and something of the growth and development of plant life, might be taught by means of properly graduated lessons from school-books, assisted by actual application of principles in the school garden. About "practical farming" I said nothing, because I know nothing, but any reasonable man would know if a series of lessons similar to the rough draft in the pamplet would be useful not only to the would-be farm labourer, but to all the boys from Standard III. upwards in rural schools. You say—"There would be good reason to fear that gardening on such a scale would be mere play or pastime." That would depend entirely upon the teacher. I cannot see why this particular part of the school work need degenerate into "play or

pastime" more than the ordinary lessons. Your suggestion about taking the boys round some good farm or garden is a valuable one; but a boy would take surely a far greater interest in the matter if he were taught to be responsible for the management of a plot of ground of which he alone should reap the advantage. The subject is so interesting, and, as I think, important, that much more might be said of it. I will not further occupy your valuable space, however, than to remark that it is no more possible to teach agriculture and horticulture theoretically from reading books than any other industry. As for the so-called three R's, and the intellectual knowledge so essential to their future welfare, both the acquisition of these and their practical application would be very considerably assisted by well-managed school gardens. Surely, land is cheap enough at this time to allow of an opportunity for the experiment. *The Author of "The School Garden."* [Our correspondent has misunderstood us. We agree with him in principle entirely. It was to certain details only that we raised objection. EDS.]

**Mimulus primuloides.**—While lacking the vivid colour and gorgeous markings of other members of the genus, this modest little species deserves notice on account of its delicate grace and curious life history. It grows well in pans of sandy loam, and if the surface be covered loosely with sphagnum moss I find the stolons run through it in all directions. The flowers are pale yellow, poised most gracefully on slender lilac stems. So slender and hair-like are these latter, that in some lights one could almost imagine the flowers were floating in the air unsupported by stalk of any kind. The winter, or resting-stage of the plant's existence is the most curious. As the plant "dies down" in autumn little bulbils are produced at the apex of each stem. These eventually become detached from the plant, and are of a green colour. They are light enough to float in water, and so may possibly be distributed by that medium in its native haunts. These bulbils remind one of the stems of Crassula lycopodioides, their scales being arranged in a similar four-ranked manner. Our sketch (fig. 138) shows the plant in both its flowering and resting stages. The plants now flowering in our collection were kindly sent by Mr. T. Smith, of Newry. *F. W. B.*

FIG. 138.—MIMULUS PRIMULOIDES.

**Fremontia californica.**—This beautiful Californian tree is now in full flower upon a south wall, and a more striking object it would be difficult to find. The flowers are produced upon the wood of last year as upon the Peach, and like the latter it can be spurred when trained against a wall, so that the plant is quite accommodating in regard to any system of pruning or training. The individual flowers are freely produced upon shoots from 18 inches to 2 feet in length, and in clusters upon spurs, which are very effective, many of the flowers being nearly as large as a crown piece. In situations where the plant succeeds as it does here, it deserves a place of distinction amongst wall creepers. *W. Hinds, Dorset.* [At Kew we believe the plant was killed last winter. EDS.]

**Begonia discolor-Rex.**—Amateur gardeners, to whom the race is not known unless by report, will perhaps be thankful to have their attention directed to a group of Begonias recently obtained by crossing the old B. discolor with showy varieties of B. Rex, and thence called Begonia discolor-Rex. The two species, though both of Asiatic origin, are so different in habit and growth as to promise little hope of getting hybrids from them. But experiment is the only test of possibility, and in this case it has succeeded admirably. The varieties of the new race display combined the best qualities of both the parents. As pot plants, they are both showy and graceful, apparently contenting themselves with much the same culture as B. weltoniensis. I have not yet tried any of them in the open ground, but when they are recommended for that purpose in summer in half-shady spots by such establishments as those of MM. van Houtte and Ed. Pynaert van Geert, no doubt need be felt that they deserve adoption. Indeed, the latter gentleman states in his catalogue (1880-81), "It was not until after we had confided them to the open ground that we appreciated the real merit of these plants." Four remarkable varieties (without deprecating others) are Mademoiselle Marguerite Svahn, Madame Svahn, President H. Balaresque, and Lucienne Bruant. Now is an excellent time to procure young plants. Finally, they are not expensive. *E. S. Dixon.*

**Cabbages, Broccoli: Crowbar Planting.**—Mr. Fish's letter (p. 701) brings to my mind the recollection of some trials made with the Brassica tribe in the light gravelly soil of Hillingdon, Uxbridge, and how I succeeded, not in saving them from frost, but from what I consider much worse—club-rooting. It was impossible to grow any one of the Brassica tribe except autumn Cabbages, and I found that planting in very hard ground with a crowbar was a complete cure for club-root. I recollect planting one row in a path that had been trodden down very hard, and that row far exceeded the others in luxuriance, proving (in light soils) that it does not add to its hardiness. This was twenty-two years ago. By far the hardiest Broccoli in those days, to my knowledge, was one called Miller's Dwarf. I have known that stand the winter when all the rest were killed. I am living now in a district where Broccoli are extensively grown for market. The growers have only two sorts, a late and very late, and both sorts produce yellow and white blossoms. On looking round the fields after a severe winter when they are in blossom, it may be seen the yellow ones have stood the ordeal best. *E. B.*

**Insects on Fruit Trees.**—To extirpate these in the way that used to be practised is a most tedious operation, as the old orthodox mixtures of soot, lime, soft-soap, tobacco-water, &c., had to be put on with a brush, daubing the trees and often the walls to such an extent as to render both unsightly till covered with leaves, but now, thanks to paraffin, fir-tree oil, nicotine soap, Gishurst, Fowler's, and other patent compounds, this painting and disfigurement, with its attendant labour, are quite unnecessary, as by diluting them to a certain regulated strength they may be syringed or put on in the form of spray, and the bark and insects covered quicker and far better than could be done in the way already adverted to. The most troublesome pests to deal with are scale, of which there are several kinds, the most difficult of these to kill being the white, the appearance of which is something like a speck of limewash, and although without means of locomotion it is surprising how soon it spreads itself over the branches of a tree; and the same with the Pear scale, which is a minute kidney-shaped insect having a hard brown skin. To make either of these kinds of scale leave their hold requires strong measures, which are best taken in the winter, as then any insecticide that is used may be applied stronger than would be safe at any other period of the year. An insect even more difficult to destroy than scale is the louse that affects Apple trees and causes knotty excrescences to form on the bark. This blight spreads at a rapid rate, and if not dealt with soon injures the health of the trees on which it has effected a lodgment. Various remedies have been recommended, but I have found none more efficacious than paraffin oil, put into the crevices where the insects are with a brush, as then it at once saturates them and appears to dissolve them. Another way is to make a thick liquid with clay, paraffin and water, and dab the mixture over the injured parts, and so stifle the lice in their beds and stop others occupying the same positions again. The worst pest, however, that gardeners have to contend with during the season just opening is the aphis, the black form of which is very tenacious of life. These chiefly affect Cherries, but may sometimes be found on Peaches and Nectarines, and if trees are to be saved from being crippled, these flies must be allowed no quarter, but battled with as soon as they put in an appearance. The most economical way of dealing with them when on the young shoots of Cherries, is to steep some tobacco in water, using about half a pound to the gallon, and after straining the liquid, the ends of the shoots can then be dipped in by simply bending them down, and a tree may thus be cleansed at a rapid and very cheap rate, as there is but little loss of the juice. Before using it, however, the trees should be gone over, and have all superfluous growth removed, and that on the spurs stopped back, which, by taking away the tender tops, will get rid of many of the insects, as they do not attack the older and more fully developed leaves. Nicotine soap is also fatal to black-fly, as it contains the active properties of tobacco, and does not hurt the delicate tissues of the foliage, which, when applied at such an early stage, most of the other insecticides do. Tobacco-powder, puffed on by means of a distributor sold for the purpose, may likewise be used with great success against these troublesome aphis, as well as greenfly, which latter it renders most uncomfortable at once, and sets them struggling from the intoxicating and paralysing effect it has on them. For Peaches and Nectarines at the time of the fruit setting and till the skin gets somewhat hardened, nothing is better, as to apply liquid insecticides so early is unsafe, and after disbudding it often happens that only a few shoots are infested, and a puff of the dust on them prevents further spread. Later on, when the weather gets warm, the garden engine is the best insect eradicator, as by well directed streams of water they may be washed off by its powerful force, and trees by its aid kept in most luxuriant health. In cases where aphis may have got a hold previously, it is a good plan to apply a syringing of tobacco liquid, or some of the insecticides first, and after being on a few hours, to follow up with the water, which will dislodge all stragglers, and then the work of keeping clean for the rest of the summer will be easy enough. In many gardens where there are old walls, red-spider gives much trouble, and to cope with this pest at starting sulphur is the best remedy; and if this is mixed up as a paste, and then put into water and kept stirred, it may be syringed on and driven into any nail-holes, mortar-joints, or other crevices in which the red-spider lurks. By adding a half-pint of paraffin to every 8 gallons of sulphur and water, the mixture will stick better and be far more effectual. What brings red-spider perhaps more than anything else is allowing the trees to become dry at the roots, to prevent which it is always advisable to give them a mulching of half-

rotten manure early in the spring of the year, and allow the same to remain on the whole of the summer, as it not only intercepts the evaporation of the moisture from the soil, but keeps it cool, and encourages the formation of fibres nearer the surface. Before putting on the mulching the ground should be just pricked over with a fork, so as to let in rain or sewage freely, the latter being a great help to all trees when swelling their crop. The only insect that affects Apricots is a maggot, which curls the young foliage, but may easily be got rid of by giving the part a squeeze between the thumb and finger, which pressure smashes it up in its bed. *J. Sheppard.*

## Reports of Societies.

Royal Horticultural: Great Summer Show. *June 4 to 7.*

The principal distinguishing feature of this exhibition consisted in the large and varied collection of miscellaneous exhibits in the way of horticultural buildings and appliances, tools, and the like. These filled the corridors and extended across the whole breadth of the garden, in a line parallel to the tents, and are noticed in another column (p. 753). The plants were shown in a long marquee, which gave access to the large tent, in which the principal groups of plants were massed. On the whole, the exhibition can scarcely be said to have been up to the average of similar displays on corresponding occasions. There was an absence alike of any very striking feature and of interest in detail; some of the classes were comparatively poorly represented. The pot Roses were weak by comparison with what we have been accustomed to for the last few years, and Mr. Turner did not put in an appearance at all. The display of Orchids, of herbaceous plants, and of miscellaneous plants was relatively small. Vegetables were shown in excellent quality but in small quantities, and the same remark applies to fruit. The most conspicuous feature of the exhibition consisted of the Azaleas, which furnished a blaze of colour, but which in form are too stiffly trained to be agreeable to the eye, however convenient for purposes of carriage and safety in transit. The large greenhouse plants showed in some instances too obvious traces of recent dissipation! but the smaller specimens were fresher and more effective. In groups for effect the General Horticultural Company (John Wills), Limited, staged (not for competition) one of Mr. Wills' usual groups, consisting of noble Palms and Tree Ferns in the background, with an undulating foreground of Adiantums and Selaginella, carpeted with bright-leaved Caladiums, scarlet Anthuriums, Odontoglossum vexillarium, &c. The general effect was rich and beautiful, though the introduction of flowering Orchids with pendulous or semi-pendulous spikes on the ground is an incongruity not justified on the score of necessity, for the Caladiums and other plants with coloured leaves might appropriately be used to furnish the requisite colour. A Gold Medal was awarded, Messrs. Cutbush & Son's group in the north-east corner consisted of small plants arranged on an undulating surface of green, margined by a flowing line of small flowering Azaleas, and broken up by irruptions of greenery and flowers, suggestive of miniature volcanos. Some nobly grown small plants of Erica Cavendishiana attracted attention in this group, the chief fault of which was that the art was not sufficiently concealed. The other groups call for no special notice here, beyond the remark that most of them were, as usual, too crowded. Half the number of plants would generally suffice, and prevent that worrying sense which a mass of detail not broken up and varied by isolated plants or masses of bold outline and elegant form gives. The last point we shall mention in these general remarks before entering upon the details is the novelty and interest attaching to the group of hardy Cacti collected at considerable elevations in the Rocky Mountains by the exhibitor himself (E. G. Loder, Esq.). They consisted of various species of Opuntia, such as O. arborescens, O. comanchica, O. missouriensis, O. Whipplei, and numerous varieties of these species, as well as many Echinocacti; among the latter were E. Fendleri, E. gonacanthus, E. phœniceus, E. paucispinus, E. viridiflorus, E. Simpsoni, and E. vivipara. The plants were not large but they were in excellent condition, and several of them were in flower: the orange flowers of Echinocactus gonacanthus, and the rosy-pink flowers of E. Fendleri were especially conspicuous. This group was perhaps not one which the general flower-show visitor would appreciate, but to the plant-lover and connoisseur it formed the most interesting feature of the show. We regret that, owing again to the unfortunate state of the weather on what should have been the best paying days, the show has not been so successful financially as the well meant efforts of the Society deserved. On Friday and Saturday the weather was all that could be desired; and yet the number of persons admitted, exclusive of Fellows, was ridiculously small, only 2898, the number being 1288 on Friday and 1610 on Saturday. On Monday and Tuesday, the rain, which spoilt so many other out-door attractions, had the same depressing effect here, the admittances being only 3632 on Monday, and 2200 on Tuesday. Notwithstanding the cold and damp, exhibitors of plants had little cause of complaint when they came to pack up, so fresh and bright had the greater part of them remained—and cially the Orchids, which might have been expected to be the first to suffer.

Leaving generalities for details, let us note what was to be seen in the large tent. Entering at the east end and taking the outside path, we came on the right-hand side to a large group of young, thrifty, and well flowered half specimens of various hard-wooded greenhouse plants, in which the Heaths were notably good. These came from the Messrs. Cutbush & Son, who also had alongside an artistically arranged group, by no means ineffective; but, as before observed, with the art too little concealed. Shortly succeeding this group came a fine collection of twelve stove and greenhouse plants, staged by Mr. Tudgey, gr. to J. F. G. Williams, Esq., Henwick Grange, which took the 2d prize in their class, and which included his grand specimen of Anthurium Scherzerianum, and a noble plant of Phormium tenax variegatum with three spikes of flowers. A small group of fine-foliaged plants served to divide the large specimen plants from the 2d prize collection of eight Heaths, which also came from Mr. Tudgey, a neat lot of plants of medium size. Messrs. Jackson's 1st prize group followed on—capital fresh specimens—which were succeeded in turn by a set of eight well-bloomed bushes of Azaleas, and notably so of such varieties as Souvenir de Prince Albert, Roi d'Hollande, and Duc de Nassau, from the same firm, and which were 1st in their class. The brilliancy of the Azaleas was toned down by a neighbouring group of six Ferns, shown by Mr. Child, gr. to Mrs. Torr, Garbrand Hall, Ewell, and which well deserved a higher award than a 2d prize, so thoroughly good was every specimen. Very much admired indeed was his splendidly furnished plant of Phlebodium aureum, a specimen about 4 feet through, and other notable examples of Microlepi shirta cristata and Adiantum Farleyense. Succeeding the Ferns came a group of 100 miscellaneous plants, arranged for effect, and which, though of only second-rate quality, were displayed with excellent artistic effect by the exhibitors, Messrs. John Peed & Sons, Roupell Park.

The central mound at the western end was, as before observed, in the possession of the General Horticultural Company, and grandly as Mr. Wills has clothed this coign of vantage before, he never better earned the Gold Medal awarded than on this occasion, and it said much for the resources of the Company that so many handsome specimen plants could be spared for exhibition at this busy season. In the corner of the tent near by was Mr. Aldous' 1st prize group of 100 flowering and fine-foliaged plants, capital in quality, but flat and tamely arranged. Three large Gleichenias, backed up by a similar number of Tree Ferns, and all shown by Mr. Rann, gr. to J. Warren, Esq., Handcross Park, who took a 1st prize, came next in order; and then a well-flowered set of fifteen young Azaleas from Mr. Turner, of Slough. The next group of any importance was one of fifteen pyramidal and bush-trained Hollies from Messrs. Cutbush & Son, which took the 1st prize in their class; and again came a prominent group of stove and greenhouse flowering plants, the 1st prize group of twelve staged by Messrs. Jackson & Son, and which included well-flowered, fresh specimens of two or three sorts of Heaths, Darwinia tulipifera and fuchsioides, Azalea Grand Crimson, and Dracophyllum gracile. The corner position at this end was occupied by Messrs. John Laing & Co.'s 2d prize collection of 100 plants, which was strongest in its fine-foliaged subjects. A mixed assortment of small plants from Messrs. Jackson & Son filled the remaining space on that side.

Facing the centre of the tent, on the irregularly triangular shaped mound at the eastern end, the pride of place was maintained by Messrs. Paul & Son, of Cheshunt, with a group of twenty large and small specimen Roses, most conspicuous above all the others being a magnificent bush of Céline Forestier, about 7 feet through, and grandly flowered. On the right of the Roses was a group of small but well-grown Ferns, followed by a splendid group of eight fine-foliaged plants, Palms and Crotons, of noble proportions and undeniable quality, which were 1st in their class, and shown by Mr. Rann. On the left hand was a corresponding group of Ferns, contributed by Mr. Douglas, gr. to F. Whitburn, Esq., which in turn were flanked by Mr. Tudgey's 3d prize group of fine-foliaged plants.

The raised banks to the right and left of the centre contained, amongst other things, a very good collection of 100 small miscellaneous plants, 1st in Class 15, and shown by Messrs. B. Peed & Sons; a very attractive group of fifteen young Azaleas, 1st in their class, from Messrs. Jackson & Son; five exceedingly well-grown specimens of the Maidenhair Fern, shown by Mr. Hawkins, florist, Bishop's Road, W.; the 2d prize group of eight stove and greenhouse plants staged by Mr. Tudgey, which included three good Heaths; and the 1st prize group in the same class, shown by Mr. Child—a fresh, well-flowered lot of good-sized plants, most conspicuous amongst which were examples of Bougainvillea glabra, Statice profusa, and Erica depressa and Cavendishiana. Opposite to these were some good specimen stove and greenhouse plants from Messrs. John Peed & Sons and Messrs. B. Peed & Sons, the latter being 1st in the nurserymen's class for eight. A capital collection of thirty hardy herbaceous plants from Mr. Douglas secured the 2d prize. On the other two banks was a showy display of Azaleas, made up of fine groups from Mr. Child, 1st for eight; and Mr. Ratty, gr. to R. Thornton, Esq., 3d for fifteen plants. These were backed upon either side by fine-foliaged plants, the finest of which were included in the 2d prize group of eight shown by Mr. Penfold, gr. to the Rev. Canon Brydges, of Beddington, a very superior lot of plants; and last, but not least, were remarkably well flowered Rhododendrons from Messrs. H. Lane & Son, and Messrs. Paul & Son, Cheshunt.

In the long marquee leading from the Council-chamber to the large tent were the new plants shown for the Society's prizes, and also those offered by Mr. William Bull; the fruits and vegetables, the Orchids, and many other groups of an admirable character. In the nurserymen's class for six Orchids, Mr. B. S. Williams won easily from Mr. H. James and Messrs. Jackson & Son, with a well grown and evenly balanced set of specimens, including Cattleya Mossiæ, Cypripedium barbatum superbum, Lælia purpurata, Dendrobium suavissimum, and Epidendrum vitellinum majus, &c. For fifteen Orchids Mr. H. James was awarded the 1st prize for good masses, bedded out; Mr. J. Douglas, whose plants were not made up for the occasion, being placed 2d. For ten, Mr. Child, gr. to Mrs. Torr, came in 1st, showing, amongst others, the fine Vanda and Acrides which he had at the Crystal Palace; Mr. C. J. Salter, gr. to J. Southgate, Esq., Streatham, was a good 2d; and Mr. James Douglas 3d. The display of Pansies was poor, both in numbers and quality, as may be imagined when we state that the Aberdeen growers, Messrs. James Cocker & Sons, with all the difference in climate against them, came in 1st. Messrs. Kelway & Sons, Langport, contributed a remarkably fine lot of cut blooms of single and double Pyrethrums; and Mr. T. S. Ware had a smaller lot, but of equally good quality. Messrs. Barr & Sugden made a great display with cut flowers of Pyrethrums, Pæonies, Iris, Ixias, &c.; and a very good collection of a similar character from Messrs. Hooper & Co. secured a 1st prize. Mr. R. T. Veitch sent from Exeter a superb lot of blooms of the old Devoniensis Rose; and Messrs. Osborn & Sons, Fulham, contributed a well assorted collection of alpine and herbaceous plants. Mr Boller had a nice lot of young or rather small succulents, but these were beaten on the score of novelty by the interesting group of Oregon Cacti from Mr. E. G. Loder, before-mentioned. Mr. B. S. Williams, in addition to his other contributions, had an extensive bank of small plants, new, rare, and curious; and from Chiswick came a well flowered lot of plants of a decorative character very tastefully set up. The best each of nine show and fancy Pelargoniums were staged by Mr. Wiggens, gr. to H. Little, Esq., plants from 3 to 4 feet over and well bloomed—the best set of plants, in fact, that has yet come from Mr. Little's garden. Mr. James was 2d in the large flower class, and his blooms as usual were superb in the softness and delicacy of their colouring. The prizes for thirty Begonias went to Messrs. John Laing & Co., and Mr. H. Coppin, of Shirley, near Croydon, both showing well grown and nicely bloomed plants; those from the former being the least formal. Mr. Lyon, gr. to Sir E. H. Scott, Bart., Sundridge Court, took the 1st prize easily for thirty Gloxinias; and Messrs. Hooper & Co., of Covent Garden, secured the 1st prize for 100 fine-foliaged plants with a fresh, healthy, and handsome lot of plants. The same firm also staged a splendid assortment of cut blooms of Ixias, and a bold display of Pampas plumes, &c.

New Plants.—In the class for twelve new plants not in commerce Mr. Bull was the only exhibitor. The group was, as might have been anticipated, a striking one, and well merited the award made to it of a 1st prize. Among the plants shown were Dieffenbachia rex, a very fine variety, with oblong, lance-shaped, tail-pointed leaves, of a dark green ground colour, marbled freely with small spots of greenish-yellow; Dieffenbachia regina has oblong, tail-pointed leaves, milky splashed with green; Sarracenia flava splendens had very tall, erect, green pitchers, with a blotch of reddish-purple on the under side of the lid; Alsophila taenitis, a form with arching fronds twice pinnately divided, the ultimate segments lance-shaped and dull green; Dracæna Pacottii, a variety with narrow linear lanceolate green leaves, striped with yellow; Selaginella involvens variegata is one of the cup-shaped Selaginellas, with densely packed, small, deep green leaves, tipped with silvery variegation; Geonoma Bluntii, a Palm with deep green oblong leaves, deeply notched at the apex, and more or less pinnately divided; Aralia concinna has the leaves pinnately divided, the lobes themselves being again pinnately lobed; Sanseviera flabellata is a curious plant, with long cylindrical bluish-green leaves arranged in a fan-shaped manner; Deyeuxia elegans is a striking dwarf-growing grass, with closely packed, narrow, recurved, linear leaves, with a green centre, margined on each side with a rather broad golden stripe—as a variation from the everlasting Crotons this will be a valuable acquisition; Illicium religiosum var. is a form of this well-known plant, with leaves brightly marked with milky variegation; Aralia spectabilis as shown is a very bold form, with large, spreading, pinnately divided leaves, the broad ultimate segments themselves divided into rounded lobules by shallow notches.

In the class for twelve new plants sent out in 1880, 1881, Mr. Bull was again the only exhibitor. Among the plants shown in this section were Juncus zebrinus, often described by us; Anthurium insigne, an Aroid, with deeply 3-lobed leaves, first described and figured in these columns; Philodendron Carderi, a climber, with ovate, dark, velvety-green leaves, traversed with lighter veins; Anthurium Andreanum, with three flowers; Dracæna Leopoldi, with dark green velvety leaves, marked with a central stripe of silver; Dracæna Lindeni, with recurved oblong-lanceolate leaves, with a central green stripe, the margins greenish-yellow, elsewhere mottled with yellow and cream-coloured spots; Dieffenbachia

triumphans, with oblong tailed leaves, dark green spotted yellow; Adiantum anceitense, with arching, much divided, deltoid, dull green fronds, the ultimate divisions of which are small, transversely oblong, wedge-shaped at the base, and crenately notched at the margin; Davallia fijiensis, of creeping habit, with deltoid, twice pinnately divided fronds, the segments oblong, pinnately lobed, and extended into longish tails.

SPECIAL PRIZES OFFERED BY MR. W. BULL.—In Class A, for twelve new plants introduced since 1878 by Mr. Bull, and sent out by him, the Rev. Canon Bridges (gr. Mr. Penfold) took the 1st prize. The most striking plant was a good example of the extraordinary Saxifrageaceous plant often mentioned in these columns, Davidsonia pruriens. Its noble arching, unequally pinnate leaves, with winged midribs, are very imposing, and the plant promises to be a rapid grower, and one which will lend itself to the decorator's purposes. The fruit is said to be edible. Dieffenbachia splendens, with leaves of a velvety green colour, marbled with lighter spots; D. Leopoldi, Cyphomandra argentea, with bold oblong acute leathery leaves, silvery-white on the upper surface; and the grand Carludovica Drudei, originally figured and described in these columns, may be mentioned as the leading plants in this group. The 2d prize in this class went to Mr. W. Selway, gr., Knightshayes, Tiverton. The plants shown included a good specimen of the very striking Encephalartos Friderici Guilielmi, Carludovica Drudei, Anthurium insigne, Dieffenbachia Leopoldi, Davidsonia pruriens, Croton Williamsii and Challenger, Ixora Chelsoni. It is open to question whether this group should not have been placed 1st. The judges were probably influenced by the fine plant of Davidsonia in the group to which they assigned the 1st prize, but the Encephalartos in the present group, to our thinking, eclipsed the Davidsonia for rarity and interest.

In Class C, for twelve new plants sent out since 1878, and exhibited by private growers, the 1st prize was awarded to F. Yates, Esq., Higher Feniseowles, Blackburn. The plants were small, and comprised Dieffenbachia Shuttleworthii, a form with lanceolate leaves, green, mottled and sprinkled with white spots; Sarracenia flava atrosanguinea and ornata, and other plants brought under frequent notice in our comments at various times upon Mr. Bull's plants.

FRUITS AND VEGETABLES.—The display of these was not nearly so extensive as at some former June shows; but generally, as regards quality, what was shown of both was of excellent merit. The 1st prize for two Pines was taken easily by Mr. D. Wilson, gr. to Earl Fortescue, Castle Hill, South Molton, with a handsome brace of Smooth Cayennes, weighing respectively 6 lb. and 6 lb. 5 oz., and the three prizes for Queens, all rather small, were taken respectively by Mr. Roberts, the Gardens, Gunnersbury; Mr. G. Sage, the Gardens, Ashridge; and Mr. Child, gr. to Mrs. Torr, Ewell. In a class of eight good dishes of Peaches Mr. Crump, the Gardens, Blenheim, came in 1st with a capital sample of Grosse Mignonne; Mr. Hinds, Canford Manor, Dorset, being a good 2d with Early York. Mr. Miles, gr. to Lord Carrington, Wycombe Abbey, took the lead in both classes for Cherries with Black Circassian and Governor Wood; and for three dishes of Strawberries Mr. Norman, the Gardens, Hatfield, was 1st, with exceedingly fine samples of President, Sir Joseph Paxton, and Sir Charles Napier; and a grand dish of President, staged by Mr. Mortimer, gr. to Major Storer, Purley Park, Reading, was the best in the single dish class. The Grape classes were thinly contested, but included the finest samples of Black Hamburgh and Muscat of Alexandria that we remember to have seen so early in the season. These came from Mr. Louden, gr. to J. Barnes, Esq., The Quinta, Chirk, and were of course 1st in their respective classes. The three bunches of Black Hamburgh averaged nearly 5 lb. each in weight, and were besides very compact, with the berries very large and thoroughly well coloured. The 2d and 3d prizes in this class went to Mr. Fyfe, gr. to W. W. F. Dick, Esq., Thames Ditton, and Mr. Phillips, gr. to Captain Phillips, Meopham, both showing much smaller examples. Three good bunches of Black Prince, staged by Mr. J. Bolton, gr. to W. Spottiswoode, Esq., Coombe Bank, Sevenoaks, came in 1st in the any other Black Grape class; and Mr. Mowbray, gr. to the Earl of Leven and Melville, Fulmer, Slough, stood 1st in the corresponding class for white Grapes, with small but good bunches of Buckland Sweetwater. The single Melon class brought out twenty-eight fruits, but the standard of quality was very low throughout. Golden Green, a white-fleshed fruit shown by Mr. Mills secured the 1st prize; and Mr. Lockie, gr. to Lord Otho Fitzgerald, Windsor, and Mr. G. Goldsmith, gr. to P. C. Hardwicke, Esq., Tonbridge, were respectively 2d and 3d, with Hero of Lockinge, a medium-sized white-flesh.

For a dish of Tomatos Mr. Ward, gr. to the Earl of Radnor, Longford Castle, Salisbury, came in 1st, with an admirable sample of the Stamfordian; and Mr. Bones, gr. to D. McIntosh, Esq., Havering Park, and Mr Austen, Ashton Court, secured the other awards. The Silver Cup, given by Messrs. James Boyd & Sons, the horticultural builders, was taken, without competition, by Mr. Fry, gr. to L. J. Baker, Esq., Haydon Hall, Easteote. Messrs. Sutton & Sons' prizes for two varieties each of Melons and Cucumbers brought out eight competitors, and Mr. T. Lockie secured the highest award, with Hero of Bath and Hero of Lockinge Melons, Duke of Connaught and "Improved" Telegraph Cucumbers. Mr. Mann, gr. to R. Hornsby, Esq., St. Vincent's, Grantham, was 2d; and Mr. G. Goldsmith, 3d. To the miscellaneous class Mr. Sage, Ashridge, contributed a magnificent bunch of Bananas weighing 95 lb., for which he was awarded a Bronze Medal.

For a collection of vegetables, consisting of ten kinds, Mr. Austen, The Gardens, Ashton Court, Bristol, came in 1st, closely followed by Mr. Miles, Wycombe Abbey, and Mr. Ward, of Longford Castle. Mr. Austen had a remarkably good bunch of Connover's Colossal Asparagus, two excellent fruits of Moore's Vegetable Marrow, Sir J. Paxton Kidney Beans, large and good Turnips, Stamfordian Tomatos, Walnut-leaved Kidney Potatos, &c. Mr. Miles had, as usual, a very superior lot, but was beaten by the Marrows and the larger Asparagus. For the Messrs. Suttons' prizes for four dishes of Peas, Mr. Ward came in 1st with Ringleader, Emerald Gem, William I., and Sangster's No. 1, in fine condition for the season; and Mr. Chettleburgh, The Gardens, Worstead House, Norwich, was 2d.

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**Manchester Royal Botanic and Horticultural:** *June* 3—10.—The grand National Horticultural Exhibition of this Society opened on Friday se'nnight and closed yesterday. It was, as usual with the Whitsuntide shows held at Manchester, a very successful one, and though somewhat shorn of its dimensions to make way for a splendid display of Rhododendrons from Messrs. Waterer, of Bagshot, which filled the new annexe, every part of the great show-house, and of an immense tent beside it was full to overflowing. There was also, as usual, a large assortment of implements and garden appliances. Our space is this week so much occupied by other shows that we can only refer to the more prominent of the exhibits.

EXOTIC ORCHIDS.—These formed the opening classes of the schedule, and were also the most striking feature of the show. In the class for fifteen plants, R. B. Dodgson, Esq., Blackburn (Mr. Osman, gr.), was 1st with a grand and even lot of plants, consisting of Vanda suavis, a very handsome plant with eleven spikes of flower; Dendrobium Wardianum, D. thyrsiflorum, and a nicely bloomed D. Ainsworthii; Cattleya Mossiæ and Warneri; Lælia purpurata; Masdevallia Harryana, M. Harryana splendens, and M. Veitchii; Cypripedium villosum, C. barbatum, C. superbum, and C. biflorum; Epidendrum vitellinum majus, and Odontoglossum vexillarium. The 2d prize went to G. W. Hardy, Esq., Timperley (Mr. Hill, gr.), who also had a very fine lot, scarcely inferior to Mr. Dodgson's, and consisting of Cattleya Mendelii, with fifteen flowers; C. Mossiæ grandiflora, with thirty-six flowers; a grand Odontoglossum vexillarium with twenty-six spikes of fine deep rosy-tinted flowers; Dendrobium densiflorum Walkerianum, with eleven spikes; the always pleasing D. Bensoniæ, Ada aurantiaca, Oncidium Marshallianum, the rare Vanda Denisonæ, with two spikes of its peculiar creamy-white wax-like flowers; Thunia Marshalliæ, with ten flower-spikes, and Orchis foliosa with twenty. Dr. Ainsworth, Higher Broughton (Mr. Mitchell, gr.), was placed 1st in the class for nine plants; this collection, consisting mostly of Indian species, contained a very fine bushy plant, 3 feet high, with nine flower-spikes, of Vanda suavis; Aerides Fieldingii, and Saccolabium præmorsum—each with six spikes; a very fine Phalænopsis grandiflora; a grand plant of Dendrobium crassinode, D. Jamesianum, Vanda tricolor, Cypripedium barbatum, and Odontoglossum vexillarium. R. B. Dodgson, Esq., was 2d. For six plants, G. W. Hardy, Esq., gained the 1st place with Cattleya Mossiæ grandiflora with about thirty flowers; another fine variety of C. Mossiæ, a grand plant, and the richly-coloured C. Warneri; Dendrobium thyrsiflorum, with ten fine spikes; and good examples of Odontoglossum vexillarium and of Cattleya citrina. M. Sparkes, Esq., Huyton (Mr. Sherwin, gr.), who was 2d, had a fine young Cypripedium caudatum, one spike of which bore three grand flowers. G. W. Hardy, Esq., was 1st in the class for three plants, showing Dendrobium thyrsiflorum, Cattleya Mossiæ marmorata, and a high-coloured, well-bloomed Odontoglossum vexillarium. F. H. Allen, Esq., Timperley (Mr. Aitken, gr.), who was 2d, had Cattleya Mossiæ superba, with remarkably fine flowers; and R. B. Dodgson, Esq., who was 3d, showed Odontoglossum cirrhosum. The best specimen Orchid was a Phalænopsis amabilis, shown by Dr. Ainsworth, who in the six "single plant" class took 1st prize with a collection in which the most conspicuous plant was the valuable Aerides Schröderi, a stocky well-grown specimen with six spikes of flower. In the 2d prize lot, G. Hodgkinson, Esq., Dunham Massey (Mr. Boardman, gr.), had a pretty plant of Dendrobium Falconeri.

The nurserymen's section was not so numerously represented, but still a very good display was made by Mr. B. S. Williams, Holloway, who took 1st prizes for sixteen and for ten plants respectively; and by Mr. Cypher, Cheltenham, who was awarded the 2d place in both. Mr. Williams' larger group consisted of Calanthe veratrifolia and C. Dominiana, the latter with eight spikes of its pleasing purplish flowers, the lip changing to buff as it ages; Cattleya Mossiæ, well flowered; C. Mossiæ superba, Lælia purpurata, and the variety Brysiana; Odontoglossum cordatum and vexillarium roseum, Cypripedium Stonei and barbatum superbum, Epidendrum vitellinum majus, Vanda tricolor insignis and suavis, Dendrobium crystallinum, and Masdevallia Veitchiana and Lindeni. In the smaller group were a good example of Cypripedium niveum, with about thirty expanded flowers; and a nicely bloomed Cattleya Mendelii. Mr. Cypher had a plant of the exceedingly pretty Vanda cœrulescens and the bull's-blood variety of Masdevallia Harryana.

STOVE AND GREENHOUSE PLANTS were well represented, especially in the larger classes of twenty plants, half of them to be in flower. Here J. F. W. Williams, Esq., Worcester (Mr. Tudgey, gr.), was 1st with a splendid lot of flowering plants backed up by noble Palms and Cycads. Amongst the showier of the specimens was an Ixora Williamsii, crowded with massive bunches of its large salmony-red flowers; Dracophyllum gracile was also shown in fine condition, as were Erica ventricosa, coccinea minor and ventricosa magnifica, and some two or three Indian Azaleas. In the competing lot from H. Samson, Esq., Bowdon (Mr. Lingard, gr.), Statice profusa and Dipladenia amabilis were conspicuous plants, as also were a good Ixora Williamsii, and a well-coloured Croton Queen Victoria. S. Schloss, Esq., Bowdon (Mr. C. Paul, gr.), who was 3d, had a good Stephanotis floribunda, a fine plant of the salmony-red Azalea named Napoleon III.; a very good variety of Anthurium Scherzerianum; and a large Phormium tenax variegatum in blossom. The smaller amateur classes were very well filled.

In the nurseryman's class for twenty flowering and foliage plants, Mr. Cypher, Cheltenham, and Messrs. E. Cole & Sons, Withington, were the competitors, the former having the finest collection, which contained several finely grown fresh-looking Palms and Cycads as a background; and amongst the flowering subjects a wonderfully good Erica Cavendishiana, of large size; Dracophyllum gracile, about 3 feet over, in beautiful condition; a showy Bougainvillea glabra, a grand Pimelea spectabilis, now seldom seen; Clerodendron Balfourianum, and some good Azaleas. There were dense bushy habited examples of Gleichenia speluncæ, and of Croton Weismanni and C. Disraeli. Messrs. Cole's plants also included some good specimens, but as a whole they lacked the freshness and finish of the rival set, especially amongst the larger foliage plants; they had, however, a beautiful medium sized plant of Darwinia tulipifera, well flowered and splendidly coloured, and a good Erica Cavendishiana.

Several collections of Crotons and of Dracænas were staged. In the 1st prize lot of six Crotons, shown by R. B. Dodgson, Esq., was a large finely-coloured plant of Queen Victoria; and in the nurserymen's group of eight plants Messrs. R. P. Ker & Sons, Liverpool, were 1st with a nice lot of well-grown young plants. In the nurserymen's group of ten Dracænas, Mr. B. S. Williams showed good samples of the beautiful flame-coloured majestica, the striped Robinsoniana, the white-edged alba marginata, and the narrow-leaved bronze and red superba. Interesting and extensive miscellaneous groups were shown by Mr. B. S. Williams, Messrs. R. P. Ker & Sons, and Messrs. Standish & Co., who had some charming examples of the Niphetos Rose. Mr. B. S. Williams had an interesting group of Pitcher-plants.

NEW PLANTS.—The prizes for novelties fell to Mr. B. S. Williams and Mr. Cypher. The former showed a collection of twelve plants, consisting of Lastrea membranifolia, Dracæna superba, D. Earl of Derby, Dieffenbachia Imperator, Cyphokentia robusta, Dracæna Goldieana, Oleobachia (Delabechea) palustris, Anthurium Waroquianum, Croton Warreni, Thrinax gracillima, and Philodendron elegans, all of which we have previously noticed. In Mr. Cypher's group was a large and deeply coloured crimson form of Anthurium Scherzerianum, called Hendersoni. In the amateur's class for six plants, R. B. Dodgson, Esq., was placed 1st with a pretty group, containing Alocasia Thibautiana, and Cypripedium Lawrencianum; and J. F. W. Williams, Esq., was 2d, with a scarcely inferior lot, in which was a young plant of Anthurium Andreanum, Ixora Duchess of Teck, and Bowenia spectabilis serrulata.

FERNS.—Several good collections both of tender and hardy kinds were shown. The 1st prize for ten stove and greenhouse Ferns fell to S. Schloss, Esq., who had very finely grown examples of Davallia tenuifolia and D. Mooreana, a grand example of Brainea insignis, a large mass of Goniophlebium subauriculatum, a good specimen of Gleichenia flabellata, dichotoma, and Mendelii. There were six groups of six Adiantums, the 1st prize lot, shown by R. B. Dodgson, Esq., consisting of A. cultratum, formosum, tenerum, cuneatum, concinnum latum, and excisum. The other collections were beautifully grown, and altogether added a refreshing feature to the show. The hardy Ferns were well grown and effective, but our limited space forbids further mention of them.

HERBACEOUS PLANTS were quite features of the show, and excited very much interest amongst the exhibitors. In the class of eighty plants, including alpines, Messrs. J. Dickson & Sons, Chester, were a good 1st, and we noted amongst them very interesting

groups of the new yellow Lilium Parryi, Lilium purpureum, the musk-scented Euryangium Sumbul, Eulalia japonica, in both the vittata and zebra-marked variegated forms; Aquilegia californica, Ourisia coccinea, Spiræa palmata, &c. Mr. J. Brownhill, Sale, who was 2d, had a beautiful potful of the dwarf Campanula Raineri. The amateurs' class was limited to thirty-six plants, and four lots were shown, the 1st prize going to W. Brockbank, Esq., Didsbury, who had a good plant of the Edelweiss, Leontopodium alpinum, Campanula thyrsoidea, with a dense erect raceme of pale greenish flowers, very curious; Ramondia pyrenaica, Aquilegia glandulosa (jucunda) and A. truncata, Cypripedium acaule, Saxifraga lantoscana, Onosma taurica, and Campanula Warneri.

Pansies, fancy Pansies, and Violas in pots were numerously shown both by amateurs and dealers, but it was manifest that the late hot weather had told upon them; they, nevertheless, formed a very interesting display.

Pelargoniums were largely shown and mostly in good condition. For eight show sorts Messrs. Lazenby & Sons, York, took the 1st prize, and Mr. C. Rylance, Ormskirk, the 2d. For eight fancy varieties Mr. Rylance was far ahead. For eight Zonals he also gained the 1st position.

Roses in pots were both few in number and poor in quality. Mr. R. Smith, Worcester, had a showy group of fairly grown Clematises. Messrs. Kelway & Sons staged a nice lot of cut blooms of Pyrethrum, which attracted a good deal of notice from the visitors.

Fruit was shown in limited quantity. The 1st prize for a collection of ten dishes went to Lord Hill, Hawkstone (Mr. Pratt, gr.), who had two Pines, Black Hamburgh Grapes, Grosse Mignonne and Early Rivers Peaches, and Gros Monstreuse de Lipari and Brown Turkey Figs. For two bunches of Black Grapes the Earl of Crawford and Balcarres (Mr. Jameson, gr.), was 1st; Mrs. Ackers, Congleton (Mr. Breese, gr.), 2d; and J. Knowles, Esq., Bolton (Mr. Hand, gr.), 3d; they all showed medium-sized bunches of good quality. For white Grapes Mrs. Ackers took 1st prize with Duke of Buccleuch. The best twelve pots of Strawberries were from Mr. F. Faulkner, Wootton Hall, Liverpool, who had President in very fair condition.

Rhododendrons.—The exhibition of these fine hardy shrubs from the Bagshot Nursery was very effective, and filled the whole of the large annexe. The plants were disposed in picturesque groups with serpentine paths between, on each side the central avenue. They had been carefully preserved, so that they showed little or none of the destructive influences of the past winter and spring, and as a consequence the display of flowers was of a very brilliant and imposing character. One of the most effective at the time of our visit was Cynthia, a variety with immense trusses of light rose slightly-spotted flowers. Other striking sorts were John Walter, compact trusses of rosy-scarlet; Baroness Lionel de Rothschild, compact trusses of rosy-scarlet, with the upper segment paler and slightly bronze-spotted; the old favourite, Lady Eleanor Cuthbert, with its dark blotched trusses of deep rose-pink; Roseum elegans, an old but valuable sort, because really hardy; Frederick Waterer, close truss of rosy-scarlet; Princess Mary of Cambridge, pale rosy-purple with white centre; Sir H. de Trafford, deep rosy-pink with greenish blotch on paler upper segment, large showy truss; Sam Morley, bright rosy-scarlet with white centre; Duke of Connaught, bright rosy-scarlet with white dash on upper segment, large truss, and brilliant colour; Duchess of Connaught, large, white, with blotch of yellowish spots; Duchess of Bedford, a very distinct variety, crimson flushed or shaded with purple, and having a greenish blotch. These are but a few of the most striking of those which were in bloom on the opening day.

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**The Royal National Tulip Show**: *June* 4.—This, the annual exhibition of this Society, was held at the Manchester Botanical Society's Gardens, Old Trafford. The show of blooms was a very good one considering the lateness of the season, and the display larger than had been seen for years previously; quality seemed to be about the average. The frost of last winter did not seem to have affected the Tulip bulb, for the foliage was everywhere very strong and healthy, and early in the season gave promise of a good bloom but late. The hot weather during the last three weeks had forced the bloom on so fast that several growers were out of first-class varieties, and consequently there were fewer pans of twelve staged than usual. A late season and hot May sun has a tendency to make the marking and delicate feathering all the brighter when caught, but, on the other hand, the bloom is soon over, the flowers scarcely lasting a week, so that many good flowers never reach the stage. There were a few seedlings shown, but nothing to take precedence of the older varieties, although Mr. B. Simonite, Sheffield, had a few very fair ones, and so had a few others. Samuel Barlow, Esq., was the most successful exhibitor, and one who spares neither time nor trouble to make the Tulip show a success. The following is the prize list:—

*Twelve Dissimilar Tulips, two feathered and two flamed in each class.*—1st, Samuel Barlow, Esq., Stakehill, Castleton, near Manchester, with Sir J. Paxton, flamed bizarre; Frederick Tymons, flamed byblœmen; Madame St. Arnaud, flamed rose; Dr. Hardy, flamed bizarre; Hepworth's William Parkinson, flamed byblœmen; Bion, flamed rose; Heroine, feathered rose; Garibaldi, feathered bizarre; Hepworth's William Parkinson, feathered byblœmen; Beauty, feathered rose; Albert, feathered bizarre; Music, feathered byblœmen. 2d, Mr. Henry Travis, Royton, near Oldham, with Annie McGregor, feathered; Heroine, feathered; Annie McGregor, flamed; Mabel, flamed; Sir J. Paxton, feathered; Lord Raglan, feathered; Excelsior, flamed; Sir J. Paxton, flamed; Amiable, feathered; unknown, feathered; Lord Denman, flamed; Duchess of Sutherland, flamed. 3d, Mr. Thomas Mellor, Ashton-under-Lyne, with Madame St. Arnaud, flamed; Mabel, flamed; Industry, feathered; Dr. Hardy, flamed; Agnes, flamed; Adonis, feathered; Sir J. Paxton, flamed; Charles X., feathered; Duchess of Sutherland, flamed; Rachel, feathered; Sulphur, feathered; Bessie, feathered. 4th, Robert Sharpley, Wakefield, with Sovereign, feathered; Denman, flamed; Sir J. Paxton, flamed; Grace Darling, feathered; Dr. Hardy, flamed; Heroine, feathered; Parker's King, feathered; Madame St. Arnaud, flamed; Industry, feathered; Aglaia, flamed; Talisman, flamed; Lord Lilford, feathered. 5th, Mr. Thomas Parkinson, Derby.

*Six Dissimilar Tulips, one feathered and one flamed in each class.*—1st, Mr. Thomas Parkinson, Derby, with Heroine, feathered; Mrs. Pickerell, feathered; Sir J. Paxton, feathered; Sir J. Paxton, flamed; Mabel, flamed; Lively, flamed. 2d, Mr. Daniel Woolley, Stockport, with Mrs. Bentley, feathered; Duchess of Sutherland, feathered; Heroine, feathered; Paxton, flamed; Olivia, flamed; Paxton, feathered. 3d, Mr. Thomas Mellor, with Mabel, flamed; Charles X., feathered; Rachel, flamed; Duchess of Sutherland, feathered; Rachel, flamed; Sir J. Paxton, flamed; Adonis, feathered. 4th, Mr. Henry Travis; 5th, Mr. Robert Sharpley; 6th, Mr. Joshua Hague, Stockport; 7th, Mr. James Thurston, Wolverhampton.

*Six Dissimilar Tulips, one feathered and one flamed in each class* (10*s.* 6*d.* subscribers only).—1st, Mr. Hugh Houseley, Stockport, with Paxton, flamed; Talisman, flamed; Mabel, flamed; Mabel, feathered; Amiable, feathered; and Charles X., feathered. 2d, Mr. John Wood, Royton, with Paxton, flamed; Friar Tuck, flamed; Lord Denman, feathered; Heroine, feathered; Friar Tuck, feathered; and Prince of Wales, flamed. 3d, Mr. Edward Schofield, Leeds; 4th, Mr. William Dymock, Stockport.

*Three Feathered Tulips, one in each class.*—1st, Mr. Thomas Mellor, with Adonis, Lord Lilford, and Heroine; 2d, Samuel Barlow, Esq., with Heroine, Pegg's Seedling, and George Hayward; 3d, Mr. John Wood, with Heroine, Violet Amiable, and Lord Lilford; 4th, Mr. E. Schofield; 5th, Mr. H. Travis; 6th, Mr. Daniel Woolley.

*Three Flamed Tulips, one of each class.*—1st, Samuel Barlow, Esq., with Geo. Hayward, Aglaia, and Sir Joseph Paxton; 2d, Mr. Hugh Houseley, with Mabel, Princess Royal, and Sir J. Paxton; 3d, Mr. Henry Travis, with Sir J. Paxton, Aglaia, and Duchess of Sutherland; 4th, Mr. William Bentley, Stakehill, Castleton, near Manchester; 5th, Mr. Thomas Mellor; 6th, Mr. Daniel Woolley.

*Two Tulips, one feathered and one flamed* (for maiden growers only).—Mr. Jessie Hardwick, with Pilate and Mrs. Cobden.

*Two Tulips, one feathered and one flamed, of any class.*—1st, Mr. Henry Travis, with Heroine and Paxton; 2d, Mr. Hugh Houseley, with Heroine and Paxton; 3d, Mr. Daniel Woolley, with seedling and Paxton; 4th, Mr. John Wood, with Lord Lilford and Mabel; 5th, Mr. Edward Schofield, with Mrs. Nichols and Lord Denman; 6th, Samuel Barlow, Esq.

*Single Feathered Bizarre.*—1st, Mr. Robert Sharpley, with Lord Lilford; 2d, Mr. Thomas Parkinson, with Sir J. Paxton; 3d, Mr. John Wood, with Lord Lilford; 4th, Mr. E. Schofield, with a seedling; 5th, Mr. John Heap, Ashton-under-Lyne, with Sulphur; 6th, Mr. John Morris, with John Ratcliffe; 7th, Mr. Benjamin Simonite, Sheffield, with a seedling; 8th, Mr. Daniel Woolley, with Sidney Smith; 9th, Mr. R. Sharpley, with Masterpiece; 10th, Mr. T. Mellor, with Flora.

*Single Feathered Byblœmen.*—1st, Mr. Edward Schofield, with Vicar of Radcliffe; 2d, Mr. E. Schofield, with George Edward; 3d, Mr. H. Travis, with Mrs. Jackson; 4th, Mr. John Morris, with a seedling; 5th, Mr. T. Mellor, with Mrs. Hepworth; 6th, Mr. Houseley, with Amiable; 7th, Mr. T. Mellor, with Adonis; 8th, Mr. J. Morris, with Mrs. Pickerell; 9th, Mr. E. Schofield, with seedling; 10th, Mr. E. Schofield, with Sarah Jane.

*Single Feathered Rose.*—1st, Mr. H. Travis, with Heroine; 2d, Mr. H. Travis, with Heroine; 3d, S. Barlow, Esq., with one unknown; 4th, S. Barlow, Esq., with Charmer; 5th, S. Barlow, Esq., with Sarah Headley; 6th, Mr. H. Travis, with unknown; 7th, Mr. H. Houseley, with Mr. Lea; 8th, Mr. H. Houseley, with Amiable; 9th, Mr. H. Travis, with unknown; 10th, Mr. W. Dymock, with Lady Crewe.

*Single Flamed Bizarre.*—1st, Mr. H. Houseley, with Sir J. Paxton; 2d, Mr. H. Houseley, with Sir J. Paxton; 3d, Mr. Houseley, with Dr. Hardy; 4th, Mr. E. Schofield, with a seedling; 5th, Mr. James Thurston, with Sulphur; 6th, S. Barlow, Esq., with unknown; 7th, Mr. E. Schofield, with seedling; 8th, Mr. H. Travis, with Masterpiece; 9th, Mr. H. Houseley, with King; 10th, Mr. H. Houseley, with Ariosto.

*Single Flamed Byblœmen.*—1st, Samuel Barlow, Esq., with Hepworth's 63-62; 2d, Mr. H. Houseley, with Chancellor; 3d, Mr. Daniel Woolley, with Lord Denman; 4th, Mr. H. Travis, with Duchess of Sutherland; 5th, Mr. W. Dymock, with unknown; 6th, S. Barlow, Esq., with unknown; 7th, Mr. H. Travis, with Atlas; 8th, Mr. T. Anson, with unknown; 9th, Mr. J. Morris, with Amiable; 10th, Mr. D. Woolley, with Norval.

*Single Flamed Rose.*—1st, S. Barlow, Esq., with Annie McGregor; 2d, S. Barlow, Esq., with Annie McGregor; 3d, Mr. T. Mellor, with Mabel; 4th, S. Barlow, Esq., with Lady Sefton; 5th, S. Barlow, Esq., with Celestial; 6th, Mr. H. Houseley, with unknown; 7th, Mr. D. Woolley, with Triomphe Royale; 8th, Mr. J. Wood, with Catharine Gordon; 9th, Mr. J. Morris, with Sarah Headley; 10th, Mr. J. Thurston, with Headley's Mary.

*The best Feathered Tulip in the whole exhibition.*—Mr. Thomas Parkinson, Derby, with Heroine, feathered rose: a grand flower, with a rich bold feather.

*The best flamed Tulip in the whole exhibition.*—Samuel Barlow, Esq., with Hepworth's well known William Parkinson, flamed byblœmen: a fine flower, of very grand properties.

*Six Breeder Tulips, dissimilar, two of each class.*—1st, S. Barlow, Esq., with Alice Grey, Sir J. Paxton, 27-62, George Hardwick, Richard Yates, and Mrs. Barlow; 2d, Mr. S. Mellor, with Sir J. Paxton, Alice Grey, Mabel, Dr. Hardy, Ellen Fawcett, and Baroness Burdett Coutts; 3d, Mr. John Heep, with 76-62, Olivia, Annie McGregor, Sir J. Paxton, Wm. Bentley, and Dr. Hardy; 4th, Mr. John Morris, with Lady May, Madame St. Arnaud, Wm. Bentley, J. Murray, Dr. Hardy, and Sir J. Paxton; 5th, Mr. J. Thurston; 6th, Mr. R. Sharpley.

*Three Breeder Tulips, one of each class.*—1st, S. Barlow, Esq., with Alice Grey, Mrs. Barlow, and Richard Yates; 2d, Mr. S. Mellor, with Paxton, Ellen Fawcett, and Mabel; 3d, Mr. E. Schofield, with Queen of England, Duchess of Sutherland, and seedling; 4th, Mr. Ben. Simonite, with three seedlings; 5th, Mr. J. Morris; 6th, Mr. D. Woolley; 7th, Mr. H. Houseley; 8th, Mr. Wm. Bentley.

*Single Bizarre Breeder.*—1st, Mr. H. Travis, with Horatio; 2d, Mr. H. Travis, with Rd. Yates; 3d, Mr. Ben. Simonite, with seedling; 4th, Mr. H. Travis, with Sir J. Paxton; 5th, Mr. T. Mellor, with Sulphur; 6th, Mr. H. Travis, with Lea's No. 2; 7th, Mr. B. Simonite, with seedling; 8th, Mr. T. Mellor, with Dr. Hardy.

*Single Byblœmen Breeder.*—1st, Mr. H. Houseley, with Philip; 2d, Mr. R. Sharpley, with Emperor; 3d, Mr. R. Sharpley, with Alice Grey; 4th, Mr. E. Schofield, with Duke of Devonshire; 5th, Mr. J. Morris, with Dragon; 6th, Mr. Bentley, with seedling; 7th, Mr. J. Hardwick, with Beauty of Brighouse; 8th, Mr. J. Morris, with Ne Plus Ultra.

*Single Rose Breeder.*—1st, Mr. T. Mellor, with Olivia; 2d, Mr. H. Houseley, with Mabel; 3d, Mr. T. Mellor, with Mrs. Barlow; 4th, Mr. D. Woolley, with Charmer; 5th, Mr. H. Travis, with Atlas; 6th, Mr. T. Mellor, with unknown; 7th, Mr. B. Simonite, with seedling; 8th, S. Barlow, Esq., with unknown.

*The Best breeder in the whole exhibition.*—Mr. Henry Travis, with Horatio, a very fine bizarre breeder. *W. B.*

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**Dundee Horticultural Association**: *June* 3.—The monthly meeting of this Association was held in the Templar Hall, Dundee, on the above date, the President, Mr. D. Doig, in the chair. Mr. Thomas Miln, Linlathen Gardens, read a communication on "Hardy Border Flowers." Having dealt with their general culture and arrangement in a former paper he confined his remarks on this occasion more directly to the special culture of a few favourite sorts. These he detailed in their order of flowering, and his remarks were illustrated by from sixty to seventy distinct varieties of this useful class of plants, all named and nicely arranged, presenting a beautiful and interesting table of rich and varied blossom. In addition to the above Mr. Miln also exhibited a stand of twenty-four varieties of hybrid Rhododendrons, all of which were splendid examples of their kind.

Mr. Frank W. Young then read a most interesting paper on "The Physiology of Plants and Animals," tracing many of the relations that exist between the two kingdoms of Nature. The general action of the animal kingdom in oxidising carbonaceous substances with formation of carbonic acid gas, and the reducing of this in the green parts of plants under the influence of sunlight, were experimentally illustrated. Under this head Mr. Young spoke at some length on the "blue glass" question, showing that it had no scientific basis whatever; that, in fact, the work of many eminent botanists had proved the retarding effect of the blue rays on growth, and further that the yellow rays of light were most effective in decomposition and assimilation. The paper was illustrated by several experiments performed by Mr. Frank Collyer.

An interesting discussion followed on this "blue glass" question, the general conclusion of the practical gardeners present bearing out what Mr. Young had demonstrated, namely, that the blue glass, so far as had come under their observation, in no way assisted or perfected the growth of plants.

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**Bath and West of England and Southern Counties Association**: *June* 6 *to* 10.—The exhibition which opened at Tunbridge Wells on Monday last was one of the most satisfactory that the Society has held. The ground selected for the site of the show—some 40 acres or more, on the top of Rumber's Hill, on the Frant Road, and overlooking the town—was the best that could possibly be got for such a purpose: a charming position, high, naturally drained and breezy. The implement and machinery in motion stands seemed to be as extensive and complete as ever, and Messrs. Sutton & Sons and Messrs. Edward Webb & Sons, of

Wordsley, represented the seed interest in the most satisfactory manner, their most imposing seed museums having a very commanding position side by side, and being most complete in every detail. The nursery trade had a representative in the firm of Messrs. J. Cheal & Sons, of Crawley; and with pottery Mr. John Matthews, of Weston, had no rival. The horse classes were weak, especially those for hunters; and Shorthorns were also more sparingly represented than usual, but other breeds seemed to be about the same, with the exception of Sussex cattle, which, as a matter of course, being so near their native heath, were splendidly represented. One of the most interesting departments was a dairy in full work, and next to this came the bee show, the flower show, and the exhibition of pictures and art manufactures. The floral department was, as usual, under the stewardship of the Hon. and Rev. J. T. Boscawen, whose ideas on this subject are now well known, and which were well carried out on this occasion. We have seen Mr. Boscawen's fine tent better filled than it was on Monday last, but we do not remember him having so great a number of really well grown specimen plants to exhibit. The largest contributors of these were W. Spottiswoode, Esq., Coombe Bank, Sevenoaks (Mr. Bolton, gr.); F. Barnaby Atkins, Esq., Halstead Place, Sevenoaks (Mr. Gibson, gr.); J. J. Barron, Esq., Holmwood Park, Tunbridge Wells (Mr. Pope, gr.); G. A. Britten, Esq., Ferndale House, Tunbridge Wells (Mr. Carley, gr.); Dr. Siemens, Sherwood Park (Mr. Buchanan, gr.); and B. H. Collins, Esq., Dunorlan (Mr. Walker, gr.). Orchids were represented by a nice group of small plants, sent by Sir William Marriott, Down House, Blandford (Mr. Denny, gr.); Messrs. Thomas Cripps & Son sent a fine group of well flowered bushes of Rhododendrons, cut blooms of Clematis and other things; and Messrs. John Laing & Co., made a neat and effective and effective display with a good collection of small Begonias. For Mr. Boscawen's prize for the best three bunches of black Grapes there were only three competitors, and Mr. James Allan, gr. to G. H. Field, Esq., Ashurst Park, was the successful exhibitor, his Black Hamburghs, though small in bunch and rather over-thinned, were good in berry, and thoroughly ripened.

The Asparagus competition was almost a failure, only eleven bundles being brought forward. Mr. Harwood, of Colchester, was the only exhibitor of 300 heads in the market-growers of the United Kingdom class, but the sample was a good one of fine marketable stuff, and took the 1st prize. Kentish growers for market were represented only by Mr. Philpotts, of Feldland, near Sandwich, and he secured the 1st prize with a good bundle of 200 heads. The gardeners' prizes for sixty heads were taken by Mr. Haycock, gr. to Roger Leigh, Esq., Barham Court, Maidstone; Captain Taylor, Grimley, Hastings (Mr. Dickson, gr.); Mr. Allan, gr. to the Earl of Suffield, Gunton; and W. Spottiswoode, Esq. (Mr. Bolton, gr.). Mr. Allan's sample had been the best—large and well grown heads—but for the most part had been cut too long, and was quite rotten.

## Law Notes.

HIGH COURT OF JUSTICE: Chancery Division (*before Mr. Justice Fry*).—THE COMMISSIONERS FOR THE EXHIBITION OF 1851 *v.* THE ROYAL HORTICULTURAL SOCIETY (*continued from p. 737*).—Mr. FISCHER, Q.C. (with whom was Mr. Haughton), on behalf of the Society, submitted that no forfeiture had taken place. Before a landlord could exercise a right of re-entry, he must demand his rent. This, in the present case, could not be done, because, inasmuch as the Expenses Committee had not sat since 1871, whatever rent was payable had not been ascertained. It was also necessary for the plaintiffs to set out distinctly the day upon which the forfeiture accrued, and unless they did so they could not show that the payment of rent had failed in every one of the consecutive years preceding the date of the forfeiture. The plaintiffs had contended that their power of re-entry differed from an ordinary re-entry clause, because they were not bound to accept the rent even were it tendered; but the Society submitted that such a contention must fail, seeing that the most the plaintiffs could get would be whatever amount might be ascertained to be payable. Whatever might be the case of the debenture holders as to an alleged partnership between the Commissioners and the Society, it was clear that they were joint adventurers in the undertaking, the term "rent" simply representing the interest upon the capital invested by the Commissioners.

Mr. HAUGHTON having also argued the case from a similar view—

Mr. COOKSON, Q.C., addressed the Court on behalf of the debenture holders. Their case, he said, was an entirely distinct one. The holders of debenture securities had been led to invest their money upon the faith of certain representations, and they claimed priority over any right of the plaintiffs in respect of the land in question. In the original appeal for debenture advances nothing was said as to any right of re-entry on the part of the Commissioners, and no re-entry clause was consented to by the Society until after the debentures had been paid up. In 1876 the plaintiffs opened negotiation to obtain repossession of the property and made offers to the debenture holders which were declined. Corporations could, at Common Law, become partners, and where agreements existed between parties, even though they might on the face of them indicate a positive desire to avoid partnerships, the Court could hold that, at any rate as regarded third parties, a partnership existed. The defendants, the debenture holders, submitted that the whole transaction was plainly a commercial speculation disguised in the garb of horticultural science, and they asked the Court to declare that a partnership existed between the plaintiffs and the defendants' society, and that no power of re-entry could be exercised until the amount due upon the debentures had been provided for in full.

The case was then adjourned until Tuesday the 14th inst.

## Forestry.

DEAD WOOD.—One aspect of the forest at this season of the year (and never more so than at the present time) that deeply interests, and fills the forester with anxiety, is the great number of withered twigs and branches upon many species of forest trees. When a branch gradually decays by annually losing vitality, and ultimately dies, it creates little interest and awakens no alarm, nor in most cases need it do so, as that is the only natural process the tree can adopt to relieve itself of such branches as it does not require and cannot sustain; but when one or several branches or twigs upon a tree which to-day were green and to-morrow are found dry and withered, it creates at least the inquiry why it is so. Dead branches in general are so common that no one thinks of either asking himself or any one else why they occur—whether the result is a thing to be desired or to be regretted, or of no consequence either way. Evergreens of all kinds have suffered severely from the past winter's frosts, and none have escaped with impunity. Whin hedges in this district are nearly all killed, and the Holly in many cases is quite leafless. The evergreen Oaks, and in some cases the Rhododendrons as well, are quite leafless. I saw one fine grown large plant of the common ponticum to-day literally leafless, but abundantly covered with flowers; showing this much, at least, that the flower-bud stands the frost better than the common leaves. I find upon some trees of the Horse Chestnut more than the usual quantity of abortive buds, and from their position I think it more than likely they have been killed by the intense frost. One thing, at least, is evident, they had never swelled by the spring sap, showing their vitality had gone before that time. It is also very observable that the extremity of many branches of the Hornbeam have perished; there is no life in them, and from the appearance of the young shoots and the buds the wood had been well ripened last autumn, and the scales had not moved by spring growth. Had last autumn been unfavourable for the perfecting of the young wood, as is frequently the case, the results would have been fearfully disastrous. The Scotch Pine has in many instances suffered severely, and in the case of young trees it is no rare thing to find the vitality of the leader quite gone, and many buds evidently will never open. The Silver Fir has, of all other evergreen forest trees, suffered least in this district, and the Norway Spruce in contrast has suffered most. There is an aspect connected with the latter circumstance of special significance—namely, the most advanced and older trees have sustained much more damage in the foliage than younger trees and those of smaller stature. Indeed, as a rule, I find the Norway Spruce more liable to injury in the foliage after it is twenty years old than before that age, and this has led many a forester to cut down both Silver Firs and deciduous trees out of deference to it, seeing it flourishing and doing well up to a given age, and then wither and degenerate.

The subject above all others that concerns the forester at the present time is that of the Larch. Not only in some of our Larch plantations here, but also in many, it may be most, parts of the country, trees are to be seen of from 10 to 20 feet high (less or more) presenting the appearance of having been singed by fire—the branches, or twigs, having just developed their leaves when their growth was suddenly suspended, leaving the branches, some large and some small, red and dried up as if scorched or blighted, some trees presenting more an autumn than a summer hue. Having closely examined many such branches, I find the results, though much alike, yet produced from various causes. In some cases (though few) the cause is that of the previous year's wood not having been properly ripened; such branches make an effort to grow, but being too weak the buds only swell a little and then dry up, leaving the foliage dry and withered, less or more advanced, as the branch was strong or weak. Another and very common cause of the branch withering is that of the bark having been bruised or injured from some cause, such as snow bending the branch and overstraining the fibre. The bark is also in many cases injured rather by chemical than mechanical means. A cold, wet, or sunless season will do it seriously, and a very hot scorching season, with scarcity of moisture, also produces diseased bark, but less directly so than that of cold and wet. Accidents from cattle going ruthlessly amongst the trees, carelessly throwing the falling tree against the standing ones in the work of thinning, the shot from a gun, or indeed anything that in any way injures the bark, will produce a withered branch or twig. So sensitive is the bark of the Larch that in many cases the cause of death of a branch of considerable size is clearly traceable to the destruction of a single bud. Every tree requires to grow with a force and vigour adapted to its nature; a Poplar, for example, will not grow on soil suited to the Scotch Pine or Birch, and the Larch tree growing strong and vigorous will escape injury in an adverse season when one growing feebly will either sustain injury or die outright.

An explanation may, in conclusion, be necessary as to why one tree falls a prey to disease and the one next to it is exempt. One great cause of this is the difference of variety. One tree may be a week or ten days in advance of another, and if a frost occurs while the one is at its most tender stage of growth it may be fatally injured, while another, close by, either a week later or a week earlier, will entirely escape. The bark, too, varies in tenderness as well as the foliage, and indeed every organ may truly be said greatly to differ. There is also winter injury done, as well as in spring or summer, although in this respect the Larch is less liable than most other trees. There is no such thing as dormancy, winter rest, or entire cessation in a tree. I have seen the sap flow from a newly pruned Sycamore or Birch in January just as freely as in March or April. Many tree diseases are preventible, but very little can be done to effect a cure; and this recommends the importance of timely precaution and sharp outlook. *C. Y. Michie, Cullen House Banffshire, June 7.*

## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON*
FOR THE WEEK ENDING WEDNESDAY, JUNE 8, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| June | In | In. | ° | ° | ° | ° | ° | ° | ° | | In. |
| 2 | 29.91 | +0.11 | 80.0 | 52.0 | 28.0 | 64.0 | + 7.3 | 53.5 | 68 | E. | 0.00 |
| 3 | 29.92 | +0.12 | 79.0 | 52.4 | 26.6 | 64.7 | + 7.8 | 53.4 | 67 | N. | 0.00 |
| 4 | 29.72 | −0.08 | 81.6 | 57.0 | 24.6 | 66.2 | + 9.1 | 52.6 | 62 | S.W. | 0.00 |
| 5 | 29.37 | −0.43 | 62.0 | 54.0 | 8.0 | 55.8 | − 1.5 | 52.5 | 89 | S. | 0.42 |
| 6 | 29.29 | −0.51 | 60.0 | 46.2 | 13.8 | 49.7 | − 7.8 | 46.2 | 88 | S.W | 0.57 |
| 7 | 29.48 | −0.32 | 52.6 | 43.5 | 9.1 | 46.5 | −11.1 | 42.6 | 87 | N. | 0.21 |
| 8 | 29.82 | +0.02 | 61.0 | 41.6 | 19.4 | 49.0 | − 8.7 | 41.1 | 73 | N. N.E. | 0.00 |
| Mean | 29.64 | −0.16 | 68.0 | 49.5 | 18.5 | 56.6 | − 0.7 | 48.8 | 76 | N. S.W. | 0.22 |

June 2.—A very fine day; fine clear night.
— 3.—A fine warm, nearly calm day and night.
— 4.—A very fine warm day; fine night, but wind increasing in strength.
— 5.—A dull, wet, and cold day. Cold, wet night. A great change in temperature since yesterday.
— 6.—A dull, showery, cold day. Sun's place visible at times. Thunder in the evening.
— 7.—A gloomy and bitterly cold day. Showery. Very cold night. The mean temperature of this day was 20°.2 lower than that of June 4.
— 8.—A cold day; sun shining occasionally. Clear cold night. The lowest temperature to-day was 40° below the highest on the fourth day.

LONDON: *Atmospheric Pressure.*—During the week ending Saturday, June 4, the readings of the barometer at the level of the sea increased from 29.98

inches at the beginning of the week to 30.38 inches by the morning of May 31; decreased to 30.07 inches by the morning of June 2; increased to 30.18 inches by the morning of June 3; and was 29.93 inches at the end of the week. The mean reading for the week at the level of the sea was 30.15 inches, being 0.06 inch higher than that of the preceding week, and 0.17 inch above the average.

*Temperature.*—The highest temperatures in the week were 81°.6 on June 4, and 81°.5 on June 1. The lowest of the high temperatures were 63°.5 on May 29, and 75°.2 on May 30. The mean of the seven high day temperatures was 76°.7. The lowest temperatures were 47° on May 30, and 51° on May 29 and June 1. The highest of the low temperatures were 57° on June 4, and 52°.4 on June 3. The mean of the seven low temperatures was 51°.5.

The greatest range of temperature in one day was 30°.5, on June 1; the next in order was 28°.2 on May 30. The least ranges were 12°.5 on May 29, and 24°.6 on June 4. The mean of the seven daily ranges was 25°.2.

The mean temperatures on May 29 was 54°.8; on the 30th, 59°.7; on the 31st, 62°.3; on June 1, 63°.9; on the 2d, 64°; on the 3d, 64°.7; and on the 4th, 66°.2. The mean temperature of May 29 was 1° below its average, that of every other day was above its average, by 3°.7, 6°, 7°.4, 7°.3, 7°.8, and 9°.1 successively.

The mean temperature for the week was 62°.2, being 2°.9 of higher temperature than last week, and 10°.2 higher than that of the week before last, and was 5°.7 above the average of the same week for sixty years.

The highest reading of a thermometer with blackened bulb in vacuo was 174° on June 2, the next in order was 161° on June 4. On May 29 the highest reading of this thermometer was 93°.5. The mean of the seven daily readings was 142°.

The lowest readings of a thermometer with its bulb resting on short grass, and fully exposed to the sky, was 42°.5 on the 30th, and 43° on the 31st. The mean of the seven night readings was 45°.8.

*Rain* fell on one day only, viz., on May 29, to the amount of 0.29 inch.

The weather was very fine during the week.

England: *Temperature.*—During the week ending Saturday, June 4, the highest temperatures exceeded 81°.5 at Blackheath, Cambridge, Birmingham, and Nottingham; at Liverpool the highest in the week was 70°, and at Brighton was 75°. The mean from all stations was 79°. The lowest temperatures in the week were—39°.5 at Wrottesley, 40° at Hull, 41° at Truro, and 41°.5 at Leicester. The highest of the low night temperatures were—50°.4 at Brighton, 48°.5 at Plymouth, and 47° at Blackheath, Norwich, and Sunderland. The general mean was 43°.9.

The greatest ranges of temperature during the week were 43°.5 at Cambridge, and 40° at Truro. The smallest ranges were 24°.6 at Brighton, and 25°.7 at Liverpool. The mean from all stations was 35°.2.

The mean of the seven high day temperatures was 81° at Cambridge, and 78°.1 at Nottingham. The smallest means were 68°.1 at Liverpool, 71°.2 at Bristol, and 71°.3 at Brighton. The general mean from all stations was 74°.8.

The mean of the seven low night temperatures was least at Hull, 46°.9, and Cambridge, 47°.1. The means were highest at Plymouth, 53°.8, and Sunderland, 53°.4. The mean from all stations was 50°.7.

The mean daily range was greatest at Cambridge, 33°.9, and Nottingham, 30°.1. The least daily ranges were smallest at Liverpool, 16°.7, and Brighton, 18°.5. The mean from all stations was 24°.

The mean temperature for the week was highest, 62°.8, at Birmingham and Bradford, 62°.7 at Leeds, and 62°.2 at Sunderland. The lowest mean temperatures were 57°.9 at Liverpool, 58°.6 at Hull, 58°.7 at Wrottesley, and 59°.6 at Bristol. The mean from all stations was 61°.7.

*Rain.*—Some fell on June 4 at Liverpool, to the depth of 0.63 inch; the next heaviest fall was at Blackheath, 0.29 inch, on May 29; 0.26 inch fell at Bradford and 0.14 inch at Cambridge, in a thunderstorm on June 1. At many stations no rain fell, and the average from all stations was 0.14 inch. The week was one of fine weather with light winds.

Scotland: *Temperature.*—During the week ending Saturday, June 4, the highest temperatures were 81° at Dundee, 79°.3 at Aberdeen, and 79°.2 at Edinburgh. At Greenock the highest temperature in the week was 76°.2, and the general mean was 78°.4. The lowest temperatures were 43° at Dundee and 44°.5 at Aberdeen. At Greenock and Paisley the lowest temperature was 48°. The general mean was 45°.7.

The mean temperature was highest at Edinburgh, 61°.7, and Greenock, 61°.5. The mean was least at Paisley, 57°.4, and Leith, 59°.6. The general mean was 60°.1.

*Rain.*—The largest amount was 0.73 inch, at Greenock, the next in order being Glasgow, 0.34 inch. No rain fell at Aberdeen. The general mean was 0°.19 inch.

JAMES GLAISHER, F.R.S.

## Answers to Correspondents.

Books: *D. S.* Hemsley's *Handbook of Hardy Trees, Shrubs, and Herbaceous Plants* will probably suit you; for Conifers Messrs. Veitch's *Manual* just published; for herbaceous and alpine plants, Sutherland's *Handbook*, and Robinson's *Hardy Flowers.*—*A. J. H.* Hooker's *Student's Flora of the British Islands* (Macmillan), price about 7*s.* 6*d.*, will suit you best, we should think.—*C. & R. Paxton's Cottagers' Calendar of Garden Operations*, published at this office, price 3*d.*

Cardboard Boxes: *C. & R.* We like the boxes made by Messrs. Blake & Mackenzie, of Liverpool, and which are now very largely used, much better than yours.

Fish Manure: *D. C.* Farmers utilise refuse fish by making up a compost in the proportion of five barrels of fish to about eighteen loads of soil, and this is a sufficient dressing for an acre. We do not know of any other method of treating it.

Names of Plants: *A. Browne.* Trifolium minus. It will not hurt your lawn.—*H. E. W.* We do not know.—*J. M. W.* 1, we do not recognise; 2, Sedum arboreum variegatum; 3, Mesembryanthemum cordifolium variegatum.—*T. S. P.* Apparently Cerasus virginiana.—*W. B.* 1, Veronica officinalis; 2, Lychnis dioica var. alba; 3, Asperula taurina.—*J. Horsefield.* 1, Clematis viorna; 2, Genista radiata; 3, Saponaria calabrica, probably; 4, Meconopsis cambrica; 5, Ranunculus bulbosus; 6, Cytisus purpureus. Please be more liberal with materials another time.—*H. J. C.* We cannot possibly undertake to name florists' flowers—there are too many of them.—*Lucombe, Pince & Co.* Rhododendron blandfordiæflorum, figured in these columns in 1856, p. 548.—*St. J. C.* A variety of Dendrobium moschatum without the usual spots on the lip.—*G. W. S.* The old Epidendrum cochleatum.—*A. Gant.* Collomia grandiflora.

Peat Charcoal. Can any of our readers give us the address of the manufacturer of peat charcoal, whose works are near Doncaster?

Plants for a Water Tank: *S. Hartsbourne.* Aponogeton distachyon; the Water Fern, Ceratopteris thalictroides; Pistia stratiotes; Limnocharis Humboldtii; Nymphæ alba, and N. cœrulea, would all do well in such a tank.

Rhododendron Jasminiflora: *E. T. R.* It flowers in the autumn, and should be treated as a cool greenhouse plant. It will not grow out-of-doors in your cold district.

Seeds Germinating: *Enquirer.* We are not aware of any seeds that "will be seen germinating in a few minutes if placed on something moist."

Strawberries: *E. T. R.* Pot them as soon as you can get runners strong enough. You would get much practical assistance on this subject from Mr. Hind's little pamphlet, *Strawberries all the Year Round.*

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Communications Received:—J. A. Fraser (your contribution has been mislaid).—T. S.—J. B.—T. H., La Mortola (many thanks).—P. Claussen, Nikita Crimea.—J. S. C.—J. S. G.—T. R.—Krelage & Sons.—J. Thornton.—T. Christy.—G. B.—Diss.—Hortensius.—W. Milne.

# Markets.

*COVENT GARDEN, June 9.*

The holidays have had a depressing effect upon our market, and prices have generally given way, especially in hothouse goods. *James Webber, Wholesale Apple Market.*

Fruit.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apricots, per box | 1 6– 2 6 | Lemons, per 100 | 4 0– 6 0 |
| Cherries, per box | 1 6– 2 6 | Melons, each | 5 0– 8 0 |
| Figs, per dozen | 6 0– 9 0 | Peaches, per dozen | 6 0–20 0 |
| Gooseberries, ½-bush. | 6 0– 6 6 | Pine-apples, Eng., lb. | 2 0– 4 0 |
| Grapes, per lb. | 3 0– 6 0 | Strawberries, per lb. | 4 0– 8 0 |

Vegetables.—Average Retail Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Garlic, per lb. | 1 0– .. |
| Asparagus, English, per bundle | 6 0– .. | Herbs, per bunch | 0 2– 0 4 |
| — Sprue, per bund. | 1 6– 2 0 | Horse Radish, p. bun. | 4 0– .. |
| Beans, French, p. lb. | 1 0– .. | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| — Broad, per lb. | 1 0– .. | — Engl. Cos, score | 1 6– .. |
| Beet, per doz. | 1 6– 2 6 | Mint, green, bunch | 0 4– 0 6 |
| Cabbages, per doz. | 1 0– 2 0 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Carrots, per bunch | 0 4– 0 6 | Onions, per bushel | 7 0– .. |
| — New Fr., bund. | 1 6– .. | — Spring, per bun. | 0 9– .. |
| Cauliflowers, English, each | 0 6– 0 9 | Parsley, per bunch | 0 4– .. |
| Celery, per bundle | 1 6– 2 0 | Radishes, per bun. | 0 2– 0 6 |
| Cucumbers, each | 0 6– 1 6 | Rhubarb, per bund. | 0 4– 0 6 |
| Endive, per doz. | 2 0– 3 0 | Small salading, pun. | 0 4– .. |
| | | Spinach, per bushel | 2 0– 2 6 |
| | | Tomatos, per lb. | 0 9– 1 0 |

Potatos:—Old Potatos are nearly finished, but new ones are very plentiful from the Channel Islands and France. Prices—Kidney, 12*s.* to 14*s.*; Round, 10*s.* to 12*s.*; Malta, 8*s.* to 10*s.*

Plants in Pots.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Fuchsias, per dozen | 6 0–12 0 |
| Begonias, per doz. | 6 0–12 0 | Ivy Geranium, doz. | 4 0– 6 0 |
| Calceolaria, per doz. | 6 0–12 0 | Lilium longifl., doz. | 24 0–42 0 |
| Creeping Jenny, doz. | 3 0– 4 0 | Lobelia, per dozen | 4 0– 6 0 |
| Cyperus, per dozen | 6 0–12 0 | Marguerite, white, per dozen | 18 0–24 0 |
| Dracæna terminalis | 30 0–60 0 | — Yellow, per doz. | 12 0–30 0 |
| — viridis, per doz. | 12 0–24 0 | Mignonette, per doz. | 5 0– 8 0 |
| Erica, in variety, doz. | 18 0–30 0 | Myrtles, per doz. | 6 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Palms in var., each | 2 6–21 0 |
| Evergreens, in var., per dozen | 6 0–24 0 | Pelargoniums, doz. | 9 0–30 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | — tricolor, per doz. | 3 0–12 0 |
| Ficus elasticus, each | 1 6– 7 6 | — scarlet, per doz. | 4 0– 9 0 |
| Foliage Plants, various, each | 2 0–10 6 | Roses, various, doz. | 12 0–30 0 |
| | | Spiræa japonica, doz. | 9 0–18 0 |
| | | Stocks, per dozen | 4 0– 6 0 |

Cut Flowers.—Average Wholesale Prices.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 3 0– 6 0 | Lilium longiflorum, 12 blooms | 4 0– 6 0 |
| Antirrhinum, 12 bun. | 6 0– 9 0 | Marguerites, 12 blms. | 0 4– 0 9 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Azalea, 12 sprays | 0 6– 1 0 | Pelargoniums, 12 sprays | 0 9– 1 0 |
| Bouvardias, per bun. | 0 9– 1 6 | — zonal, 12 sprays | 0 4– 0 9 |
| Calceolaria, 12 bun. | 9 0–12 0 | Pæony, 12 bunches | 9 0–24 0 |
| Carnations, 12 blms. | 1 0– 2 0 | Pinks, white, 12 bun. | 3 0– 6 0 |
| Cornflower, 12 bun. | 3 0– 4 0 | — coloured, 12 bun. | 4 0– 6 0 |
| Daisies, 12 bunches | 2 0– 6 0 | Primula, double, per bunch | 0 6– 1 0 |
| Eucharis, per doz. | 4 0– 6 0 | Ranunculus, 12 bun. | 3 0– 6 0 |
| Forget-me-not, 12 bunches | 3 0– 6 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Gardenias, 12 blms. | 1 6– 6 0 | — (outdoor), 12 bun. | 6 0–12 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | — (Moss), 12 bun. | 18 0–24 0 |
| Hemerocallis (Day Lily), 12 blooms | 1 0– 1 6 | — (de Mois), 12 bun. | 6 0–12 0 |
| Iris, 12 bunches | 6 0–18 0 | Spiræa, 12 bunches | 8 0–12 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Stephanotis, 12 spr. | 3 0– 4 0 |
| — red, 12 blooms | 1 0– 3 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| Lily of the Valley, 12 bunches | 6 0–12 0 | Tuberoses, per dozen | 2 0– 3 0 |
| | | Woodroffe, 12 bun. | 3 0– 6 0 |

## SEEDS.

London: *June* 8.—The seed market presented today quite a holiday appearance, and the business transacted was very small. Of Mustard and Rape seed the available supplies are moderate, and holders consequently demand full rates. For Clover seed no speculative inquiry has yet arisen. The Linseed trade is quiet but steady. For spring Tares very low prices are now accepted. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CATTLE.

At the Metropolitan Market on Monday a supply of cattle much in excess of demand depressed prices 2*d.* and in some cases 4*d.* per stone, except for a few choice Scots, which brought previous value. Sheep sold more readily, but an advance of 2*d.* per stone was difficult to obtain, and not in all cases realised. Prime lambs being exceedingly scarce brought decidedly higher prices, but inferior were without alteration. Calves met a dull sale. Quotations:—Beasts, 3*s.* 8*d.* to 4*s.*, and 4*s.* 4*d.* to 5*s.*; calves, 4*s.* 6*d.* to 6*s.*; sheep, 5*s.* to 5*s.* 6*d.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; lambs, 7*s.* 8*d.* to 8*s.* 4*d.*—On Thursday trade was steadier. Beasts were disposed of at steady prices; sheep and lambs made 2*d.* to 4*d.* per 8 lb. more money than on Monday, and calves and pigs were firm.

## HAY.

Tuesday's Whitechapel Market report states that owing to the unfavourable weather for loading, supplies were light, but the trade dull and prices as follows:—Prime Clover, 100*s.* to 125*s.*; inferior, 60*s.* to 90*s.*; prime meadow hay, 95*s.* to 117*s.*; inferior, 30*s.* to 80*s.*; straw, 30*s.* to 44*s.* per load.—On Thursday there was a moderate supply of fodder on offer. Trade was dull at the following quotations:—Prime Clover, 100*s.* to 125*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 114*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 44*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 110*s.* to 116*s.*; inferior, 60*s.* to 88*s.*; superior Clover, 120*s.* to 130*s.*; inferior, 88*s.* to 100*s.*; and straw, 43*s.* to 50*s.* per load.

## POTATOS.

The Borough and Spitalfields Markets reports state that supplies are adequate to the demand, which is dull. Quotations:—English and Scotch Champions, 50*s.* to 70*s.*; Victoria, 100*s.* to 120*s.*; Regents, 90*s.* to 140*s.* per ton; German reds, 5*s.* 6*d.*; Belgian kidneys, 4*s.* 6*d.* to 5*s.* per bag. French round, 80*s.* to 90*s.* per ton. New Malta, 9*s.* to 10*s.*; St. Malo, 8*s.* 6*d.*; Jersey rounds, 9*s.* to 10*s.*; kidneys, 11*s.* per hundredweight.—The following are the imports into London last week:—5148 bags Hamburg, 7590 packages Malta' 1039 packages Antwerp, 3421 packages Bordeaux, and 778 packages St. Nazaire.

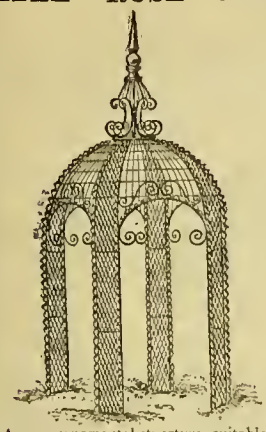
## COALS.

The following are the prices current at market during the week:—East Wylam, 15*s.* 6*d.*; Walls End—Hetton, 15*s.*; Hetton Lyons, 13*s.*; Hawthorns, 13*s.* 3*d.*; Lambton, 14*s.* 6*d.*; Wear, 13*s.*; South Hetton, 15*s.*; Tunstall, 13*s.*; Chilton Tees, 13*s.* 6*d.*

**Government Stock.**—On Tuesday Consols closed at 100 to 100⅛ for delivery, and 100¼ to 100⅜ for the account—both ex div. Wednesday's closing figures for delivery were as on the day previous, but for the account were posted at 100 9/16 to 100 5/16. The final quotations on Thursday were 99⅞ to 100 for delivery, and 100⅛ to 100¼ for the account—all ex div.

ROYAL HORTICULTURAL SOCIETY.—Great Summer Show, 1881. Two First Prizes, One Second, and the GOLD MEDAL for the most meritorious exhibit, awarded to J. J. THOMAS & CO.

## THOMAS'S NEW PATTERN PORTABLE ROSE TEMPLE,



No. 895.—A very ornamental structure, suitable for a lawn, to be placed over a gravel walk where four paths meet.

PRICES (Galvanised or Painted):—

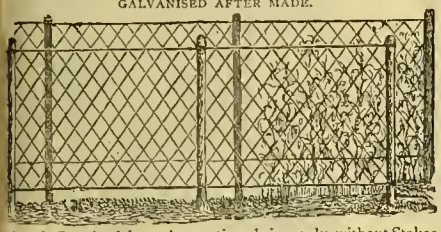
| Height. | Diameter. | To suit Pathways. | Width of Trellis. | £. | s. | d. |
|---|---|---|---|---|---|---|
| 9 feet. | 6 feet 3 in. | 4 feet wide. | 9 inches. | 4 | 4 | 0 |
| 10 feet. | 8 feet. | 5 feet. | 1 foot. | 5 | 5 | 0 |
| 11 feet. | 9 feet 9 in. | 6 feet. | 1 foot 3 in. | 6 | 6 | 0 |

Any size made to order.

## IMPROVED PEA TRELLISES,

*For Training Peas, instead of Sticks.*

GALVANISED AFTER MADE.

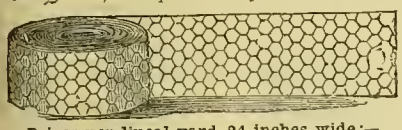


Prices in Panels of the undermentioned sizes only, without Stakes.
6 feet wide, 3 feet high .. .. .. 2s. 6d. each panel.
6 „ 4 „ .. .. .. 3s. 6d. „
6 „ 5 „ .. .. .. 4s. 6d. „
The above engraving shows the arrangement of the panels ed to ordinary wood stakes. Improved Framed Standards for tto, galvanised, 2s. 6d., 2s. 9d., and 3s. each.

## GALVANISED WIRE NETTING,

REDUCED PRICES.

*Best Quality. Equal to any in the Market.*



Prices per lineal yard, 24 inches wide:—

| Mesh. | Light. s. d. | Medium. s. d. | Strong. s. d. | Extra strong. s. d. |
|---|---|---|---|---|
| 2 in. | 0 2½ | 0 2¾ | 0 3¾ | 0 4½ |
| 1⅝ in. | 0 2¾ | 0 3½ | 0 4 | 0 5¼ |
| 1½ in. | 0 3½ | 0 4 | 0 5¼ | 0 6¼ |
| 1¼ in. | 0 5½ | 0 7 | 0 9 | 1 0 |
| 1 in. | 0 7 | 0 8½ | 0 11 | 1 3 |
| ¾ in. | 0 9 | 0 11 | 1 2 | 1 6 |

Usual widths kept in stock, 12, 18, 24, 30, 36, 48 inches. -inch Mesh kept in stock 72 inches wide. This will be ound very convenient for erecting Poultry Yards. All widths harged at proportionate prices. SOFT GALVANISED YING WIRE, 6d. per pound. CUTTING NIPPERS, s. 3d. per pair, very useful for cutting wire netting, &c. GARDEN SEATS, £1 1s. each. GARDEN CHAIRS, s. 6d. each. FOLDING GARDEN TABLES, 10s. each.

IMPROVED LAWN MOWERS.

| Makers. | 6 in. | 8 in. | 10 in. | 12 in. | 14 in. | 16 in. | 18 in. |
|---|---|---|---|---|---|---|---|
| | s. | s. | s. | s. | s. | s. | s. |
| American .. | — | 35 | 40 | 50 | 60 | 70 | — |
| Archimedean | 25 | 42 | 63 | 84 | 105 | 126 | 147 |
| Green .. | 35 | 50 | 70 | 90 | 110 | 130 | 150 |
| Shanks .. | 25 | 50 | 70 | 90 | 110 | 130 | — |
| Ransome .. | — | 55 | 70 | 90 | 110 | 130 | 150 |

GARDEN ROLLERS.

| Single Cylinders. Inches. | s. d. | Double Cylinders. Inches. | s. d. |
|---|---|---|---|
| 18 × 18 | 37 6 | 18 × 16 | 45 0 |
| 20 × 20 | 45 0 | 20 × 18 | 52 6 |
| 22 × 22 | 52 6 | 22 × 20 | 65 0 |
| 24 × 24 | 65 0 | 24 × 22 | 75 0 |
| — | — | 26 × 24 | 85 0 |

Illustrated Catalogue on application.

Discounts for Prompt Cash:—LAWN-MOWERS, 20 per cent.; WIRE NETTING (in 50-yard rolls), 15 per cent.; GARDEN SEATS and TABLES, PEA TRELLISES, 10 per cent.; NEW ROSE TEMPLE and GARDEN ROLLERS, 5 per cent.

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Show Rooms { 87, Queen Victoria Street, E.C. / 285, Edgware Road, London, W.
Manufactory—362, Edgware Road, London, W.

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An effectual and speedy Eradicator of

Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight, and all Parasites affecting Plants, without Injury to Foliage.

*It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.*

**Especially adapted for the Destruction of Blight on the Coffee Plant.**

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It has now undergone a thorough test by some of the most Practical Men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with PERFECT SAFETY TO FOLIAGE.

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Some hundreds of Testimonials lately received from men of considerable experience throughout the Kingdom.

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CHEAP ART SUMMER-HOUSES.
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MANSION HOUSE BUILDINGS, LONDON, E.C.
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Made of Wood and Iron only.

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BOULTON & PAUL,
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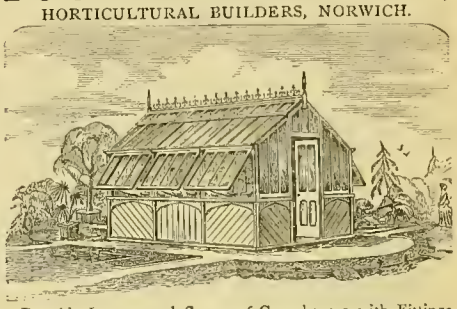

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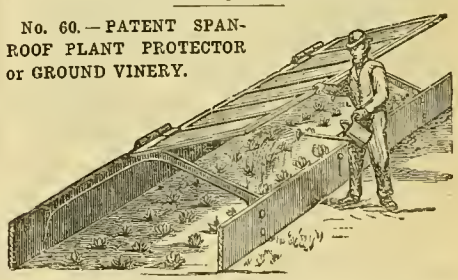

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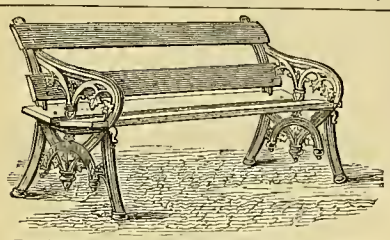

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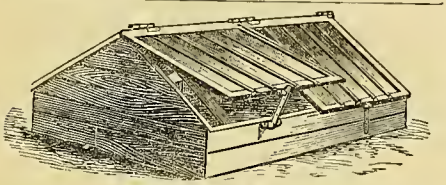

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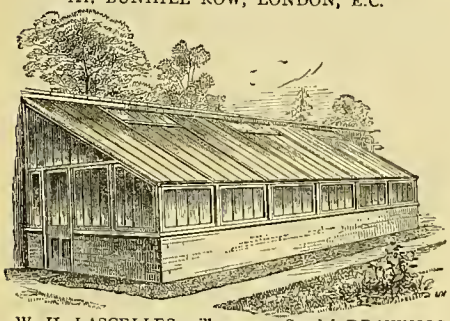

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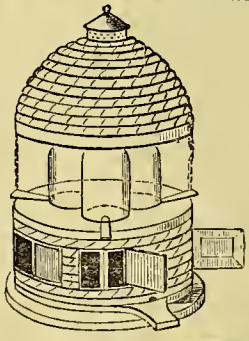

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as originally introduced by
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This Hive will be found to possess many practical advantages, and is more easy of management than any other Beehive that has been introduced.
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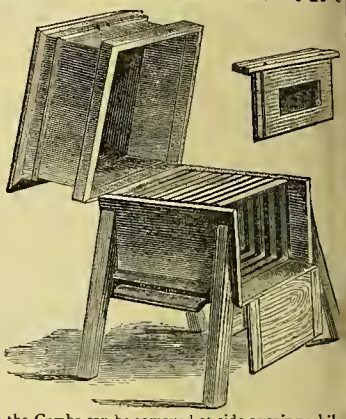

From which the Combs can be removed at side opening while supers are on. This Hive affords remarkable facility for manipulation, because the Frames can also be taken out from top as with other Frame Hives, and at the same time afford great opportunity for full inspection, having glass on three sides closed with shutters.
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ITALIAN SUN BLINDS made of strips of wood, 2d. to 3d per square foot. Kept in stock. Excellent material for shading Conservatories, &c. Apply for Samples and Price List to
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RAFFIA FIBRE for Tying.
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| To cover 20 | loads | 20 feet | by | 24 feet, | £2 | 13 | 2 |
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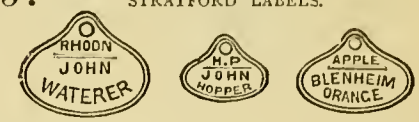


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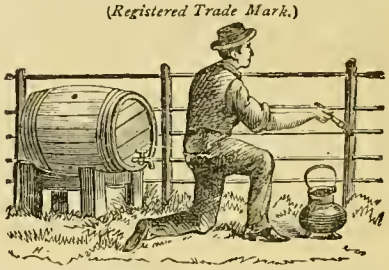

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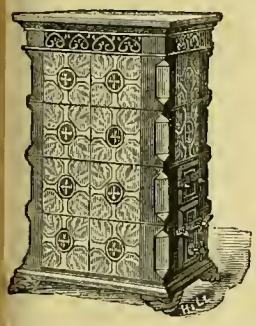

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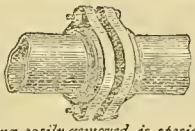

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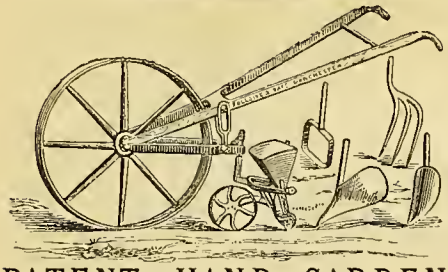

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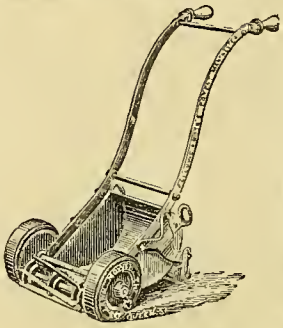

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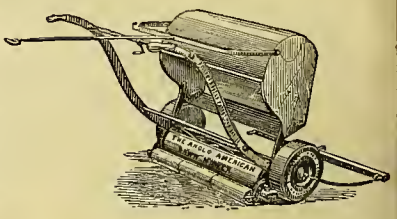

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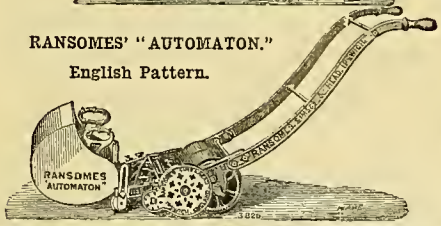

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Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, June 11, 1881.
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THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 390.—Vol. XV. { New Series. } SATURDAY, JUNE 18, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. { Post Free, 5½d.

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FORESTRY:—Report on the Forest Wealth of the United States, and Catalogue of the Forest Trees of North America.

NOTICE.

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W. B. ROWE AND CO. (Limited), Barbourne Nurseries, Worcester.

PRIMULAS and CINERARIAS.—Fine, strong plants of the good Covent Garden Strains, of first-class quality, 1s. 6d. per dozen; 10s. per 100.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

**Primulas — Primulas — Primulas.**

Twelfth Year of Distribution.

WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100. CINERARIAS same price. Package and carriage free.

The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

**Gardenia intermedia.**

MESSRS. JOHN STANDISH AND CO. have to offer a very extensive stock of GARDENIA INTERMEDIA of all sizes, every plant being in the most robust health, and guaranteed perfectly clean. Nice plants in 6-inch pots at 2s. 6d. each; larger, 3s. 6d. to 10s. 6d. each. Specimens, fine bushy plants, with plenty of bloom-bud on them, 1, 1½, 2 and 3 guineas each.

Royal Nurseries, Ascot, Berks.

**Verbenas—Verbenas.**

VERBENAS.—Strong, healthy, well-rooted Cuttings, perfectly free from disease, of White, Purple, Scarlet, and Pink, 6s. per 100, 50s. per 1000; 100 strong rooted Cuttings, in twelve most splendid varieties, First Prize Flowers, for 8s. Terms cash.

EXECUTORS of the late H. BLANDFORD, The Dorset Nurseries, Blandford.

**Verbenas.**

VERBENAS.—Extra strong and well-rooted Plants of Purple, White, Crimson, and Pink, 6s. per 100, 50s. per 1000; ten choice Exhibition varieties, beautifully clean and healthy, 8s. per 100, 70s. per 1000; Cuttings, 3s. and 4s. per 100, 25s. and 35s. per 1000. All securely packed. Terms cash.

FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

**Rhododendrons.**

JOHN WATERER AND SON'S EXHIBITION of these Plants is NOW ON VIEW daily at the Gardens of Cadogan Place, Sloane Street. Admission 1s.

NARCISSUS CLUSII, or CORBULARIA MONOPHYLLA

(the White Hoop Petticoat Narcis).

Of this elegant and much desired bulbous plant an important consignment has just arrived, in excellent condition. We send out bulbs, prepaid, and no charge for packing, at the following prices:—One dozen, 6s.; twenty-five, 12s.; fifty, 21s.; 100, 42s.

Special offer to the Trade on application.

E. H. KRELAGE AND SON, Haarlem, Holland.

**Hyacinths, Tulips, &c.**

BUDDENBORG BROTHERS, BULB GROWERS, House Bloemswaard, Hillegom, near Haarlem, Holland. Wholesale CATALOGUE now ready, and will be sent post-free on application.

B. B have an immense stock of CHRISTMAS ROSES, which they can strongly recommend. Prices on application.

**Notice to Home and Continental Nurserymen and SEEDSMEN.**

BALLANTYNE AND SON, Dalkeith, N.B., request that NO MORE TRADE CATALOGUES be sent to their Address, as they have RETIRED from the Trade.

June 7, 1881.

STRAWBERRY RUNNERS.—Strong, healthy, and well-rooted, from twenty of the best varieties in cultivation. Price LIST, &c., on application.

Manual on Strawberry Culture, with Sample Box of Plants and Fruit, post-free 1s.

W. LOVEL & SON, Strawberry Farmers, Weaverthorpe, York.

**Mangel Wurzel Seed.**

JOHN SHARPE is now prepared to supply samples and special quotations to the Trade.

Bardney Manor, Lincoln.

**To the Seed Trade.**

MALDEN AND SON have a few Quarters of each of the following varieties of TURNIP SEEDS to offer—grown on their own Farms from fine Selected Stocks, Nett Crop, 1880:—

MAMMOTH PURPLE-TOP WHITE TURNIP
STRATTON GREEN ROUND TURNIP
POMERANIAN WHITE GLOBE TURNIP
GREEN GLOBE TURNIP
LINCOLNSHIRE RED GLOBE TURNIP
GREY STONE TURNIP
YELLOW TANKARD TURNIP.

For prices, &c., apply to

MALDEN AND SON, Market Square, Biggleswade.

## SALES BY AUCTION.

SALE THIS DAY at HALF-PAST TWELVE PRECISELY.

**The Grove, Highgate, N.**

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, The Grove, Highgate, N., on SATURDAY, June 18, at half-past 12 o'Clock precisely, by order of the Executors of the late E. J. Nettlefold, Esq., a small collection of STOVE and GREENHOUSE PLANTS, consisting of Crotons, Marantas, Palms, Specimen Tree and other Ferns, Camellias, Azaleas, Orange Trees, Fruit Trees in Pots, Roses, quantity of Geraniums, and other Bedding Plants; a few lots of TOOLS, &c.

May be viewed the day prior and morning of Sale; and Catalogues had on the Premises, and of the Auctioneer, 38, King Street, Covent Garden, W.C.

**The Fifth Portion of the Celebrated Collection of ORCHIDS formed by JOHN DAY, Esq., of Tottenham.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, June 21 and 22, at half-past 12 o'Clock precisely each day, the Fifth Portion of this celebrated Collection, comprising, amongst other fine things:—

| | |
|---|---|
| Cattleya Trianæ, white variety | Nepenthes villosa |
| Odontoglossum Andersonianum | Saccolabium curvifolium, yellow var. |
| ,, polyxanthum [num | Cymbidium Lowe Chanvieri |
| ,, Rossii majus, var. rubescens | Anguloa eburnea |
| Cryripedium Dmryi | ,, uniflora |
| Angræcum Ellisii | Lælia purpurata, grand variety |
| Aerides Schröderi | Oncidium ornithorhynchum album |
| ,, Fieldingii, v. album | Vanda furva (limbata) |
| ,, ,, v. Williamsii | |

Also great numbers of CATTLEYA MOSSIÆ and C. MENDELII, PHALÆNOPSIS AMABILIS GRANDIFLORA and SCHILLERIANA, ODONTOGLOSSUM VEXILLARIUM, and many other showy species in great variety, which being offered without the LEAST RESERVE, are peculiarly adapted to Gentlemen beginning to form a Collection.

On view the mornings of Sale, and Catalogues had.

**Stove and Greenhouse Plants, Orchids, Bedding PLANTS, GARDEN SEATS, HORSES, CARRIAGES, COWS, PIGS, POULTRY, &c.**

MR. J. C. STEVENS is instructed to SELL by AUCTION, on the Premises, Womersley House, Crouch Hill, Hornsey, N., on THURSDAY, FRIDAY and SATURDAY, June 23, 24 and 25, at half-past 12 o'Clock precisely each day, a well-grown collection of STOVE and GREENHOUSE PLANTS, a few good ORCHIDS, a large assortment of first-class BEDDING PLANTS, GARDEN SEATS, VANS, &c.; also 3 good CARRIAGE HORSES, 3 COWS, PIGS, POULTRY, KICK of HAY, CARRIAGES, HARNESS, and the entire Stock of Garden and Farm, the property of the late Mrs. Peter Robinson.

May be viewed the day prior and mornings of Sale; and Catalogues had on the Premises, and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

**Odontoglossum crispum (Alexandræ), splendid** masses, and in fine condition.—SHUTTLEWORTH, CARDER & Co., Orchid and New Plant Importers, 191, Park Road, Clapham, S.W., beg to announce that

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 28, at half-past 12 o'Clock precisely, a fine Importation of ODONTOGLOSSUM CRISPUM (ALEXANDRÆ), in splendid condition.

On view the morning of Sale, and Catalogues had.

**Imported and Established Orchids.**

MR. J. C. STEVENS has received instructions from The New Plant and Bulb Company to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 28, at half-past 12 o'Clock precisely, an importation of ORCHIDS, in an unusually fine condition; also many valuable ESTABLISHED ORCHIDS.

Full particulars next week. On view morning of Sale, and Catalogues had.

**Established Orchids.—Important Sale.**

MR. J. G. STEVENS has received instructions from Sir Trevor Lawrence, Bart., M.P., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 29, at half-past 12 o'Clock precisely, a portion of his renowned COLLECTION of ORCHIDS in consequence of the Houses being overcrowded. The Plants are in vigorous health, for which this Collection is well known, and comprise many rare varieties and fine specimens. Among them are:—

| | |
|---|---|
| Oncidium macranthum | Lælia anceps Dawsoni |
| Aerides Schröderi | Trichopilia lepida |
| Lælia elegans Turneri | Dendrobium Veitchianæ |
| ,, ,, alba | Cattleya Dowiana |
| Eulophia Guineensis | ,, Dolosa |
| Masdevallia Macrura | Utricularia Endresii |
| Cattleya exoniensis [teum | Mormodes luxatum eburneum |
| Dendrobium Falconeri gigan- | &c., &c. |

On view morning of Sale, and Catalogues had.

**The Collection of Orchids formed by the Late GEORGE CLIVE, Esq., M.P.**

MR. J. C. STEVENS is instructed to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 29, at half-past 12 o'Clock precisely, the COLLECTION of ORCHIDS formed by the late George Clive, Esq., M.P., comprising good plants of Odontoglossums, Epidendrums, Calanthes, Cymbidiums, Cœlogynes, Dendrobiums, Oncidiums, Vandas, Aerides, Angræcums, Pleione, Lycastes, &c.

On view morning of Sale, and Catalogues had.

**Lathes, Model Engines, Boilers, &c.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, July 8, at half-past 12 o'Clock precisely, a valuable SCREW CUTTING LATHE and appliances, BENCH LATHES, quite new two-horse power Horizontal SLIDE VALVE ENGINE, and Vertical SLIDE VALVE ENGINE, handsome three-quarter horse power TABLE ENGINE, in bright gun-metal; BEAM ENGINES, Double Cylinder Slide Valve Marine PADDLE ENGINE, with Copper Boiler, for canoe; WORKING MODELS of Horizontal and Vertical Slide Valve Engines, Marine Engines, and Boilers; Lathe TOOLS and WHEELS, Handsome RACING CUTTER and SCHOONER YACHT, Built SCREW STEAMER HULL in Mahogany, Copper fastened, &c.

**Valuable Established Orchids.**

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 30, at half-past 12 o'Clock, precisely, a collection of Established ORCHIDS from France, among them extremely rare kinds. The collection contains a very fine specimen of ANGRÆCUM SESQUIPEDALE, about 2 feet high, and with three young plants from lower part of stem; also a plant with fourteen bulbs of LÆLIA PERRINI ALBA, and:—

| | |
|---|---|
| Lælia elegans alba | Cattleya Eldorado |
| Vanda Lowii | Masdevallia chimæra |
| Masdevallia trochilus | Trichopilia crispa marginata |
| Cattleya Eldorado alba | Lycaste Skinneri alba |
| Cœlogyne Massangeana | Odontoglossum Andersonianum lobatum |
| Lælia purpurata alba | Miltonia virginalis |
| Cattleya bogotensis alba | Oncidium ornithorhynchum |
| Masdevallia rosea | album [leaves |
| Anguloa Rückeri purpurea | Masdevallia Wagneriana, 150 |
| Lælia Schilleriana splendens | Lælia Schilleriana marginata |
| Cattleya labiata (autumn) | |

At the same time will be sold Valuable Importations, consisting of ONCIDIUM VARICOSUM ROGERSI, CYPRIPEDIUM CAUDATUM, &c., further particulars of which will appear next week.

**The Collection of Surgical and Scientific Instruments, the Property of E. D. L. Gillott, Esq., of Sheffield.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, July 1, at half-past 12 o'Clock precisely, the collection of SURGICAL and SCIENTIFIC INSTRUMENTS, the property of E. D. L. Gillott, Esq., of Sheffield.

On view morning of Sale, and Catalogues had.

**Photographic Apparatus, Microscopes, &c.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY and SATURDAY, July 1 and 2, at half-past 12 o'Clock precisely, CAMERAS and LENSES, BATHS, PRINTING FRAMES, STANDS, &c.; Telegraph Apparatus, Microscopes, Telescopes, Model Engines and Boats, Lathes with various Chucks and Tools, Desks, Glove Boxes, Scrap-Books, Engravings, Water-Colours, Graphoscopes, Bicycles, and Miscellaneous Property.

May be viewed after 2 o'Clock the day prior and morning of Sale, and Catalogues had.

**Periodical Sale of Poultry and Pigeons.**

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, July 5, at half-past 12 o'Clock precisely, 300 Pens of choice POULTRY and PIGEONS from the yards and lofts of well-known breeders and exhibitors.

On view morning of Sale, and Catalogues had.

**The First Portion of the Stock of Minerals, &c., the property of the late Mr. James Tennant, F.G.S., Professor of Geological Mineralogy at King's College, London.**

MR. J. C. STEVENS has received instructions from the Executors to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY and TUESDAY, July 11 and 12, at half-past 12 o'Clock precisely each day, the first portion of the Stock of MINERALS, &c., the property of the late Mr. James Tennant, F.G.S., removed from his residence, 149, Strand, comprising fine specimens of Opals, Cryolites, Beryles, Stilbites, Prehnites, Fluor Spars, Tourmalins, Arragonites, Agates, and other cut and polished specimens; also a variety of FOSSILS, MAHOGANY and other CABINETS, Glass Show CASES, LAPIDARY APPARATUS by Mawe, CHEMICAL CHESTS, &c.

On view the Saturday prior and Mornings of Sale, and Catalogues had.

**Imported Orchids, direct from Mexico.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, City, E.C., on MONDAY NEXT, at 12 o'Clock, a splendid importation of 800 LÆLIA MAJALIS and 150 CHYSIS BRACTESCENS, consigned direct from Mexico for Sale without the slightest reserve. Amongst them will be found a quantity of very large masses.

Catalogues at the Mart, and 8, New Broad Street, E.C.

**Established Orchids.**

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, City, E.C., on MONDAY NEXT, at 12 o'Clock, about 400 lots of ESTABLISHED ORCHIDS, including many very fine pieces; and a few plants of the exceedingly rare PHALÆNOPSIS SUMATRANA.

On view morning of Sale. Catalogues at the Mart, and 8, New Broad Street, E.C.

**Important Sale of Surplus Stock of the Haven GREEN NURSERIES, EALING.**

MR. F. S. REYNOLDS will SELL by AUCTION, THIS DAY, at 2 o'Clock precisely, the above Stock, as previously advertised.—Offices, 81, Edgware Road, W.

**Midland Counties.—(5250.)**

FOR DISPOSAL, a valuable NURSERY BUSINESS, in a High-class Locality, doing an excellent local Trade. Two Nurseries, thoroughly well-stocked, in perfect Working Order, attractive Shop, and Twelve-roomed Residence. Ill-health cause of disposal. Rent £70; small Premium. Incoming by valuation.

Particulars of Messrs. PROTHEROE AND MORRIS, 8, New Broad Street, London, E.C.

**A Rare Opportunity.**

TO BE DISPOSED OF, a small NURSERY (in consequence of the continued failing health of the present Proprietor), situated in one of the best parts of the Midland Counties, and has been established upwards of 50 years.

For further particulars, &c., address T. M., Robert Cooper, Esq., Seed Merchant, 90, Southwark Street, London, S.E.

TO FLORISTS.—A First-class BUSINESS, in the above line, in one of the best positions at the West End, well situated for Flowers and Fruit.

For particulars write to G. R., Lambert's General Advertising Offices, Westbourne Grove, W.

TO FLORISTS and OTHERS.—For Disposal, three Span-roofed GREENHOUSES, 65 feet by 11, also two ranges of PITS, 65 feet by 5, all heated with Hot Water. The HOUSE with STOCK and 16 years' LEASE to be Sold.

Apply to A. ROFE, Crowborough Cross, Sussex.

TO LET, an extensive FRUIT and KITCHEN GARDEN, containing 3½ Acres, with Greenhouse and Vinery, in good condition. Possession, with Gardeners' House thereon, at Michaelmas.

Apply, Mrs. COGHILL, Norwich St., East Dereham, Norfolk.

PELARGONIUM SOCIETY.—Instituted 1874, to Promote the Cultivation and Improvement of the Pelargonium. A Subscription of £1 1s., paid annually, constitutes Membership, and Members are alone privileged to compete for the Society's Prizes.

The ANNUAL EXHIBITION of PELARGONIUMS will be held in connection with the Rose Show, by permission of the Council of the Royal Horticultural Society, in the Gardens, South Kensington, W., on TUESDAY and WEDNESDAY, June 28 and 29. Entries close June 24. Schedules, Forms of Entry, Regulations and any other particulars, may be obtained on application to

Mr. SHIRLEY HIBBERD, Hon. Sec.

15, Brownswood Park, London, N.

ROYAL HORTICULTURAL SOCIETY'S SHOW at South Kensington, JUNE 28 and 29.

PRIZES OFFERED by MESSRS. WEBBER AND CO., Fruiterers, Covent Garden, W.C.

In order to show Fruit-growers and the Public generally the best mode of Packing Fruit for Market, so as to realise the Highest Prices, Messrs. WEBBER & Co. hereby offer the following PRIZES for the BEST PACKED THREE BOXES of FRUIT.

1st Prize, £5 5s.; 2d, £3 3s.; 3d, £2 2s.

To consist of 1 box of Grapes, not less than 14 lb.; 1 box of Peaches, not less than 24; 1 box of Strawberries, not less than 2 lb.

CONDITIONS.—To be booked, *carriage paid* at any station, irrespective of distance, and delivered by Railway Company, addressed to the Superintendent, Royal Horticultural Society, South Kensington, S.W.

FARNINGHAM ROSE and HORTICULTURAL SOCIETY.

ANNUAL EXHIBITION, WEDNESDAY, June 29. Liberal Prizes offered to all comers for ROSES, STOVE and GREENHOUSE PLANTS, MISCELLANEOUS COLLECTIONS of FLOWERING and other PLANTS, FRUIT, VEGETABLES, and TABLE DECORATIONS. Entries close on Saturday, June 25. Schedules to be obtained of

Farningham, Kent. F. BURNSIDE, Esq., Hon. Sec.

RICHMOND HORTICULTURAL SOCIETY.

President—H.S.H. THE DUKE OF TECK, G.C.B.

The SEVENTH ANNUAL SUMMER EXHIBITION of PLANTS, FLOWERS, FRUIT and VEGETABLES will be held in the Old Deer Park, Richmond Green, on THURSDAY, June 30. Schedules and Tickets may be obtained of

ALBERT CHANCELLOR, Hon. Sec.

1, King Street, Richmond.

WOODBRIDGE HORTICULTURAL SOCIETY.

*President*: The Lord RENDLESHAM, M.P.

The ANNUAL MEETING will be held on THURSDAY, June 30, and FRIDAY, July 1, being the days of the Meeting of the Suffolk Agricultural Society. Four Hundred Prizes will be awarded, including TWENTY GUINEAS for ROSES. Lists and further particulars of

F. WHISSTOCK, Secretary.

GRAND FLOWER SHOW.—WORCESTERSHIRE AGRICULTURAL SOCIETY STOURBRIDGE MEETING, JULY 5, 6, and 7 next. TWO HUNDRED and FORTY POUNDS in PRIZES for PLANTS, FLOWERS, FRUIT, and VEGETABLES, open free to all comers; also a COTTAGERS' SHOW. Entries close June 28. For Schedules of Prizes, apply to

J. S. HAYWOOD, Hon. Sec. Hort. Department, Seed Merchant, Worcester.

TIVERTON (Devon) HORTICULTURAL SOCIETY.

ELEVENTH EXHIBITION, JULY 7, 1881. Liberal PRIZES for CUT ROSES, open to all England, and to Subscribers for STOVE and GREENHOUSE PLANTS FRUIT and VEGETABLES. Schedules on application to

Messrs. PAINE AND MILLS, Hon. Secs.

SHROPSHIRE HORTICULTURAL SOCIETY.

ROSE SHOW, July 7.
GREAT SUMMER SHOW, Aug. 17 and 18.

Schedules and full particulars may be obtained from the Hon. Secs.,

Messrs. ADNITT AND NAUNTON,

The Square, Shrewsbury.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.

The 25th Grand ANNUAL FLOWER, FRUIT and ROSE SHOW will be held on FRIDAY, July 8, 1881, in the Great Hall, opposite the South-Eastern Railway Station, and in the Calverley Hotel Grounds behind the same. The full Band of the 2d Life Guards will attend. Schedules of Prizes may be obtained on application, and Subscriptions paid to

E. F. LOOF, Secretary, 26, Parade.

BRIGHTON AQUARIUM.—The FIRST SHOW of ROSES and DECORATIVE PLANTS will take place in the Aquarium on SATURDAY July 9 next. Particulars and Schedules on application to

The MANAGER.

DISS HORTICULTURAL SOCIETY.

TUESDAY, July 12.
SPECIAL OPEN ROSE PRIZES.

The Rectory, Scole. F. PAGE ROBERTS, Hon. Sec.

RHODODENDRONS.

The AMERICAN PLANTS at KNAP HILL will be in their greatest beauty during the ensuing fortnight, and may be seen daily, Sundays excepted.

The EXHIBITION of RHODODENDRONS in the GARDENS of the ROYAL BOTANIC SOCIETY, Regent's Park, W., will be ON VIEW DAILY, from June 1. Orders of Admission may be obtained from Fellows of the Society, or from the Exhibitor,

ANTHONY WATERER,
Knap Hill Nursery, Woking, Surrey.

☞ The RHODODENDRONS and AZALEAS in ROTTEN ROW, Hyde Park, W., are supplied by ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.—May 28.

SUTTON COLDFIELD CRYSTAL PALACE COMPANY'S GREAT ROSE SHOW, FRIDAY, July 22. For Schedules and all information apply to
Rev. J. A. WILLIAMS,
Vardley Wood Vicarage, near Birmingham.

**Bedding Plants for the Million.**

JAS. HOLDER AND SON can supply strong, healthy Plants of Scarlet and Variegated GERANIUMS, VERBENAS, GAZANIAS, AGERATUMS, LOBELIAS, Single PETUNIAS, DAHLIAS, SALVIAS, CHRYSANTHEMUMS, FUCHSIAS, HELIOTROPES, IRESINES, MESEMBRYANTHEMUM, CINERARIA MARITIMA, &c. Eight dozen for 20s.; box and packing free. Cash with order. Crown Nursery, Reading.

ALTERNANTHERAS.—100,000 well-established Plants for Sale, fit for Bedding-out at once, as follows:—
ALTERNANTHERA amœna, 8s. per 100, 70s. per 1000.
" " spectabile, 8s. per 100, 70s. per 1000.
" magnifica, 7s. per 100, 65s. per 1000.
" amabilis latifolia, 7s. per 100, 65s. per 1000.
" paronychioides major, 7s. per 100, 65s. per 1000.
" versicolor, 7s. per 100, 65s. per 1000.
" spathulata, 7s. per 100, 65s. per 1000.
MILES' NEW ZONAL, "West Brighton Gem," the best scarlet Bedding Geranium yet introduced, awarded First-class Certificate by the Royal Horticultural Society, strong plants, in No. 60 pots, 6s. per dozen, 50s. per 100.
Special quotations to large buyers.
WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

GEO. JACKMAN AND SON have every confidence in recommending the undermentioned, as choice and distinct varieties of their NEW HARDY CLEMATIS:—
C. BELLE OF WOKING (Jackman).—See Plate in *Florist and Pomologist* Magazine in July number.—A fine double variety, of the florida type, with about eight series of sepals, and a small tuft of stamens. The colour is a charming delicate but decided tint of bluish-mauve or silver-grey, the innermost sepals having here and there a dash of reddish-lilac, the filaments white, supporting cream-coloured anthers. A decided acquisition. 10s. 6d. each.
C. ANGELINA (Jackman).—A fine variety of the early lanuginosa type, flowers are flat and full, 6 inches across, eight-sepaled, of pale bluish-mauve colour; altogether a very choice variety. 10s. 6d. each.
C. MISS CRAWSHAY (Jackman).—A most distinct and charming variety, belonging to the patens group. The flowers are large for this type, 6½ inches across, eight-sepaled, and frequently a second row of sepals, of a pretty solferino-pink (pink shaded with lilac), soft and delicate in hue, and marked with a pale bronzy tint on the bar, the pinkish tint being paler on each side next the bar, and passing off to pale flesh colour. 10s. 6d. each.
The set of 3 varieties for 24s. The usual discount to the Trade.
Woking Nursery, Surrey.

SPECIAL OFFER of CHOICE PLANTS.
FUCHSIAS, 12 best Exhibition varieties, 1s. 6d.; 12s. per 100.
" 12 new Exhibition varieties, 2s. 6d.; 20s. per 100.
COLEUSES, 12 new varieties, 2s. 6d.; 20s. per 100.
" 18 new varieties, 3s. 6d.
AGERATUM, Dwarf, 12 for 1s. 3d.; 8s. per 100.
IRESINE, 12 for 1s. 2d.; 8s per 100.
VERBENAS, 12, in 4 varieties, 1s. 2d.; 6s. per 100.
" 12, in 8 varieties, 1s. 4d.; 8s. per 100.
CHRYSANTHEMUMS, 12, in 12 varieties, 2s.
" 100, in 50 varieties, 12s.
PELARGONIUMS, 100 Show and Fancy, in 25 varieties, 20s.
GERANIUMS, Bronze, Beauty of Calderdale, 12 for 2s. 6d., 18s. per 100.
" " Maréchal McMahon, 12 for 2s. 6d.; 18s. per 100.
" " mixed varieties, 12 for 2s.; 15s. per 100.
" Variegated Bijou, 12 for 2s.; 12s. per 100.
" Double, 12 new varieties, 2s. 6d.; 20s. per 100.
" Zonal and Scarlet, 12 varieties, 2s. 6d.; 18s. per 100
" " " mixed, 12 for 1s. 6d.; 10s. per 100.
All well rooted and package free.
Terms—Cash with all Orders.
FLETCHER AND SON, Florists, &c., New Square, Chesterfield.

**Carnations.**

HEATH AND SON beg to offer the following sorts, for delivery in September, out of pots:—
BRIDE, "Hodge's," 30s. per 100.
PRINCE of ORANGE, 35s. per 100.
MISS JOLIFFE, 35s. per 100.
DR. ABERCROMBIE, deep yellow, a great improvement on "King of the Yellows," £5 per 100.
Special quotations per 1000.
Exotic Nurseries, Cheltenham.

GERANIUMS.—The best of the New, all that took Prizes or Certificates.—Denny's Romeo, Dudu, &c., eight varieties, post-free, for 6s.; Catlin's (Carter & Co.), five varieties, for 4s.; Cannell's, ten varieties, for 7s. 6d.; Pearson's, ten varieties, for 7s. 6d.; Cuttings half-price. All the best Doubles in Cultivation. Also PELARGONIUMS Regal and others. See CATALOGUE.
RICHARD PANNETT, Nurseryman, Chailey, Sussex.

**Verbenas—Verbenas.**

WILLIAM BADMAN offers a splendid stock of Purple, White, Scarlet, Crimson, and Rose Verbenas, best bedders, clean, healthy, well-rooted stuff, 6s. per 100, 50s. per 1000; strong plants from single pots, full of cuttings, 12s. per 100; 100 rooted cuttings, in twelve best show kinds, 8s.; packing included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

**50,000 Pelargonium Vesuvius.**

WILLIAM BADMAN is sending out VESUVIUS, from store pots, 8s. per 100, 75s. per 1000, packing included. Send cash with order.
Cemetery Nursery, Gravesend, S.E.

SINGLE PYRETHRUMS.—Orders are now being booked for these lovely hardy decorative plants in their many attractive colours, which have the appearance of coloured Marguerites, varying from pure white to the deepest shades of pink and crimson.
Plants will be supplied shortly at 9s. per dozen, and the usual discount to the Trade.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London, N.

**Cauliflower Plants.**

VEITCH'S AUTUMN GIANT. Strong Plants for Sale, 6s. per 1000, cash. Packing free.
FREEMAN, Seed Grower, Norwich.

# DOMINY FUND.

This Fund is being raised to make a present to Mr. DOMINY, on his retirement from the service of Messrs. James Veitch & Son, in token of the esteem, regard, and gratitude felt for him, especially by Orchid Growers.

Contributions are invited from lovers of Orchids of all ranks, and will be received by

Sir TREVOR LAWRENCE, Bart., M.P.,
57, Princes Gate, S.W.; or
THE LONDON JOINT STOCK BANK,
69, Pall Mall, S.W.

**Amount already Advertised, £99 7s.**

*A Second List of Subscriptions will appear on June 25.*

## Come and See.

THE DOUBLE BOUVARDIA (Alfred Neuner), splendidly in flower; and also our Collection of PELARGONIUMS, BEGONIAS, PETUNIAS, PYRETHRUMS, VIOLAS, FOXGLOVES, and SWEET WILLIAMS, &c., which are probably the best and the most complete ever brought together. Send for our "Floral Guide."
Plants transmitted to all parts of the world at the very lowest price consistent with quality and correctness.
All the New Plants and Novelties of the year are fast developing their respective qualities, and a Catalogue of the same will shortly be ready and sent post-free.

Mr. P. CLAUSEN, *Imperial Gardens, Nikita, near Talta, Crimea, Russia, June*, 1881.
"Gentlemen,—I was really astonished on receiving the Roses, &c. I never saw such a complete practical way of exporting plants (by post), and it is my opinion that only Englishmen are capable of doing such. After four weeks they are in such a state of health I feel that I ought to publicly thank Messrs. Cannell & Sons, Swanley."

**NEW SEED.**

*Four First-class Certificates.*

**Primulas, Cinerarias, Cyclamens, and Calceolarias.**

WE have now a splendid crop of the above, and it is well known that we spare no expense and pains in possessing the best of the best, and often purchase from one plant to the entire collection, if any are found distinct [to our own, so as to make quite sure that our assertions are correct. Our Calceolarias are even now splendid, and by adopting the most practical mode of hybridising they are bearing an immense crop of seed, which must this year prove of superior excellence, as they have individually been fertilised with the best shrubby kinds, therefore hardier and better in habit, and more continuous blooming, 1s., 2s., 3s., 4s., and 5s. per packet.

THE HOME FOR FLOWERS
SWANLEY KENT.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.
Prices and plants need only be compared with those of other firms, to prove that in no instance can buyers of plants who study both price and quality be supplied more advantageously than by ourselves.
The Collections are all of the finest sorts, and as varied in colour as possible, fine for exhibition or home decoration, and as certain to be satisfactory to purchasers as collections can be. All are our selection.

| | Per doz.—s. | d. | | Per doz.—s. | d. |
|---|---|---|---|---|---|
| Abutilons, in variety .. | 3 | 0 | Hollyhocks, Seedlings.. | 4 | 0 |
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| Epiphyllum .. .. | 9 | 0 | Pelargoniums, Show, Fancy, and French, 6s. to .. .. .. | 9 | 0 |
| Ferns, Stove and Greenhouse, 6s. to .. .. | 9 | 0 | Potentillas, Double .. | 6 | 0 |
| Fuschias, per 100, 15s... | 3 | 0 | Rock Plants, per 100, 15s. | 3 | 0 |
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| Geraniums for Bedding | 3 | 0 | Stove Plants, 6s. to .. | 9 | 0 |
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| Gloxinias, 6s. and .. | 9 | 0 | Violas (immense stock of best sorts), per 100, 8s. to 12s. .. .. .. | 2 | 0 |
| Hardy Climbing Plants, in great variety, 6s. .. | 9 | 0 | | | |

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.
W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

PANSIES and VIOLAS, for Bedding or Exhibition.—Many thousands of strong Plants on Sale, at low prices, our selection. CATALOGUE with LISTS of sorts, post-free:—

| | Doz.—s. | d. | 100.—s. | d. |
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| BEDDING PANSIES, named sorts .. | 2 0 | .. | 12 0 | |
| VIOLAS, named sorts .. .. | 2 0 | .. | 12 0 | |
| " PANSIES and VIOLAS, without names | 1 3 | .. | 8 0 | |
| FINE SHOW PANSIES, all named .. | 3 0 | .. | 20 0 | |
| " FANCY PANSIES, all named .. | 3 6 | .. | 25 0 | |

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

NEW DOUBLE WHITE BOUVARDIA, "ALFRED NEUNER."
*The following is the Raiser's Description:*—"This is a gem of the first water, equal, if not superior, in profuse blooming quality and vigorous healthy growth to the valuable single white variety, Davidsonii. The flowers are rather larger than those of the single-flowering, and composed of three perfect rows of petals of the purest waxy-white colour, each floret resembling a miniature Tuberose. The trusses are large and perfect, and are freely and without interruption produced, even on the small side shoots. This double Bouvardia will prove indispensable in all fine cut-flower work."
Orders now being Booked for Execution in strict Rotation. Stock limited. Price, 10s. 6d., 15s. and 21s. each. Usual discount to the Trade.
Sole Agents in Great Britain:—JAMES CARTER AND CO., The Queen's Seedsmen, 237 and 238, High Holborn, W.C.

NEW DOUBLE CLEMATISES.

ENCHANTRESS, a very large and distinct variety, good habit, and bearing very double white flowers; the exterior petals are very prettily flushed with rose in the centre. First-class Certificate Royal Horticultural Society.
Plates of this variety, 2s. 6d. each.
VENUS VICTRIX, another double variety; colour a delicate lavender; sepals very broad and finely formed. First-class Certificate Royal Horticultural Society.
The above two Varieties are now ready for distribution. Price 10s. 6d. each. Trade discount.
Messrs. THOS. CRIPPS AND SON, The Tunbridge Wells Nurseries, Kent.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

**Stove and Geenhouse Plants of all sizes to offer by**

MESSRS. PEED AND SON, Norbury Nurseries, Lower Streatham, to any Nobleman or Gentleman wishing to Purchase Plants in good condition, they having taken many of the First-class Prizes at the London shows and elsewhere, and one of which was for 100 Flowering Stove and Greenhouse Plants at the Royal Horticultural Society, South Kensington, on June 3d inst.
Also they have a first-class GARDENER they can highly recommend, well up in all branches.

**Surplus Bedding Plants.**

WILLIAM BADMAN can still offer strong plants of the undernamed, all turned out of single pots and fit to plant at once:—

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| PELARGONIUMS—Vesuvius, scarlet .. | .. 10s. | per 100 |
| " Madame Vaucher, white .. .. | .. 12s. | " |
| " Master Christine, pink .. .. .. | .. 12s. | " |
| " SILVER VARIEGATED, May Queen | .. 15s. | " |
| " " Flower of Spring .. .. .. | .. 15s. | " |
| " GOLD-LEAF, Crystal Palace Gem .. | .. 15s. | " |
| VERBENAS—Purple, white, scarlet, &c... | .. 12s. | " |
| AGERATUM—Imperial Dwarf, blue .. | .. 10s. | " |
| LOBELIA—Emperor William (true) .. | .. 10s. | " |
| HELIOTROPIUMS—dark .. .. .. | .. 12s. | " |

Packing included. Terms cash.
Cemetery Nursery, Gravesend, S.E.

**To the Trade and Others.—Clearance Prices.**

GERANIUMS, popular varieties, from stores, 7s.; single pots, good plants, 14s.; LOBELIAS, 2s.; PYRETHRUM, 1s. 6d.; CINERARIA, maritima, 2s.; ALTERNANTHERA, amœna, magnifica, and versicolor, 7s.; MENTHA, 2s. 6d.; MESEMBRYANTHEMUM, 6s. per 100. Choice DOUBLE GERANIUMS, twelve for 3s.
Cash, packed free.
GEO. GUMMOW, 114, Loughborough Road, Brixton, S.W.

FOR SALE, PALMS and FOLIAGE PLANTS of all sizes and varieties. Also PHŒNIX RECLINATA (true), LATANIA BORBONICA (store pots), £4 per 1000.
JACQUES COENE, St. Pierre-Alost Nursery, Ghent.

CHEAP OFFER OF BEDDING PLANTS:—

| Per 100.—From | 60's. | Boxes. |
|---|---|---|
| ALTERNANTHERA MAGNIFICA .. .. | 10 0 | 5 0 |
| " VERSICOLOR GRANDIS .. .. | 12 0 | .. |
| IRESINE LINDENI .. .. .. .. | .. | 5 0 |
| MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM .. .. | 12 0 | 6 0 |
| CENTAUREA CANDIDISSIMA .. .. | 18 0 | .. |
| MENTHA PULEGIUM GIBRALTARICUM | 10 0 | 5 0 |
| COLEUS VERSCHAFFELTI .. .. .. | 14 0 | 6 0 |
| HELIOTROPE .. .. .. .. .. | 14 0 | .. |
| AGERATUM, "Cannell's Dwarf" .. .. | .. | 6 0 |
| GERANIUMS—Beauty of Calderdale, Maréchal McMahon .. .. .. .. .. | 18 0 | .. |
| " Flower of the Day, and other silver edged. | 15 0 | .. |
| CALCEOLARIA—"Golden Gen," from frames .. | 7 6 | .. |

Fine healthy Stuff: free to London for Cash with Order.
W. M. CROWE, Boleyn Road, Upton, Essex.

**CHOICE SUMMER FLOWERS, 1881.** The LAWSON SEED and NURSERY CO. (Limited), Edinburgh, are booking Orders for the leading **BEDDING-OUT PLANTS**, viz., Verbenas, Geraniums, Calceolarias, &c., for present delivery. CATALOGUES may be had on application.

**DOUBLE CINERARIAS, FOR WINTER BLOOMING.**

R. H. VERTEGANS is now offering SEED saved from his Superb Collection, at 3s. 6d. and 5s. per packet, post-free. Also Booking Orders for PLANTS, 12 varieties, selected from his large choice and noted strain. Names and Descriptions will shortly be published.
CHAD VALLEY NURSERIES,
Edgbaston, Birmingham.

RAFFIA FIBRE.—RUSSIA MATS.—We beg to offer to the Trade Raffia direct from Madagascar, at wholesale price. We can offer Russia Mats to the Trade at very low prices this season.
MARENDAZ AND FISHER,
Russia Mat Warehouse, James Street, Covent Garden, W.C.

GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest Prices of
WATSON AND SCULL, 90, Lower Thames St., London, E.C.

NOW READY,

## SEEDS for AUTUMN SOWING,

*Post or Carriage Free at Prices Quoted.*

**DANIELS' DEFIANCE CABBAGE.**

The most magnificent Cabbage in cultivation. Early, short-legged and compact. Weight from 10 lb. to 15 lb. each. Exceedingly tender, and of the most delicious marrow flavour. Should be in every gardeo.

**Seed—per packet, 1s. 6d.; per ounce, 3s. 6d.**

*From* C. Braddon, Esq., *Upton-on-Severn*:—"I have been a grower of Cabbages for 50 years, but have met with none to equal your Defiance. I have had an immense crop of magnificent heads this year."

**Other Cabbages, per ounce:—**

Enfield Market .. 6d. | Early Battersea .. .. 6d.
Early York .. .. 6d. | Improved Nonpareil .. 8d.
Blood-red Pickling .. 8d.

**NEW GIANT ROCCA ONION (true).**

A splendid variety for autumn sowing. Fine globular shape, with light brown skin. Weight, 2 lb. to 3 lb. each. Of the most delicate flavour. Highly recommended. Seed with cultural directions.

**Per ounce, 1s. 2d.; 2 ounces, 2s.; 4 ounces, 3s. 6d.**

*From* Mr. G. Smith, *Wardley*:—"I had 9 bushels of Onions from 1 ounce of your Rocca Onion Seed."

**NEW GOLDEN ROCCA ONION (Daniels').**

The finest Onion ever introduced. Beautiful globular shape, with golden-yellow skin. If sown in autumn and well cultivated, will produce Onions of 3 lb. to 4 lb. each.

**Seed—per packet, 1s. 6d. Other Onions, per ounce:—**

Giant Madeira .. .. 1s. | White Spanish .. .. 1s.
White Tripoli .. .. 1s. | Red Italian Tripoli .. 1s.
White Lisbon .. 6d.

*Special quotations for larger quantities on application.*

## DANIELS BROS.,

ROYAL NORFOLK SEED ESTABLISHMENT,

NORWICH.

**NEW ROSES IN POTS.**

**TEA and NOISETTE ROSES, in Pots.**

*Pot Rose LIST, for present summer, now ready.*

EWING AND CO., Eaton, Norwich.

## Hybrid Perpetual and Tea Roses

**IN POTS.**

*Strong Healthy Plants,*

**Fit for Immediate Planting, or Flowering under Glass.**

*List of Sorts and Prices on application to*

**CRANSTON'S NURSERY & SEED CO.**
(LIMITED),
KING'S ACRE, HEREFORD.

**PRIMULA.**
**CINERARIA.**
**CALCEOLARIA.**

Wm. Cutbush & Son's

Strain of these cannot be surpassed. They are sold in Packets, 2s. 6d., 3s. 6d. and 5s. each; but quality is the same.

HIGHGATE, LONDON, N., and BARNET, HERTS.

**Ferns a Speciality.**

EXOTIC AND BRITISH FERNS,

IN great number and variety, suitable for Stove and Greenhouse cultivation, for Outdoor Ferneries and other purposes.

*Intending Purchasers before buying elsewhere should send for our SPECIAL LIST of CHEAP FERNS, which will be forwarded free on application.*

W. and J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

## CRANSTON'S NURSERIES.

(Established 1785.)

CATALOGUE

OF

*New English and French Roses*

for Spring of 1881,

**DAHLIAS, CLEMATIS, PHLOXES, and CHOICE BEDDING PLANTS,**

*Free on application to*

**CRANSTON'S NURSERY & SEED CO.**
(Limited),
KING'S ACRE, near HEREFORD.

## TENTH CENSUS OF THE UNITED STATES.

*FORESTRY:—Report on the Forest Wealth of the United States, and Catalogue of the Forest Trees of North America.*

NOTICE.

## THE GARDENERS' CHRONICLE

For JULY 2, 1881, will contain a

## PAGE PLATE OF PORTRAITS

OF

Prof. SARGENT, of the Arnold Arboretum, and
Prof. G. ENGELMANN, of St. Louis.

**Price 6d., post-free.**

Agent for America:—C. H. MAROT, 814, Chestnut Street, Philadelphia, U.S.A., to whom American Orders should be sent.

## W. RICHARDS,

41, WELLINGTON STREET, STRAND, LONDON, ENGLAND.

**In 8vo, neatly bound in Cloth, price 7s. 6d.,**

## A MANUAL OF THE CONIFERÆ.

*Containing a General Review of the Order, a Synopsis of the Hardy Kinds Cultivated in Great Britain, their Place and Use in Horticulture, &c.*

**WITH NUMEROUS WOODCUTS AND ILLUSTRATIONS.**

"That a Manual of the Coniferæ for practical use, at once trustworthy in detail and popular in treatment, is one of the requirements of horticultural literature, few can have better opportunities of knowing than ourselves. It was, therefore, with special interest that we looked for the publication of this work, and now that we have it before us, and have examined its contents, we are in a position to say that the requirement abovementioned is well fulfilled." *Gardeners' Chronicle, June* 11, 1881.

## JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERY, 544, KING'S ROAD, CHELSEA, S.W.

## VINES FOR SUMMER PLANTING.

## THOMAS METHVEN & SONS

**Beg to intimate that their Vines are now in splendid order for Summer Planting.**

*Their Stock is a very extensive one, and well worthy the attention of intending Purchasers.*

LEITH WALK and WARRISTON NURSERIES, EDINBURGH.

## Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

**GREEN'S**

**PATENT "SILENS MESSOR"**

AND

**"MONARCH" LAWN MOWERS**

Over those of all other Makers is universally acknowledged.

**They will Cut**

**Either Short or Long Grass, Bents, &c., Wet or Dry.**

These advantages no other Lawn Mowers possess.

They are the only Mowers which have been in CONSTANT use from 15 to 20 years in the Royal Gardens, Windsor,

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|---|---|
| Buckingham Palace Gardens | The Hyde Park Gardens |
| Marlborough House Gardens | Hampton Court Gardens |
| Royal Horticultural Society's Gardens, South Kensington | The Zoological Gardens, Regent's Park |
| The Royal Botanic Gardens, Regent's Park | The Dublin Botanic Gardens, |
| The Crystal Palace Company's Gardens, Sydenham | The Liverpool Botanic Gardens |
| The Winter Palace Gardens, Dublin | The Botanic Gardens, Brussels |
| | The Hull Botanic Gardens |
| | The Leeds Horticultural Gardens |

And in most of the Principal Parks and Squares in the United Kingdom.

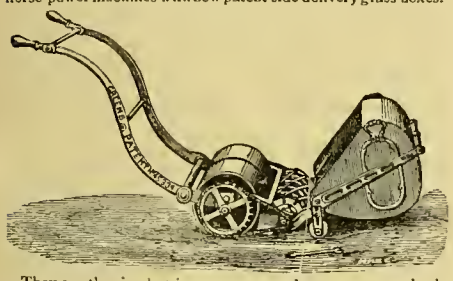
**Royal Horticultural Society's Show**, South Kensington, London, June 3 to 7, 1881.—The following Prizes were awarded to THOS. GREEN & SON (Limited), Leeds and London: **A Silver Medal**, the 1st and Highest Prize of the Royal Horticultural Society, was awarded to Green's Patent "Silens Messor" Lawn Mowers.

*The "Journal of Horticulture" of June 9 says:—*

"MOWING MACHINES.—The judges' work in this class of eight exhibitors, each having a number of machines, was no sinecure, for special advantages in some form or other were claimed for each kind of mower, and it may be safely said that all were good and did their work well. After a critical examination the Silver Medal was granted to the old firm of world-wide fame, Messrs. T. Green & Son, of Leeds and London. As the machines are known in all lands where good lawns are cherished, it is quite unnecessary to give any description of them."

*The "Garden" of June 11 says:—*

"Messrs. GREEN took the Silver Medal for their mowing machines, which were represented by their 'Silens Messor' and the horse-power machines with new patent side delivery grass boxes."



They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant. The above machines have proved to be the best, and and have carried off Every Prize in all cases of Competition. Every Lawn Mower is guaranteed to give entire satisfaction, otherwise they may be returned AT ONCE, free of cost to the purchaser.

The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

| | | | £ | s. | d. |
|---|---|---|---|---|---|
| To cut 6 inches. | Can be worked by a lady .. .. | | 1 | 15 | 0 |
| ,, 8 ,, | ,, ,, .. .. | | 2 | 10 | 0 |
| ,, 10 ,, | Can be worked by one person .. | | 3 | 10 | 0 |
| ,, 12 ,, | ,, ,, .. .. | | 4 | 10 | 0 |
| ,, 14 ,, | ,, ,, .. .. | | 5 | 10 | 0 |
| ,, 16 ,, | This can be worked by one man on an even lawn .. .. | | 6 | 10 | 0 |
| ,, 18 ,, | By man and boy .. .. .. | | 7 | 10 | 0 |
| ,, 20 ,, | ,, ,, .. .. .. | | 8 | 0 | 0 |
| * ,, 22 ,, | Two men .. .. .. .. | | 8 | 10 | 0 |
| * ,, 24 ,, | ,, .. .. .. .. | | 9 | 0 | 0 |

* If made stronger, suitable for donkeys, 30s. extra.

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

Carriage paid to all the Principal Railway Stations in the United Kingdom. Illustrated Price LISTS free on application.

N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

GREEN'S Patent TUBULAR SADDLE BOILER had also the 1st and Highest Prize, a **Silver Medal**, awarded to it at the above show.

*The "Journal of Horticulture" of June 9 says:—*

"HEATING APPARATUS.—A great number of boilers, valves, &c., were exhibited by eight competitors, and considerable interest was manifested in the verdict of the judges, and much discussion was brought to bear on the merits and shortcomings of the different boilers. The apparatus for which the Silver Medal was awarded was a wrought-iron saddle boiler with a series of intersecting tubes, somewhat in the form of the letter X, but the tubes in ogee form, in the crown of the boiler. Most gardeners who examined the boiler expressed a favourable opinion of it. It is no doubt a quick and powerful boiler without being complex, the latter condition having, no doubt, had weight with the judges."

*The "Garden" of June 11 says:—*

"The premier prize, a Silver Medal, was taken by Messrs. Green & Son for their new patent tubular saddle boiler. It is a modification of their original patent, the boiler being longer and not so high. It is found to be a powerful and efficient boiler, and heats a large quantity of water quickly with a small consumption of fuel."

**THOMAS GREEN AND SON (Limited),**
SMITHFIELD IRONWORKS, LEEDS;
And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

**USED in the ROYAL GARDENS**
AND IN THE
**Principal Nurseries and Gardens throughout the United Kingdom, with the most successful results.**

## FOWLER'S
## HORTICULTURAL PREPARATIONS.

**LAWN SAND,** for destroying Daisies, Dandelions, Plantains, Ribbed Grass, Thistles, and other weeds, on Lawns, Croquet Grounds, Bowling Greens, Parks, &c.; at the same time acting as a fertiliser, and improving the growth and colour of the grass. Price in tins, 1s., 2s. 6d., and 5s.; kegs, 28 lb., 10s.; 56 lb. 19s.; 112 lb., 36s.

**GARDENER'S INSECTICIDE,** for destroying all the various Insects, Blights, and Mildews infesting plants and trees. It is easily applied either by dipping, syringing, sponging, or as a winter dressing; does not require cleansing off with water; will not stain or injure, any more than plain water, the most delicate flower, fruit, foliage, or root; gives the foliage a bright, clean, and healthy appearance, and promotes the growth of the plant. In jars, 1s. 6d., 3s., 5s. 6d., and 10s. each; and in kegs, 28 lb., 21s.; 56 lb., 42s.; 112 lb., 84s. each.

**STANDEN'S MANURE,** for promoting a rapid, healthy, robust growth, an early maturity, improving the quality of vegetables, flavour of fruits, and heightening the colour and increasing the size of flowers. It is specially invaluable to exhibitors and others whose aim is to excel. It is always of the same strength, certain and safe in all operations, and is applied with but little time or labour. In tins, 1s., 2s. 6d., 5s. 6d., 10s. 6d., and 21s. each; and in kegs, 56 lb., 21s.; 112 lb., 56s. each.

**MEALY BUG DESTROYER,** for the special eradication of this most troublesome of stovehouse plant pests. It is easily applied either with a small brush or vaporiser, is instant destruction to both insect and ova, and does not stain or injure the foliage. In bottles, 1s., 2s. 6d., 5s., and 10s.; ½ gallon, 21s.; 1 gallon, 42s. each.

**FLOWER CEMENT,** for fixing the petals of flowers for bouquets, head-dresses, vases, church, table, or ball decorations. It dries quickly, and preserves the flowers without staining or injuring them. In bottles, 1s. 6d.; quarts, 8s. each.

**WORM DESTROYER,** for eradicating every kind of Worm from the roots of large specimen plants, pots, lawns, &c. It is easily and cheaply applied, and will not harm the most delicate plant. In bottles, 1s., 2s. 6d., 7s., and 12s. 6d. each.

**VINE STYPTIC,** for preventing the Bleeding of Vines. It is invaluable to Vine Growers. In bottles, 3s.; quarts, 12s. each.

**HORTICULTURAL SUNDRIES,** of every description in stock.

*Sole Manufacturers:—*

**CORRY, SOPER, FOWLER & CO.**
(LIMITED).

Offices and Show Rooms: FINSBURY STREET, E.C.

Manufactory and Bonded Tobacco Stores:
SHAD THAMES, S.E.,
LONDON.

**By Permission of the Hon. Board of Customs**
*DUTY FREE.*

## TOBACCO PREPARATIONS
FOR
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THE

# Gardeners' Chronicle.

*SATURDAY, JUNE 18, 1881.*


## NOTES ON TREES.

DURING thirty years of travelling in Great Britain I have often laid aside the business of the hour to visit any notable specimens of timber trees that lay within reach, and not infrequently have made a special journey for the sake of describing them in the columns of the *Gardeners' Chronicle*. I agree with that great lover of trees, Lord Beaconsfield, that their worship by the ancients was not surprising. It is pleasing to reflect that the best of our timber trees are natives; early writers made the mistake of being too modest on this point, for they claimed only four aboriginal trees for Britain—the Oak, Elm, Beech, and Scotch Pine.

In the *Antiquity of Man*, Sir Charles Lyell offers evidence which very much gratified me some years since, as a lover of English trees In his great collection of facts relating to his subject he enumerates the trees whose remains have been found in the submerged forests around our coasts, as, for example, in the Cromer Forest bed. In this great forest, extending 40 miles from Cromer to Kessingland, the remains have been found of the Oak, Yew, Scotch Pine, Spruce Fir, Birch, Alder, common Sloe, and others. Since that remote epoch, when these specimens formed part of the living growth of the forest, the site where they now lie buried has subsided 400 feet, and the glacial drift which covers the primæval wood indicates its age.

An uninstructed person finds it difficult at first to grasp the facts of geology. Some years since such a person, whom "the Traveller" knew for an uneducated man of great but eccentric ingenuity, wrote a pamphlet on the origin of the English Channel, which lay before his windows. He had convinced himself that the Channel had been scooped out by the tail of the moon. A young gardener, equally innocent of geology, could not bring himself to believe the former union of the cliffs of Calais and Dover. He has since studied the history of shifting seas and lands, and seen the hypothetical maps of the prehistoric world. He knows something now of the buried forests of the coast—of the Beech woods of Beachy Head—and the Fir and Oak forests of Cromer and the Bristol Channel, and, thinking out his subject, he has arrived at the conclusion that the fauna of Britain, allied as it is to that of the Continent, must originally have crossed into this country by land and not by sea. If our young friend were told that the first squirrel hopped into England from tree to tree across the German Ocean he would know that such a statement might be true.

The sea and land are still shifting. In Greenland, between lat. 60° and 70°, piles and wooden buildings have to be periodically shifted inland, and there is no doubt the whole of that coast of Greenland is sinking. But in Sweden and Norway marine deposits are found above the level of the sea in rocks whose surfaces are polished and striated by the action of former glaciers—the land is slowly rising.

In the Tertiary strata of Disco Island (Upper Miocene) the remains of certain fossils, and of a

Conifer allied to Sequoia sempervirens, prove that the climate was once anything but arctic, and as genial as Iceland must have been when it, in fact, produced the Tulip-tree, the Walnut, Vine and Plane, or as the mouth of Bear River and other parts of the Arctic circle where the evidence of the fossils shows that the climate must have once been temperate.

Under the influence of the Gulf Stream and of levels alternately raised and lowered, Sweden and Norway have become milder, the permanent ice which covers Greenland between 60° and 70° has been melted, and we encounter at 70° N. the first glacier reaching the coast. It was when Scandinavia was as Greenland now is that England was submerged, and the boulder clay of Norfolk and Suffolk which buries Cromer Forest was in process of accumulation, and it was when the Scotch mountains were more elevated than at present that they were capped with ice, which ground to pieces or swept away any drift of the age of the Cromer Forest or glacial deposits of the Norfolk coast, supposing them to have existed in Scotland.

During the progress of the revolution just described as having been confined to the country north of the Thames, the southern part of England appears to have remained undisturbed.

The first seed bed of the Oak can only be obscurely indicated by that interesting chain of geological evidence which points out Asia as the source of existing forms of life. In the Stone Age the Oak was spread over Denmark. Quercus robur pedunculata occurs in the deep peats of Denmark as well as in Cromer Forest. An unbroken link united the forests of Denmark with those of England.

In the peats referred to, the pedunculated variety of the Oak lies buried with the Alder, Birch, and Hazel at lower levels than the sessile fruited variety.

Several successive sorts of trees have grown in Denmark in the course of ages and have in turn died out. The Scotch Fir is found at the bottom of the peat bogs and was once the prevailing tree. It is now rare in Denmark, and the Beech has become the tree of the country, having to a great extent replaced the Oak. In England we are still in an age of Oak, and both varieties abound even in ungenial sites where Nature would have planted some other tree, we may suppose, if the seed had been in her hand when the site was seized by our prevailing strong Oak of Denmark.

We may claim, perhaps, eight native timber trees—the Oak, Yew, Scotch Fir, Ash, Wych Elm, Beech, Lime, and Sycamore. The Hazel, Birch, Elder, Alder, Mountain Ash, and Aspen, are also natives, but they can hardly be called timber trees. A tree which ripens its seed freely in England may or may not be a native, but a tree found in the primæval forests of the coast must certainly be so.

At some period subsequent to the Ice Age the trees migrated from their refuge, south of the Thames, and occupied the sites suitable to them. Unplanted Oaks covered the clays generally; Elms, the loams; the Beech, the chalk and the rubble of the Oolite; and the Fir, the sands; the Yew, the Ash, the Sycamore, and Maple being scattered for the most part thinly, and the Birch taking those high positions on the surface of the country which it alone affects. The Oak seems to have entered Wales early from the Oak district of the west.

It is by no means easy for a district to shake off the domination of a well-established timber tree, and the Oak to this day holds undisputed sway alike over the green hills of South Wales and the mountain sides of the North. In travelling through Wales I have observed the Aspen trembling on many sites, the Yew growing in churchyards, the Rowan on the mountains, and the Beech and Fir generally in plantations; but the Oak springs everywhere, showing it to be a tree which Nature planted, and planted widely. *A Traveller.*

## New Garden Plants.

Oncidium grandiflorum, *n. sp.**

This has quite the growth of Oncidium macranthum, as its possessor states. Let me add, it has nearly the flowers of Oncidium æmulum. There are, however, some distinctive marks, which compelled me to separate them. The petals are more acute, and both the petals and the odd sepal are more crisp, embellished by a yellow border. The lip has a spatulate middle lacinia, and a totally distinct flat callus, totally wanting the keel of the middle line. It is a very beautiful thing in its tribe, not so striking as macranthum. It was introduced from the United States of Columbia by Mr. W. Bull, who favoured me with very good materials, viz., an enormous peduncle and a beautiful leaf more than 1½ foot long—all in good condition, in consequence of having been sent in a good light wooden case, in lieu of a card or match box, from whence flowers come out smashed and crushed, so that you may sit for half an hour endeavouring to succeed in bringing each part to its original place, as a lady fills up her time by playing "patience." *H. G. Rchb. f.*

Cattleya luteola Roezlii, *nov. var.*

Perhaps seven years ago I had from the excellent Inspector Ortgies a water-colour sketch prepared by our mutual friend Mr. B. Roezl in Peru, who had forgotten to dry specimens. I could only think of Cattleya luteola, but having no document I left the drawing unnamed. Now my excellent correspondents, Messrs. Mayer, senior and junior, Garten-director and Garten-inspector of the Hofgarten of Carlsruhe, send me flowers of a Peruvian Cattleya. It has brighter colours than even the good varieties of Cattleya luteola. There are two large purple spots on each side the middle, interrupted by numerous white veins, an orange anterior part, and an uncommon development of the velvet-like surface. It is agreeable to see a Brazilian plant in Peru. *H. G. Rchb. f.*

Dendrobium speciosum Bancroftianum, *nov. var.*

This is an interesting variety. Its flowers are much like those of the genuine plant, but the petals are a trifle longer, hence more antennate; the lip is of the lightest sulphur colour, with a few minute atoms of purple at the base, and the keel running from the base to the middle is dark yellow, and a similar darker yellow line runs from the middle lip through the middle of the anterior lacinia. The stem is even more slender than that of Dendrobium Hillii, Hook., and that alone affords a good mark for distinction. It was sent from Brisbane by Dr. Bancroft, whose name it justly may bear. It flowered in the garden of his friend, Mr. Thomas Christy, who earns so many thanks just now for the publication of his *New Commercial Plants and Drugs.* *H. G. Rchb. f.*

Phalænopsis sumatrana sanguinea, *nov. var.*

I propose this name for a fine variety introduced by Messrs. Veitch from Borneo. It has the peculiarity of having the lateral sepals nearly wholly dark red, showing very few yellowish-green markings. The flowers appear a good deal shorter than in the genuine plant, but this may only be the consequence of their smaller size. *H. G. Rchb. f.*

Eria ignea, *n. sp.*†

A very neat species, in the way of Eria Dillwynii, Hook., but with very small bulbs and narrow leaves. The peduncle as well as the flaked ovary are light chrome-yellow. The large bracts to the sepals and petals are nearly vermilion. It was imported by Messrs. Veitch from Borneo. *H. G. Rchb. f.*

* *Oncidium grandiflorum*, n. sp.—Affine Oncidio æmulo, Rchb. f.: sepalis tepalisque ejusdem, sed flavo marginatis; tepalis majus acutis, labelli laciniis posticis triangulis introrsum rotundatis, lacinia antica spatulata acuta, callo in basi rhombeo plano non carinato antice obtusato multilobuloso; columnæ alis ascendentibus lineari curvatis tridentatis. U. St. Columbia. Coluit cl. Bull. *H. G. Rchb. f.*

† *Eria* (*Hymeneria*) *ignea*, n. sp—Pseudobulbo ovoideo parvo; foliis lineari ligulatis acutis; racemo plurifloro porrecto; bracteis cuneato oblongis obtusis, deflexis, ovaria pedicellata longitudine non æquantibus; sepalis triangulo ligulatis acutis; tepalis subæqualibus, labello cuneato oblongo trifido, laciniis lateralibus ligulatis, lacinia mediana ligulata porrecta, carina longitudinali a basi in apicem laciniæ medianæ, carina longiuscula utrinque in lacinia laterali, carina breviori utrinque in lacinia mediana. Peduculus et ovaria pedicellata intense flava. Sepala et tepala cinnabarina. Labellum pallide flavum. *H. G. Rchb. f.*

## WORSLEY HALL.

Notwithstanding the adverse influences of an atmosphere to some extent charged with smoke, such as is inseparable from near proximity to a town like Manchester, fruit as now for many years grown and exhibited by Mr. Upjohn, shows what may be done by careful attention and the adoption of such means as may be found necessary to combat the unfavourable influences which, although not always apparent to the casual observer, nevertheless ever exist where the air is at all tainted by the products of combustion. Grapes as grown here are generally noticeable for their high finish, and this year, as usual, promise well. Through the absence of the family this spring, the first house has not been forced to come in early, and was beginning to ripen at the time I saw it—Whitsuntide. These are all Black Hamburghs except one, Foster's Seedling, which is grafted on a White Frontignan—good Vines bearing a good crop.

An adjoining house, two years planted with Muscats, Madresfield Court, and Foster's Seedling, was carrying a sufficient crop of handsome bunches. Another house in this, the principal range, is occupied by late kinds, consisting of Black Alicante, Gros Colmar, and Lady Downe's. There is an abundance of fruit here that promises well. Lady Downe's is not so much liked by Mr. Upjohn as the other two varieties. In the moist atmosphere often present here during winter it is not found to keep well. The adjoining house is filled with a mixed lot of Black Hamburghs, Mrs. Pince, and Mrs. Pearson. These have set a full crop, which the condition of the Vines will no doubt enable them to finish satisfactorily. Then comes the principal Muscat-house, which, like the preceding, is all that could be desired in appearance. The kinds are Alexandria and Bowood.

The first Peach-house is situated at the opposite end of the range, and was carrying the remains of a handsome lot of fruit, the trees strong, with foliage clean and healthy; the varieties are Bellegarde and Red Magdalen Peaches, and Elruge Nectarine. The second Peach-house is a continuation of the range from the last-named vinery, the trees occupy a trellis in front, and the back wall is also covered; the kinds are Royal George, Grosse Mignonne, and Stirling Castle Peaches, with Victoria, Elruge, and Pitmaston Orange Nectarines. The last structure in the range is a long, narrow house filled with Peaches trained on the back wall, consisting of a mixed lot of old and new varieties, which, like those in the preceding house, are in a very good condition, with plenty of fruit on them.

The first division of the Orchard-house, a narrow high erection, constructed on the same principle as the old houses at Trentham, has Peaches on the back wall; but these are to be done away with, and their place occupied by Pears, the best sorts of which do not as a rule do very well out-of-doors in the locality. The adjoining division, like to that already described, is filled with Plums, fine healthy trees, bearing an abundant crop.

A new lot of hip-roofed houses have been built on the open space to the north of the principal walled garden, where are situated the pits used for storing and propagating the large quantities of bedding-plants used here. Two of these new houses are planted with Vines, which when fully established are intended for early forcing; one contains Hamburghs and Muscats carrying a nice lot of bunches fast coming to maturity, the other is filled entirely with Muscats. The next house is devoted to Figs, Negro Largo, White Marseilles, and Brown Ischia, bearing a good crop. The other three of these new houses are occupied by Pines, which in their several stages are in very good condition. The kinds grown are Smooth Cayenne, Montserrat, and Queens. The gardens collectively, including the numerous houses therein, give evidence of the same orderly skilful cultivation which has from the first marked Mr. Upjohn's management.

Summer bedding on the scale practised at Worsley, covering the unusual extent of ground it does, is a work of no small magnitude, entailing a great amount of labour and forethought to produce such effects as are here annually to be seen, and, so far as can be judged thus early, this summer's display promises to be quite equal to that of past years.

Rhododendrons, of which there are altogether, in the pleasure grounds and interspersed in groups through the woods, a good many acres, many of them 10 or 12 feet in height, densely clothed as they are with flowers

this season, and combined with the hundreds of grand old Thorns and other flowering shrubs and trees with which the grounds are furnished, are a sight worth going some distance to see. Here, as in most other places, the last two winters have left their mark in the shape of great gaps where Portugal Laurels that had attained a large size are killed down to the ground, if not completely destroyed; whilst many of the handsome examples of Araucaria imbricata and Cedrus Deodara, with which the place abounds, have evidently suffered so much as to be of no further use. Aucubas are killed down to the ground as completely as the common Laurel is in many places. Hollies and evergreen Oaks had most of their leaves killed, but are now getting clothed with young foliage; still, it will be some years before many recover from the stunted appearance generally following such injury by frost. *T. B.*

## THE VICTORIA AND PARADISE NURSERY.

(*Continued from p. 757.*)

Next is the East Indian-house, the plants collectively in which are in beautiful health, many of them kept with their heads within a foot or two of the roof. Thus the leaves as they are formed during the growing season, attain strength and solidity such as enables them to continue in a fresh healthy state double the length of time they will last if the growth is made under less favourable conditions. Vandas, Aerides, Saccolabiums and Angræcums, are alike in the best possible order. There are some twenty specimens of Vanda suavis, from 2 to 4 feet high, furnished with leaves down to the pots; as many of V. tricolor, in equally good condition, many of them showing flower, two or three spikes to a growth; V. tricolor insignis, large and strong; V. Parishii, several plants; V. Lowii, very strong; Aerides Fieldingii, unusually vigorous; A. Warneri, A. suavissimum, A. affine, A. Dayanum, A. Larpentæ, A. Veitchianum, A. maculosum, in quantity; A. quinquevulnerum, A. nobile, A. odoratum purpurascens, and A. Lobbii. Of Saccolabiums, S. giganteum, S. guttatum, the fine and scarce S. guttatum Holfordianum, and S. Turneri; S. curvifolium, S. ampullaceum, S. retusum, S. præmorsum, S. Blumei, and S. Blumei majus, all strong and vigorous; Angræcum eburneum, A. eburneum superbum, and numbers of specimens of A. sesquipedale, unusually strong. The principal stock of Cypripedium is grown on the side stages of this house; amongst a host of these in fine health, many of them large, are C. Harrisianum, C. superbiens, C. Dayanum, C. Warneri, C. Roezlii, C. Swanianum, C. villosum, C. Stonei, C. Lowii, C. Crossianum, C. Schlimi, and C. niveum in quantity. In addition to the plants here named there are hundreds of smaller examples of most of these warmer species in an equally thriving state. Of Dendrobiums in exceptionally good condition may be named D. Falconeri, D. Farmeri, D. Griffithianum, beautiful specimens. Burlingtonia decora picta, on a stout stem of a dead Tree Fern, seemed to be doing well.

The adjoining house is mostly occupied by fine-foliage plants, of which there is an immense stock, including the now numerous family of Crotons; many of them are here represented by large specimens—C. majesticus, C. undulatus, C. angustifolius, C. Veitchii, C. Evansianus. Here also are many specimens of Palms that require a high temperature, amongst which are several fine examples of Geonoma Seemanni, one of the finest kinds, possessing a comparatively small habit of growth, and suitable for houses where large species would soon outgrow their limits; Verschaffeltia splendida, another handsome and distinct kind; Dæmonorops palembanicus, Stevensonia grandifolia; the very rare Kentia Wendlandiana; Pandanus, of various kinds; Æchmea Mariæ Reginæ, several specimens 3 feet across. At the northern end of this house, with its many branches trained close to the roof, is an unusually large example of Nepenthes Rafflesiana; it is grown here with a view to its flowering, and being crossed with other kinds to raise new forms of these most singular plants. Here also are grown quantities of the various kinds of tall-habited Dendrobiums, such as D. Dalhousianum, D. fimbriatum oculatum, &c. A circumstance worth remark connected with the block of houses just noticed, and which stand side by side with their ends north and south, is that attached to the northern end of most of them is a small cooler compartment, in which the potting, cleaning and other operations connected with the cultivation of the plants can be done with much more comfort to those engaged in the work than if it had to be carried out in the hot moist atmosphere of the houses in which the plants are grown.

A few paces further brings us to a roomy span-roofed house devoted to hard-wooded greenhouse plants on one side and hard-wooded Heaths on the other, the majority of which are of quarter and half specimen size. Amongst Heaths we noticed healthy young examples of such kinds as Devoniana æmula, ventricosa coccinea minor, aristata major, depressa, depressa multiflora, Victoria maidstoniensis, obbata, Cavendishiana, MacNabiana, tubæformis, ampullaceu, ampullacea rubra, Aitoniana, Fairrieana, Turnbullii, Marnockiana, gemmifera, most of the best of the tricolors, Massonii major, affinis, and many others. The greenhouse plants include Genetyllis tulipifera, G. fuchsioides, Dracophyllum gracile, Tetratheca ericoides, Hovea Celsi, Chorozemas of various kinds, Boronia megastigma, B. pinnata, B. serrulata, Eriostemons, Acrophyllum venosum, Aphelexis of sorts, Epacrises, Correas, with other representatives of the greenhouse hard-wooded family not at present so much in fashion as they used to be, but the comparative absence of which from greenhouses has done much to reduce the interest which formerly attached to these structures.

At the lower end of the grounds there is a large, high, hip-roofed house in which is an assemblage of various plants, comprising a number of Camellias, mostly large specimens, from 7 to 9 feet high, and when we saw them mostly in bloom. Amongst them were Reine des Fleurs, elegans, Montironi, a handsome variety; imbricata, Tricolor de Mathot, a fine sort; C. M. Hovey (new), fimbriata, alba-plena; many are plants that after being grown up to a considerable size have been headed down and regrafted, in which way they make the best furnished specimens with a dense growth down to the bottom. Here also were some fine plants of greenhouse Rhododendrons, such as R. Veitchianum, 7 feet by 4; R. Denisoni, R. Princess Alice, R. calophyllum, R. Countess of Haddington, all some 4 or 5 feet in diameter, suitable for furnishing large conservatories.

Not far from this is another large block of span-roofed houses, containing collectively a variety of plants, but in many cases each house is filled almost exclusively with some particular family. The first is a long stove, in which are grown Ixoras, Dipladenias, and other things that require a high temperature. These are here in all sizes, from the ordinary trade plants, of which there are thousands, up to quarter and full-sized specimens, to meet the requirements of purchasers, some of whom prefer to buy little plants and wait until they grow up in size, wherein others want something attractive at once. Each can be suited here. Amongst Ixoras, in the form of large specimens, may be named I. Prince of Orange, a handsome orange-coloured variety; I. Duchess of Teck, said to be an improvement on the last-named; I. Williamsii, a remarkably free-growing, free-flowering kind, with large heads of bloom; I. Pilgrimii, a new variety, not yet sent out; but enough has been seen of it to bear out its high character. All the older, well-proved kinds are grown as well, including the old I. coccinea, which, although found difficult to manage by many growers, is still unsurpassed where it succeeds. Of Dipladenias there are hundreds, such as will make fine blooming specimens in the course of a few months; they comprise all the best kinds, such as D. amabilis, D. Brearleyana, D. Williamsii, D. profusa, D. regina, D. insignis, D. boliviensis, D. crassinoda, the two last-named amongst the best for cutting. Along with these are grown Combretum purpureum, Allamandas, Ipomœa Horsfalliæ, with quantities of Antburium Scherzerianum, in all sizes, including many very large plants. Here, also, was the new variety of Imatophyllum miniatum, Martha Reimers, a great improvement upon the ordinary form of this plant, the flowers of which, when at their best, look quite faded in comparison with the bright colours of the new kind; it has short, broad foliage, and is altogether a fine plant. Another pretty free-flowering plant grown in quantity is Gloneria jasminiflora, a medium habited evergreen shrub that blooms from every bit of growth it makes. The flowers are white, and produced in bunches like a Jasminum; it blooms in a very small state. Yucca filamentosa variegata, a fine specimen.

In a cooler division are a quantity of young examples of Luculia gratissima; this is one of the finest of autumn blooming shrubs, and deserves a place in every warm conservatory where room can be given it. Lapageria alba, a fine lot of young plants, and amongst other things a handsome specimen, covered with bloom, of the new Azalea Mrs. Gerard Leigh, one of several hybrids raised between A. amœna and one of the ordinary greenhouse kinds; it has good sized reddish-rose flowers, the upper segments with darker spots; it is a profuse bloomer; the leaves have much of the character of amœna. The white-flowered Toxicophlæa spectabilis, in the same house, was flowering in 3 or 4-inch pots. Double Primulas and Abutilons are also located in this house.

Then comes a large house, in which is grown the principal stock of Camellias, the smaller plants on the side stages, the larger specimens in the centre bed, which is filled with a grand lot of bushes beautifully furnished from top to bottom; from amongst them a conservatory may at once be furnished with plants that would take a score of years to grow up from small stock. Most of the leading kinds are kept on hand, noticeable amongst which are Contessa Lavinia Maggi, a splendid example—on one side of the plant the flowers come striped, on the other self coloured; Colvilli, Bonomiana, Marchioness of Exeter, alba-plena, Countess of Orkney, Queen of Roses, Valtevareda, Teutonia, Reine des Fleurs, Henri Favre, Auguste Delfosse, Thomas Moore, De la Reine, and Mathotiana alba.

A span-roofed stove, used during the winter for bringing plants into flower, connects this Camellia-house with a similar-sized structure, some 60 feet by 26, which contains the main stock of large Azaleas. This connecting house was gay with forced Azaleas, Rhododendrons, Francisceas, Eucharis amazonica, and other things of a like description. The Azalea-house is mostly occupied by a lot of large and medium-sized specimens, of which a stock is always kept up; these are trained examples, in good condition. In addition to all the newer varieties, the best older well-proved sorts are represented by large plants of Duc de Nassau, one of the best; Flag of Truce, Beauty of Europe, Criterion, Mrs. Fry, Waxwork, Distinction, Souvenir du Prince Albert, Madame Charles van Eeckhaute, Gledstanesii, formosa, and others, with smaller specimens of the newer sorts.

From this we come to another span-roofed house filled with more Crotons, Aralias, Ixoras, and specimen Dipladenias of the best varieties. A row of large examples of the handsome Cochliostema Jacobiana stand at intervals on one side. Against the wall are a lot of Dendrobium bigibbum, on blocks. Then comes the principal Dracæna-house, in which quantities of all the best varieties, new and old, of these popular and most useful decorative plants are grown, along with Aralias, Grevilleas, Jacaranda mimosæfolia, a variety of stove climbers, and quantities of various sized stock of the most generally cultivated stove plants. At a short distance from this are situated all the newer lot of houses erected on ground which Mr. Williams has acquired in recent years. The first is a long lean-to, with a division, facing south, used as a forcing-house. In this were being brought on into bloom such things as Amaryllis, Lily of the Valley, Azaleas (both greenhouse and Ghent varieties), with numerous others that require heat to get them in flower. On the back wall above the heads of the other occupants are hung, so closely as to almost cover the whole surface right up to the roof, thousands of Orchids on blocks, consisting of Cattleyas, Lælias, Dendrobiums, and others. A small bit of almost any heat-requiring kind seems to thrive and gain strength in the light position they occupy here, although, as already intimated, the house is by no means worked with a view to the particular requirements of the Orchids. Any one who may happen to hold the opinion that Orchids will not thrive well in company with or under conditions such as many other plants require would do well to see what is done in this structure with its mixed occupants. In fact, through the whole establishment, besides the houses solely devoted to Orchids, they are everywhere where a place can be found for them.

(*To be continued.*)

Hedera dentata.—This is one of the boldest-leaved Ivies we know of, apparently a freer grower than H. Roegneriana. We saw it lately covering a wall in the Pine-apple Nursery, St. John's Wood, where it did not appear to have been in the least hurt by the winter; neither has it with ourselves.

## LIST OF GARDEN ORCHIDS.

THE lovers of Orchids are innumerable, but the real students are few. During the last half century there have been only two orchidologists of first rank, namely, Lindley and Reichenbach; and for nearly a quarter of a century Dr. H. G. Reichenbach has reigned supreme in the kingdom of Orchids. It is to him that we all apply for the correct names of previously described species, and it is he who so willingly names and defines the new ones that are constantly arriving from the apparently inexhaustible sources over the seas. How far these two names are associated with the names of Orchids the following enumeration will show. Another name that should be mentioned in this place, and that is that of Darwin. It was Mr. C. Darwin who so successfully investigated the marvellous contrivances to ensure fertilisation exhibited in the reproductive organs of Orchids, and everybody interested in Orchids should read his admirable book *On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects, and on the Good Effects of Intercrossing.* No previous knowledge of Orchids is necessary to understand it, and a perusal of its contents can only intensify one's interest in perhaps the most interesting family of plants.

The publication of my list of Mexican and Central American Orchids in the *Gardeners' Chronicle*,* though useful in a certain degree, seemed to make the want of a complete enumeration of cultivated Orchids even more pressing than before. The Editors, therefore, entrusted to me the task of drawing up such an enumeration. After due consideration, the most useful plan seems to be that of including everything that has been cultivated, independently of its ornamental character. Any plan involving selection is difficult to carry out satisfactorily, and leaves too much to the judgment and taste of the compiler. It is far easier to point out under each genus the general character of the species, and to designate some of the species that are specially worthy of cultivation on account of the beauty or profusion of their flowers or their free growth. Through the kindness of Mr. Bentham it is now possible to draw up an annotated catalogue in a form that will be useful and at the same time possess enduring interest. As soon as Mr. Bentham knew the intention of the Editors he most generously placed the whole of his references, together with the manuscript descriptions of the genera prepared for Bentham and Hooker's *Genera Plantarum*, at the disposal of the compiler. This has not only materially lightened the execution of the task, but, what is of more importance, it has furnished the means of limiting and classifying the genera in accordance with a work that will long remain an authority on such matters. The limitation of the genera, then, will be substantially that of the forthcoming volume of the *Genera Plantarum;* and the species will be arranged under each genus alphabetically. Although the aim is completeness some species will doubtless be overlooked; and the compiler would be glad to have any omissions brought to his notice before the completion of the whole work. It is intended to give references to the books or papers in which the original descriptions of the species are published, to recent monographs, and to properly authenticated figures, or such as can be verified. In some instances it is difficult to ascertain whether a species has been in cultivation or not, and some species are enumerated on very doubtful authority. Thus several species of Pleurothallis are given on the authority of Johnson's *Gardeners' Dictionary*, in which they may have been inadvertently inserted. The date of introduction is not given in those where the date of publication is cited, and where that is the nearest clue we have to the date of introduction. As approximate dimensions are often useful they are given in cases where they are not readily inferable, also the prevailing colours, and other interesting particulars that may be expressed in a few words. The definitions of the tribes and sub-tribes are translated from Mr. Bentham's paper in the *Journal of the Linnean Society*, xviii. (February, 1881), pp. 287—289; and the notes on the characters of the genera are mainly extracted from his manuscript. Exceptional characters are not dealt with, save in a few instances, under the respective species exhibiting them.

* See xi., 1879, pp. 202, 203; 235, 236; 267, 268; 334; 367, 368; 433; 559; 686; 719; and xii., 1879, pp. 42, 43; 75; 107, 108; 138.

Any information respecting the altitude, &c., of the native haunts of cultivated Orchids on collectors' labels in the Kew herbarium is reproduced for what it is worth; but in nineteen cases out of twenty it is exceedingly vague. Having so recently given a sketch of the history of the discovery and introduction of Orchids, it is perhaps sufficient to refer to that—see ante vol. xi. (1879), pp. 202, 203. An error therein respecting the introduction of the first species of Masdevallia may be corrected here. It is there stated that Purdie sent the first species cultivated (M. fenestrata) from Jamaica in 1843. Further research teaches that this plant is not a true Masdevallia, but a Pleurothallis (P. atropurpurea), and also that it was cultivated at Liverpool in 1835. As the characteristics of the order are familiar to all lovers of Orchids, we may pass at once to the definition of—

### Tribe I. EPIDENDREÆ.

Anther one, dorsal, operculate, usually incumbent, with the cells distinct and parallel. Pollinia waxy, in one or two series, parallel, two or four in each series (1—4 in each cell), free, or joined in each cell by a little viscous substance or a granular appendage, very rarely attached to the rostellum.

#### Sub-tribe i. *Pleurothalleæ.*

Stem bulbless, with one leaf, and terminated by the inflorescence. Confined to tropical America,

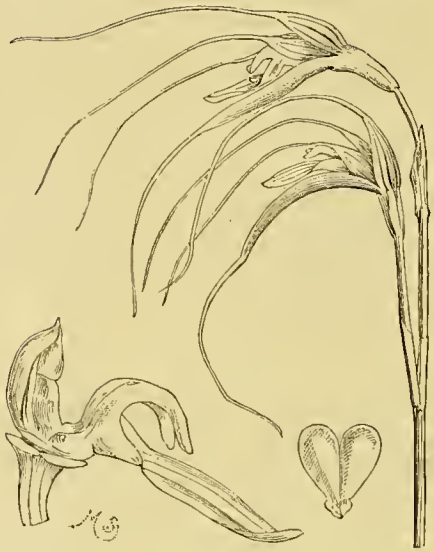

FIG. 139.—PLEUROTHALLIS SCAPHA. (NAT. SIZE.) POLLEN MAGNIFIED.

including the West Indies, and comprising about 600 species belonging to ten genera.

1. PLEUROTHALLIS.—Sepals erect, connivent or somewhat spreading. Petals shorter or narrower. Pollinia two. Labellum usually articulated at the base of the column. Leaf usually sessile or the flowers clustered.

About 350 species have been described, nearly all of which have minute or inconspicuous flowers, though many of them are elegant curious little plants. P. Grobyi, atropurpurea, hemirhoda, longissima, saurocephala, and prolifera, are some of the more ornamental species; but P. scapha (fig. 139) is perhaps the finest of the genus. In habit it is more like a Restrepia than a Pleurothallis, but it has only two pollinia, instead of four, as in the former genus. As this genus is of so little interest to cultivators in general, it seems superfluous to enter into particulars respecting its subdivision. It is probable that many species not enumerated below have been in cultivation for a short time.

1. P. ACIANTHERA, Lindl., *Fol. Orch.*, n. 135; *Acianthera punctata*, Scheidw. in *Allg. Gartenz.* 1842, p. 292.—Brazil, Scheidweiler. German gardens.
2. P. ALLIGATORIFERA, Rchb. f. in *Hamb. Gartenz.*, xxi., p. 299.—A pretty species with brownish flowers. Rio Janeiro. Cultivated by Consul Schiller in 1865.
3. P. ARISTATA, Hook. in *Ann. Nat. Hist.*, ii., 1839, p. 329, t. 15; Lindl. *Fol. Orch.*, n. 233.—Demerara. Cultivated by C. S. Parker, Liverpool.
4. P. ATROPURPUREA, Lindl. in *Bot. Reg.* 1842, Misc., p. 81; *Fol. Orch.*, n. 107; *Specklinia atropurpurea*, Lindl. in *Bot. Reg.*, sub-t. 1797; *Masdevallia fenestrata*, Lindl. in *Bot. Mag.*, t. 4164.—Jamaica. Cultivated in Liverpool Botanic Garden before 1835, and introduced into Kew Gardens by Purdie in 1843. This is one of the showiest species of the genus. It is usually cultivated as a Masdevallia, but it differs from the true Masdevallias in the stem being elongated below the leaf, and in the converging, not spreading, tips of the sepals. The flowers are of a rich dark violet-purple.
5. P. AURICULIGERA, Rchb. f. in *Gard. Chron.* 1871, p. 1579.—Brazil, Bowman. Cultivated by W. W. Saunders in 1866.
6. P. AVICEPS, Rchb. f. in *Gard. Chron.* 1871, p. 1579.—Brazil, Bowman. Cultivated by W. W. Saunders in 1866. "A gay, neat little plant."
7. P. BEYRICHII, Rchb. f. in *Linnæa*, xxii., p. 829; Lindl., *Fol. Orch.*, n. 77.—Brazil. Flowered at Kew in 1878.
8. P. BICARINATA, Lindl. in *Bot. Reg.* 1839, Misc., n. 11; *Fol. Orch.*, n. 63; *Bot. Mag.*, t. 4142.—About 6 inches high; flowers dull greenish-yellow. Brazil, Loddiges.
9. P. BILAMELLATA, Rchb. f. in *Linnæa*, xxii., p. 830; *Refug. Bot.*, ii., t. 95.—About 6 inches high, with deep orange sessile flowers. Mexico. Cultivated in many English and German gardens in 1869.
10. P. BOWMANNI, Rchb. f. in *Gard. Chron.* 1869, p. 989.—Brazil, Bowman. Cultivated by W. W. Saunders.
11. P. BREVIFLORA, Lindl. in *Bot. Reg.* 1841, Misc., n. 125; *Fol. Orch.*, n. 99.—Mexico, Loddiges.
12. P. BUFONIS, Kl. in *Allg. Gartenz.* 1854; Lindl., *Fol. Orch.*, n. 141.—Venezuela, Wagener. German gardens, 1854.
13. P. CARDIOTHALLIS, Rchb. f. in *Bot. Zeit.* 1857, p. 158; Lindl., *Fol. Orch.*, n. 52.—Nicaragua. Cultivated in England and Germany in 1857.
14. P. CARDIUM, Rchb. f. in *Bonplandia*, 1854; Lindl., *Fol. Orch.*, n. 47.—Caracas, Wagener. Berlin Botanic Garden.
15. P. CENTRANTHERA, Lindl., *Fol. Orch.*, n. 230; *Centranthera punctata*, Scheidw. in *Allg. Gartenz.* 1842, p. 293.—Brazil, Scheidweiler. German Gardens.
16. P. CERATOTHALLIS, Rchb. f. in *Bonplandia*, 1854; Lindl., *Fol. Orch.*, n. 75.—Caracas, Wagener. Cultivated in German gardens.
17. P. CHAMENSIS, Lindl. in *Orch. Linden*, n. 7; *Fol. Orch.*, n. 59; *P. triangularis*, Kl. in *Bot. Zeit.* 1847, p. 942.—Venezuela, Otto, Fendler; New Granada, Triana. Cultivated in the Berlin Botanic Garden.
18. P. CILIATA, Knowles and Westcott, *Fl. Cab.*, t. 19; Lindl., *Fol. Orch.*, n. 140.—Flowers orange. Demerara, Henchman. Cultivated in England in 1837.
19. P. CIRCUMPLEXA, Lindl. in *Bot. Reg.* 1838, Misc., n. 27; *Fol. Orch.*, n. 65; *P. mesophylla*, A. Rich. et Gal. in *Ann. Sc. Nat.*, série 3, iii., p. 16.—Flowers small, dirty brown and yellow. Mexico, Sierra San Pedro Nolasco, &c., Jurgensen, Galeotti; Guatemala, Skinner, Loddiges.
20. P. COCHLEARIS, Rchb. f. in *Bot. Zeit.* 1852, p. 764; Lindl., *Fol. Orch.*, n. 122.—A pretty little species from Mexico. Dresden Botanic Garden.
21. P. CRENATA, Lindl., *Fol. Orch.*, n. 237; *Gard. Chron.* 1846, p. 207.—Mexico, Loddiges.
22. P. ELEGANS, Lindl. in *Bot. Reg.* 1842, Misc., p. 70; *Fol. Orch.*, n. 17.—New Granada.
23. P. ELONGATA, Kl. in *Ind. Sem. Hort. Hamb.* 1853, et in *Ann. Sc. Nat.*, série 4, i., p. 333; Lindl., *Fol. Orch.*, n. 78.—Native country unknown. Flowered in Berlin Botanic Garden, 1853.
24. P. EMARGINATA, Lindl., *Fol. Orch.*, n. 146; *Epidendrum* (?) *monophyllum*, Hook., *Exot. Fl.*, t. 109; *Specklinia emarginata*, Lindl., *Gen. and Sp. Orch.*, p. 3.—Jamaica, Wiles. Liverpool Botanic Garden, 1825.
25. P. FLEXUOSA, Lindl. in *Bot. Reg.* 1842, Misc., p. 69; *Fol. Orch.*, n. 239; *Specklinia flexuosa*, Poepp. and Endl., *Nov. Gen. et Sp.*, i., t. 90.—Peru. (Johnson's *Gard. Dict.*)
26. P. FLORIBUNDA, Lindl. in *Bot. Reg.* 1842, Misc., p. 73; *Fol. Orch.*, n. 71; *Specklinia floribunda*, Lindl., *Gen. and Sp. Orch.*, p. 9.—A small species with yellow flowers. Martinique, Sir Charles Lemon.
27. P. FLORIPECTEN, Rchb. f., *Bonplandia*, 1854, p. 25; Lindl., *Fol. Orch.*, n. 155; *Refug. Bot.*, ii., t. 118.—An elegant and singular species, inhabiting Venezuela. W. W. Saunders cultivated it in 1867.
28. P. FLORULENTA, Rchb. f. in *Bonplandia*, 1855; Lindl., *Fol. Orch.*, n. 226.—New Granada. Introduced and cultivated by Linden.

(*To be continued.*)

## ENCEPHALARTOS MOOREI.

I beg to send you an account of Encephalartos (Macrozamia) Moorei. These notes were kindly procured by Mr. G. E. Layton, the Secretary for Queensland at the Melbourne International Exhibition. In a previous notice of this superb plant I referred to it as Macrozamia Miquelii; but as confusion has arisen concerning that species, owing to imperfect material, I have deemed it preferable to give a new designation to the robust and tall species, retaining the original name for the small kind from the Richmond River, which supplied the main material for the first description of M. Miquelii. In forwarding to you now Mr. McDonald's own letter and pencil sketches, I desire to bring this Zamia widely under notice, as the stems of so stately a plant ought to become here an article of horticultural export, in the same manner as a trade in Cycas stems of large size was initiated by myself. I have from Mr. Layton one of the two stems of the specimen plants of the Exhibition, ready to be sent to Kew. *Ferd. von Mueller.*

"In reply to your telegram, I beg to enclose a rough sketch of one of the Macrozamias measured for your information, the height of the same being 15 feet, and about 2 feet in diameter. There were others that measured 20 feet in stem; length of fronds, 7 feet; circumference, about 6 feet 4 inches. The cones or fruit measure from 2 to 3 feet in length. In this locality, or within a radius of ten miles, they are numerous, and principally grow on high stony ridges. Beyond the distance above named from Springsure I know of none growing. They are of very slow growth. I should say the one from which the sketch is taken is over one hundred years old. I have been resident here for seven years, and know of several young trees near my residence, in which I have observed but little difference in size during that period; they appear, however, to be very hardy—in fact difficult to kill. I have observed many trees in this neighbourhood which have been attacked by bush fires, and their leaves are completely destroyed, but the stem again throws out fronds, and which appear to grow as vigorously as the former. There are also several trees from 15 to 20 feet high, which have almost fallen to the ground, the fronds of which turn up, and continue in growth. The nuts, when young, are said to be used by the opossums and other animals of that kind; but they are, when matured, said to be poisonous to human beings; although the blacks make use of them by soaking them in water for two months, after which they break the outer shell; secondly they grate the nut on a rough stone, and form it into a kind of pulp, which they mix and bake, making it into a bread. I understand the nuts are but little used now by the natives; but in 1860, when I first visited this district as an explorer, the nuts were frequently found in the native's camps; at which time, and for some years subsequently, I believe they were regularly used when in season. *J. E. McDonald.*"

Fig. 140.—ARALIA QUERCIFOLIA.

## ARALIA QUERCIFOLIA.

Mr. B. S. Williams, who introduced this fine new plant from New Britain, and to whom we are indebted for the use of the accompanying engraving (fig. 140), describes it as a "neat, slender, and free-growing plant, admirably adapted for table decoration. The leaflets resemble very much the leaves of the Oak, hence its name. It is of compact growth, the leaves are opposite, trifoliate, with leaflets deeply sinuate, and the lower petioles are about 3 inches long; they are of a pleasing light shining green colour." It is distinct from any other Aralia that we know, and should prove as useful as any of the other members of this highly ornamental genus. The name given is provisional only.

## RHODODENDRONS.

(*Continued from p.* 691.)

Each time I visit the Edinburgh Botanic Gardens I admire them more and more, although on the first occasion Professor Balfour kindly did the honours, and showed me all the treasures, including magnificent views over the modern Athens. But I must confine myself to Rhododendrons, as I saw them early in April. In the shrubberies there was blooming R. dauricum, which often gives, and gave me this year, a gleam of brilliant colour across the snow. This species and Rhodora canadensis should be oftener seen than they are.

I did not observe very many signs of havoc among the hardy Rhododendrons. Indeed I have learnt to envy, in some respects, the climate of North Britain for these plants. The foliage of many, however, and the buds of some, told the tale of the cruel winter through which we have passed, but from which we are emerging, if the truth be told, better than we expected.

In the houses I found that Rhododendrons were not neglected. R. niveum and several of the arboreum and caucasicum type were in bloom, and there was good promise of bloom from R. Nuttallii and Dalhousiæ. I have since received stamens of both these species, but containing little or no pollen—strikingly different in this respect from those received from South Britain. I observed last year the same imperfect development of the stamens of R. Nuttallii, received from Edinburgh. Is it attributable to the climate, in which I am told Kalmia latifolia has ceased to bloom?

A large plant of R. Walkeræ (so-called) came, I believe, from the famous collection of Miss Walker, which was broken up and sold at her death.

In a house in the garden of the Lawson Company the beautiful primrose bells of R. campylocarpum were opening. Sir J. Hooker says of this that "when loaded with its inflorescence of surpassing delicacy and grace it claims precedence over its more gaudy congeners, and it has always been regarded by me as the most charming of the Sikkim Rhododendrons."

Messrs. Dickson & Co. take a lively interest in the culture of greenhouse Rhododendrons. A very fine plant of R. Thomsoni was in bloom, and there were large specimens of R. longifolium and Hodgsoni, which last is a rare and beautiful species. R. longifolium is perhaps the shyest among all the shy bloomers of Sikkim Rhododendrons, and I do not recommend it to elderly amateurs, to whom, however, the grand folage, silver beneath, offers no slight compensation. Grafting may doubtless mend this habit, but I have painful recollection of the many years Mr. Binder, of the temperate-house at Kew, and I, have watched for bloom on our respective seedling plants of the species. Messrs. Dickson have many more Rhododendrons which well deserve notice, and among others a seedling hybrid with scented leaves, the blossoms of which were kindly sent to me here, but arrived, unfortunately, in too imperfect a condition to enable me to judge of their excellence.

Before my pen leaves Scotland, let me thank Mr. Henry Knight for his remarks on hybrid Rhododendrons, and their powers of endurance. I hope before long to furnish my readers with a list of the hardiest of the hardy hybrids. I, too, have been astonished

this spring to observe the glorious scarlets and purples and whites offering so brilliant a display.

On my return South I visited Messrs. Backhouse's nursery at York, and it was interesting to find that Mr. Backhouse, too, had a strong taste for Rhododendrons, but the alpine species were naturally his special hobby. He was anxious to learn all about R. fulgens, which was growing, though not blooming, on his rockery, and in a private corner he showed me young plants of R. chrysanthum, that very rare yellow species. This seemed the very place for the Himalayan alpine kinds, such as R. nivale and R. pumilum, and other tiny beauties to thrive in company with R. chamæcistus and the well-known Roses des Alpes, of which I bought a white variety. From these reminders of the abodes of snow I stepped into a house, and found before me an unusually fine plant of R. Veitchianum, which carried me at once to the tropics—so truly catholic is this genius and so calculated to interest every type of horticulturist with some one or more of its 130 (see *Genera Plantarum*) known species! *J. H. Mangles, Valewood, Haslemere.*

(*To be continued.*)

## A SYNOPSIS OF THE KNOWN SPECIES OF CRINUM.

(*Continued from p. 763.*)

Subgenus I. Stenaster.—Flowers usually quite erect in all stages, the linear segments of the limb spreading or reflexing, not more than ¼—⅓ inch broad. Filaments suberect, diverging equilaterally from the ascending style.

* Asiatic species.

1. *C. asiaticum*, Linn. Sp. Plant. 419 (in part); Bot. Mag., t. 1073; C. toxicarium, Roxb. Hort. Beng. 23; Fl. Ind. ii. 134; C. asiaticum var. toxicarium, Herb. Amaryll. 243; Kunth, Enum. v. 547; Wight, Icones, tab. 2021—2022.—Bulb 4—5 inches in diameter, with a neck 6—9 inches long below the tuft of leaves. Leaves 20—30, lorate, multifarious, 3—4 feet long, 3—4 inches broad, thin in texture for the genus, bright green, the central ones ascending, the outer ones drooping over, narrowed gradually to an acute point, the veins close and parallel, the cartilaginous edge very narrow, and not at all ciliated or serrulate. Peduncle arising from the axis of one of the outer leaves, ancipitous, bright green, ascending, 1 inch thick, 1½—2 feet long. Flowers in cultivation not usually more than twenty in an umbel, but in the wild plant sometimes forty or fifty; spathe-valves two, reflexing, lanceolate-deltoid, 3—4 inches long; pedicels ½—1 inch long; ovary oblong-trigonous, ¼—½ inch long in the flowering stage. Perianth-tube slender, cylindrical, tinged with green, 3—4 inches long; segments white, linear, reflexing when fully expanded, ¼ inch broad, not tinged with red on the back, 2½—3 inches long. Filaments about 2 inches long, suberect, tinged with red; anthers linear, versatile, ½—¾ inch long. Ovules solitary in the cells. Fruit generally 1-seeded, subglobose, the size of a large pigeon's egg, 1½—2 inches in diameter.

This is well known in cultivation, and my description is taken from a plant that flowered some time ago in the Palm-stove at Kew. It is the Radix toxicaria of Rumphius (*Plant. Amboin.*, vol. vi., tab. 69), and it is also figured by Commelinus (*Rariores*, tab. 14) and Dillenius (*Hort. Eltham*, tab. 161, fig. 195). Under C. asiaticum Linnæus cites synonyms that apply to four different species, viz., erubescens, capense, and defixum, in addition to the present plant. Roxburgh says that he knew it in cultivation only. I have seen specimens localised as if wild from Sillet (Da Silva), Tranquebar (the Moravian Missionaries), Coimbatore (Dr. Wight), and the sea-shore at Malacca (Griffith and Maingay). Dalzell and Gibson give it as a native of the Concan Province, with the native name "Nagdaun," and praise it as an efficient emetic. In Wallich's herbarium it is mixed with C. defixum. C. declinatum, Herb., in *Bot. Mag.*, t. 2231, from Sillet, has a spreading peduncle, a slightly cernuous bud, a longer tube and limb than in the type, with the segments of the latter tinged with red on the outside. C. cochinchinense, Roem., is founded on a plant gathered by Father Loureiro in Cochin China, which may be merely asiaticum badly described. C. sinicum of Roxburgh, from China, is little known, but seems likely to be a large-flowered variety, with leaves undulated at the margin. C. procerum, Carey, from Rangoon, figured *Bot. Mag.*, t. 2684, appears to be another large variety of asiaticum. It has leaves 5 feet long and half a foot broad, and a flower with a tube 5 inches long and segments as long as the tube, with faint red streaks on the outside. C. anomalum, Herb. (C. plicatum, Livingstone, in *Bot. Mag.*, t. 2908), from China, seems to be a curious monstrosity of asiaticum, with the leaves at some distance above the base expanded suddenly into a broad membranous plaited variegated wing. There is a plant very like asiaticum in Japan, stated by Oldham to be very common on the sandy shores of the islands of Takonosima and Okanosima, of which I have seen only a single dried specimen. It has a long pedicel, a slender ovary, a tube under 3 inches long, and narrower leaves of firmer texture than in typical asiaticum, and which should be compared with the Indian plant in a living state. C. floridanum of Fraser is the plant mentioned by Herbert in his *Amaryllidaceæ* as identical with typical asiaticum, of which "a great bulb surrounded by offsets was brought from Florida by Fraser, who assured me he had dug it up on the seaside." Kunth misprints this name floridum, and Grisebach uses the name for a Jamaican plant which is evidently quite distinct. Moseley, on the *Challenger* Expedition, gathered in the Aru Islands a Crinum not distinguishable from asiaticum by dried specimens.

2. *C. sumatranum*, Roxb. Hort. Beng. 23; Fl. Ind. ii. 131; Lindl. in Bot. Reg., tab. 1049; C. rigidum var. sumatranum, Herb. Amaryll. 248; Kunth, Enum. v. 553.—Bulb ovoid, as large as in asiaticum, but with only a very short neck. Leaves linear, suberect, 3—6 feet long, 3—4 inches broad, narrowed gradually from the middle to the point, firmer in texture than in asiaticum, channelled down the face, furnished with a broad cartilaginous distinctly ciliated edge. Scape axillary, much shorter than the leaves. Flowers 10—20 in an umbel. Spathe-valves lanceolate-deltoid, scariose, reflexed, about 3 inches long; pedicels scarcely any; ovary oblong-trigonous. Perianth tube quite straight, greenish, 3—4 inches long; segments linear, not red-tinted on the back, as long as the tube, ¼—⅓ inch broad, spreading, or rather reflexing. Filaments suberect, bright red, 2 inches long; anthers very narrow, yellow, nearly 1 inch long. Fruit globose, reddish when ripe, 2—3 inches in diameter, with 2—3 large seeds in each cell.

A native of the interior of Sumatra, introduced by Dr. Charles Campbell to the botanic garden at Calcutta in 1801. I am not aware that it exists in a living state in Europe at the present time. It may be readily recognised from asiaticum by its firmer, more rigid leaves and longer perianth-segments. C. macrocarpum, Carey, from Rangoon, is likely a near ally, but it is known only from a short diagnosis of Dr. Carey's, and was never fully described. Another plant, which is probably a near ally of sumatranum, is known only from a dried specimen gathered by Schultz at Port Darwin, in North Australia.

3. *C. amabile*, Donn, Hort. Cantab., edit. vi., 83; Ker, in Bot. Mag., t. 1604; Herbert, Amaryll. 245; Kunth, Enum. v. 550; C. superbum, Roxb. Hort. Beng. 23; Fl. Ind. ii. 133.—Bulb small, but with a neck 1 foot or more long. Leaves 25—30, lorate, 3—4 feet long, 3—4 inches broad, bright green, tapering gradually to a point, the outer spreading, the inner suberect, the margin narrowly cartilaginous and not ciliated or serrulate. Scape 2—3 feet long, ancipitous, 1 inch thick. Flowers 20—30 in an umbel, very fragrant; spathe-valves lanceolate-deltoid, 4—5 inches long, tinted with red on the outside; pedicels ½—1 inch long. Ovary oblong, with several ovules in each cell; perianth-tube cylindrical, bright red, 3—4 inches long; segments as long as the tube, spreading or revolute when fully expanded, broader than in asiaticum, tinged red down the back. Filaments bright red, about 1 inch shorter than the perianth-segments; anthers linear. Fruit unknown.

A native of Sumatra, introduced into cultivation at the beginning of the century by Dr. Campbell and Sir Stamford Raffles. My description is taken from a specimen that flowered at Kew in the winter of 1871. It is decidedly the finest of all the species of this section. Herbert regarded it as a hybrid, and Roxburgh says that he never could obtain its fruit. There is a plant in the Andaman Islands which requires further investigation, of which I have seen only dried flowers gathered by Kurz; the flowers are much smaller than in superbum, both in the tube and limb (which are each only 1½—2 inches long), but as bright coloured on the outside, and the limb is not quite upright.

4. *C. defixum*, Ker, in Journ. Sc. iii. 105; Lodd. Bot. Cab., t. 362; Herb. in Bot. Mag., t. 2208; Herb. Amaryll. 255; Kunth, Enum. v. 561; C. asiaticum, Linn, *ex parte;* Roxb. Fl. Ind. ii., 128; C. asiaticum, var. angustifolium, Wall. Cat., No. 8969; C. Roxburghii, Dalz. and Gibs., Bombay Flora, 275; Coburgia (?) Mogabelle, Steud. in Hohen. Pl. Ind. Or., No. 1299.—Bulb small (2—3 inches diameter when cultivated), with a long neck ("elongated like a ruler," Herbert). Leaves 6—8 to a bulb, linear, 2—3 feet long, ¾—1 inch broad, deeply channelled down the face, tapering to a point, sub-erect, with a narrow cartilaginous border, which is neither ciliated nor serrulate. Scape 1—1½ foot long, but little compressed, often tinged with red. Flowers 6—16 in an umbel. Spathe-valves about 2 inches long; pedicels very short. Ovary small, oblong-trigonous; perianth-tube greenish or red-tinted, 2½—3 inches long, always straight; segments linear, spreading, or rather reflexing, nearly as long as the tube. Filaments bright red, about 1 inch shorter than the perianth-segments; anthers linear, about ½ inch long. Fruit sub-globose, red, 2 inches in diameter, with 1—2 seeds in each cell.

On the muddy or swampy banks of rivers about Calcutta and through Peninsular India, flowering, according to Dalzell and Gibson, about October. It is figured in Rheede's *Hort. Malabaricus*, in vol. xi., tab. 38, under the name of Belutta-pola-taley, and this synonym is cited by Linnæus under asiaticum. It is in Wallich's herbarium, from the Sunderbunds, contributed by Dr. Buchanan Hamilton, who named it Amaryllis cœnosa. C. ensifolium, Roxb., *Fl. Ind.* ii. 129, seems to be scarcely more than a variety of defixum. It came from Pegu, where it was found by Dr. Carey, and is figured *Bot. Mag.*, t. 2301. It is said by Herbert to differ from defixum by its more acute leaves and flowers redder on the outside, and to be of a more delicate constitution. There is a nearly allied Crinum (C. stenophyllum, Baker) in Wallich's herbarium, from Tavoy, numbered 8970, without any name, with thin flaccid narrow linear leaves 3 feet long, but not more than a ¼—⅓ inch broad, a slender peduncle 1 foot long, an umbel of four flowers with short pedicels, a slender tube 3—4 inches long, and linear reflexing segments not more than half as long as the tube.

5. *C. serrulatum*, Baker.—Bulb ovoid, 1½ inch diameter, with brown membranous tunics and a short neck. Leaves 10—12 to a bulb, suberect, linear, under 1 foot long, firm in texture, ¼—⅓ inch broad, narrowed gradually from the base to the apex, distinctly serrulate on the edges. Scape slender, about 1 foot long. Flowers few to an umbel; spathe-valves lanceolate, 1¼—1½ inch long; pedicels scarcely any. Perianth-tube erect, 3½—4 inches long; segments linear, tinged with red on the outside, 2½—3 inches long, $\frac{3}{16}$—⅛ inch broad. Filaments nearly as long as the perianth-segments; anthers small, linear.

A very distinct new species, discovered lately by M. Godefroy-Lebœuf in the mountains of Cambodia; No. 397 of his distributed collection.

6. *C. pusillum*, Herbert, Amaryll. 255, tab. 32, fig. 3; Kunth, Enum. v. 562.—Bulb absorbed into a cylindrical neck, 4 inches long and under ½ inch diameter. Leaves few, linear, acute, suberect, under a foot long, ¼—⅓ inch broad, tapering to an acute point, entire on the edge. Umbels few-flowered. Pedicels above an inch long. Ovary slender, oblong-trigonous. Perianth-tube erect, 3 feet long; segments linear, nearly as long as the tube. Filaments about 1 inch shorter than the perianth-segments; anthers under ½ inch long.

A native of the Nicobar Islands, never brought to Europe alive. As in C. superbum and defixum, the bulb in the wild plant seems to go off entirely into neck. Its affinity with the latter species is evidently close. *J. G. Baker.*

(*To be continued.*)

What is a "Ton"?—Is it not time that some uniform measurement were introduced in the metal trade? At present the vagaries of a "ton" are most amusing. Thus, a smelter's ton of copper ore is 21 cwt., and weighs 2352 lb.; the manufactured copper being sold at 2440 lb. to the ton. Coke for a run-out fire is bought 2000 lb. to the ton. A ton of pig-iron for a forge is 2268 lb.; blooms being sold at 2464 lb. to the ton, and 2700 lb. constituting a ton of refined metal. Coals on the American continent are bought at 2240 lb. to the ton, and retailed at 2000 lb. to the ton. In England they are always bought and sold at 2240 lb., except at Newcastle, where they are shipped by the chaldron of 30 cwt. of 3380 lb., and Newcastle coals are to-day so bought and sold in Quebec, Canada. Would it not be best to adopt the so-called metre-ton (of 1000 kilos.) of the European continent? But then this would inevitably lead to the final adoption of the decimal system, against the introduction of which, notwithstanding its great advantages, we are at present struggling with all our might. *Iron.*

## Orchid Notes.

Orchids at Messrs. Veitch's.—Cattleya Mardellii × is a very beautiful species, now in flower. It has been raised by applying the pollen of C. speciosissima to a flower of C. devoniana. As usual with such crosses the characteristics of both parents are easily apparent. There is the rosy-crimson lip of C. devoniana, with the yellow markings of C. speciosissima near the base. Indeed, the pollen parent is predominant throughout—in the light purplish-rose sepals and petals, broad and not curled back, as they are usually seen in C. devoniana. Even the base of the pseudobulb has the peculiarly formed bud of C. speciosissima. The width of the petals is just 1⅜ inch, the flowers being 5 inches across. There are also several large specimens in flower of Cypripedium selligerum ×. This is a distinct and very beautiful thing, and will form one of the very best exhibition Orchids of this class. It has been frequently alluded to, and is like the Cattleya, one of Mr. Seden's hybrids raised by crossing C. lævigatum with C. barbatum. There are also a number of plants of the rather remarkable Phalænopsis sumatrana; it is a species nearly allied to P. Lüddemanniana. The sepals and petals are buff, heavily barred with chocolate, forming a marked contrast to the pretty crimson-purple lip, which is terminated by a peculiar hairy tuft. Anguloa uniflora superba is, I think, the most beautiful species of this genus, and is also beautifully in flower. It is the same species as that exhibited by Mr. B. S. Williams at Regent's Park recently, where it was certificated under the name of A. Turneri; which is the right name others must decide, but we have flowered it at Loxford for two or three years under the name of A. uniflora superba. At any rate, it is far superior to the more common looking A. Clowesii. Dendrobium Falconeri giganteum is also a grand variety of a most beautiful richly coloured species, and the flowers last three weeks, instead of about five days, as in the typical plant. It well deserves the name it bears. Recent importations of Cattleya Mossiæ have given some very distinct and well marked varieties of that useful old species, and those who purchase unbloomed plants may find a pleasure in watching for the pure white form, which comes but seldom. Angræcum falcatum was also very finely in flower. It was thriving remarkably well in the Cattleya-house. The delicate ivory-white flowers are very freely produced, and at night are very fragrant. Cattleya Mendelii pulcherrima, as it now ought to be called, is finely in flower, although the immense flowers are past their best. The specimen is a large one, and a small fortune will not purchase it. I hope these high prices will not last, though Mr. Anderson's letter, at p. 753, seems to point in an opposite direction. Surely no variety of Cattleya Mossiæ was ever worth 200 guineas. It makes one think of the Scotch saying, that "Some folk hae mair money than wut;" at any rate growers may as well speculate in Cattleya Mossiæ at £3 a dozen; even poor varieties increase rapidly in value, and the chances are that some of them may be worth a Jew's ransom. *J. Douglas.*

### The Orchids at Manchester.

At the Whit-week exhibition at Old Trafford—now a thing of the past—whilst no fault could be found in regard to the display of Orchids, or rather that section of them that are popularly termed show plants, still there are a few species one is apt to look for at such an exhibition that on this occasion were either not shown at all, or were only represented by solitary and by no means important specimens. I would first refer to Aerides odoratum and its varieties, which in a mass well-grown with from twelve to twenty spikes is to my mind a most charming and desirable plant, and at the same time an exhibition of patience, culture, and skill. This is not met with so frequently as was the case twenty years ago—at least, not in some of the larger collections—apparently because it is common, and one almost everybody is acquainted with. By all means get and encourage the growth of the newer species, but do not despise the older ones, nor neglect those that have given many pleasure in days gone by; for there are few better things to be met with to-day than well developed spikes and good coloured flowers of A. odoratum purpurascens. This is is by no means difficult to manage; the treatment given to the East Indian plants in general is just the course that must be adapted to this species in particular. Now that the new roots have formed, and their green points are pushing out in every direction, either on the main stem of the plants or along the roots of last year's growth, in search of moisture, this must be given in large measure. Of course, whilst the blooms are upon the plants, care must be exercised that no water is allowed to hang about the spikes or leaves, or the beauty of the flowers will speedily pass away, but as soon as the spikes are cut off plenty of water must be given. The atmosphere of the East India-house will now be continually moist, yet sweetened and regulated by a free admission of air, and the roots and lower parts of the plants may be occasionally treated to a sprinkle from the syringe. It is not safe to syringe large plants continually overhead; for though some of the Aerides may not be injured by so doing, the Vandas would soon show that such heavy wettings were rather injurious than beneficial. Aerides Dayanum—the old A. virens major—the one that caused quite a stir when the gentleman whose name it bears exhibited the plant at Regent's Park, London, over twenty years ago—was not seen at all at Old Trafford this year, and yet with spikes over 2 feet long, and foliage of a dark green colour, it is one that is much admired and ever appreciated.

Instead of the continuous and everlasting Cattleyas, Masdevallias, and Odontoglossum vexillarium, bedded out as you describe them on p. 766, I would suggest that a new method should be adopted, and that the plants should be shown in their different classes. If they are to be bedded out or bedded in, in trays or in pans, let it be so stated in the schedule; but if this system is continued I am certain greater dissatisfaction will be felt and expressed both by growers and admirers than has hitherto been the case. The system is wrong and is misleading, and the gentleman who gave the prize at Manchester for single plants is to be commended for his courage. That so few competed when £10 were offered for six plants carries with it its own explanation. One plant in the 2d prize collection of this latter class—the only plant of its kind in the show (I refer to Dendrobium Falconeri) was nicely bloomed, the flowers being of good size and well coloured. This was grown in a basket, the growths having been constantly tied in over one another. *W. Swan.*

### Orchids at the York Nurseries.

Messrs. Jas. Backhouse & Son's Orchid-houses are now, and we understand have been during the past fortnight, adorned with many fine specimens of Cattleya Mossiæ. Some of these are large, carrying twenty to fifty blooms each. In not a few instances the colours, both of light and dark varieties, are exceptionally striking. A grand spike of C. gigas with four blooms is now in flower, and others of the same are following. Aerides affine roseum with nine spikes is "a sight" in itself. Sobralia macrantha nana still blooms in quantity, and many Bolleas are in bud. We noticed also fine plants of Epidendrum nemorale promising a floral display shortly. In one of the houses dozens of Dendrobium Falconeri are in large bud; while in another house there are many hundreds of spikes of the rich orange Epidendrum vitellinum majus already in flower, and likely to be so for fully six months to come. The Masdevallia-house is "not a whit behind." There are fine examples in it, amongst others, of the scarlet-crimson M. Harryana resplendens, the lighter but very brilliant M. carminata, and the deep one known as the "bull's-blood variety."

### Dendrobium Falconeri.

Now that this charming Dendrobium has gone out of flower, whether the blooms have been many or few, it must be treated to a good share of moisture, heat, and light. Direct sunlight will be too strong for it, and will cause it to dry too rapidly; yet if kept very shady the growths do not become as plump and stout as it is desirable they should do. As very few of the roots enter the soil unless the bulbs are continually pegged down, it will be necessary that the syringe be constantly used to the plants. Two or three times a day they must be wetted overhead, then the fine threadlike roots will be able the better to gather and pass along the moisture and food necessary to the life and growth of this grassy subject. The giganteum form of Falconeri, a most beautiful variety, with flowers much larger and firmer than the old type, appears to be less in the habit of forming new shoots along the old bulbs, but generally forms fresh growths from the base; this is very rare but most desirable. It may be treated in every way like Falconeri, minus the continual syringing. *W. Swan, Fallowfield.*

## CULTIVATION OF WOAD (ISATIS TINCTORIA).

The following notes on the cultivation and manufacture of Woad are taken from a very interesting article in a recent number of the *Friends' Quarterly Examiner*. The article is descriptive of the Woad industry at a village known as Parson Drove, near Wisbech. It is well known that Woad, which is the blue colouring substance obtained from Isatis tinctoria, was largely cultivated in this country before the introduction of indigo, and that the general use of this last-named dye-stuff to a great extent displaced the older product. It is therefore of considerable interest to know that in some parts of the country a trade is still done in this article.

The paper describes the Woad works (or Woad mill) in the above-named village as a remarkable assemblage of sheds and buildings, of such unusual appearance that they attract the attention of a stranger. The central edifice is formed of a circular thatched building with a conical roof, having extended wings to the north and south; around this, on three sides, are erected skeleton sheds of woodwork rudely framed of poles and hurdles.

The seed is sown in the middle of April, in fresh broken land. The young plant is at first very tender, but as its roots deepen it becomes hardy. In sowing 12 feet are allowed between each furrow, the land being measured with great care, and the horses, both in ploughing and drawing two harrows chained together between them, walk in these trenches that the soil may be kept light. The weeders clean the crop in a singular manner; the custom being to crawl, with a short hand-spade—made by the natives, and of peculiar shape—in one hand, gathering the weeds with the other, and throwing them into the furrows. Women thus engaged put on a hardened skirt; leather knee-caps are worn by the men. Having been twice weeded, the crop in June is ready for the first plucking, when the creeping process is again resorted to. This is repeated three times—namely, as often as the leaves shoot. The baskets, well filled, are then carried to the mill. It is customary to spend the morning plucking, and the afternoon in the mill, "balling."

The mill is a peculiar structure, built with turf walls, which are about 3 feet wide at the base and narrowing upwards. The turf blocks, a foot deep, are cut slanting, and arranged in a herring-bone pattern resembling old Saxon brickwork. The walls, 4 feet in height, support a high wide roof of timber and hurdles, thatched with reeds.

The grinding-machine, in the circular compartment, is worked by three horses, their harness being attached by three poles to a central wooden pillar, and three crushing-wheels; these revolve as the horses walk round the high edge of the wide hollow into which the Woad has been thrown. The working part of this apparatus is similar to that used in ain for pumping up water for irrigation. The ushing-wheels are of a slightly conical shape, about 7 feet high on the outer side, and 6 feet 6 inches on the inner side. The iron bars affixed to them roll over and over, and break the leaves till they become a pulp, which the watchers continually gather and place beneath them. The next stage is carried on without delay, and is termed "balling." The crushed Woad is taken up in the hands, and worked into balls of about the size of a Dutch cheese. This makes the hands almost black, and so they remain till the skin changes. Thus prepared the Woad is carried on boards on men's heads to the "ranges" (skeleton sheds), six or seven storeys high, and is there arranged in a never varying fashion on trays of twined Hazel, called "fleaks," to dry, when it is again removed, and thrown in heaps into the great thatched wings of the mill, the "couching-houses." Here it lies till it is heated by fermentation, and, being turned over and worked with water, becomes a sort of paste. This requires twenty to forty days, as it is necessary to destroy certain vegetable principles injurious to the beauty of the dye, as also to bring out its colouring properties.

At Wisbech the leaves are gathered three times in the year; at Erfurt, in Germany, where the plant is also cultivated, four times; in Italy and Spain, owing to the better climate, eight to ten times. In the Fens it is customary to cease working on Martinmas Day, whatever may be the condition of the plants, as the season is then judged too damp to gather.

The finished Woad, now in paste, is placed in

sugar hogsheads, and rammed down with spades, and when well compressed is ready for market.

In consequence of an obscure fermentation the paste improves with age, and if kept for four years it will have twice its original power; but, unfortunately for this trade, 4 lb. of indigo are said to produce the same effect as 210 lb. of Italian paste, which, although it dyes by itself, is now most commonly used for the improvement of other colours.

The interesting article from which the foregoing extracts are made further points out that in days gone by, when the industry was very remunerative, the hands employed were trained to the work from childhood, and thus became very expert. Mothers even took their infants into the Woad fields, putting them into the gathering-baskets while they went on with their work. The paper concludes with the following remarks :—" In the early part of this century fortunes were realised by Woad cultivation, and many good houses may be seen in our neighbourhood built by successful growers. In those days the mill was moved from place to place, as the farms became exhausted, the science of agriculture being then but little understood. This may account for Prof. C. C. Babington's statement, that at Ely, where the Woad was grown for one year, the parish requested it should be discontinued, for fear of increasing the number of paupers. That the erection itself, as we now see it, is practically the same as in very early times, we can feel very little doubt. It seems, in its romantic appearance to recall the days of the ancient Briton, when such mud-built halls were probably considered suitable habitations for chief men ; and possibly we have handed down to us a specimen of the original architecture of the Fens, when brick, stone, and even the wood of which the fierce Huns made their palaces, would, in our land of waters, be luxuries unknown, and with it one of the earliest of our manufactures, when the Briton, justly or unjustly, was ranked amongst the savage nations of the earth."

## THE KEW ARBORETUM.

### The Maples.—XIII.

Acer Lobelii, Tenore, *Flora Neapolitana*, vol. v., p. 291, tab. 199 ; Koch, *Dendrologie*, theil i., p. 530. *A. platanoides*, L., *var. Lobeli*, Loud., *Encyclop. of Trees and Shrubs*, p. 83. *A. ætnense*, Hort. — Mountains of Southern Italy.

I follow Koch in treating this as a separate species. It differs markedly from A. platanoides in the different outline and firmer texture of its leaves, and in the young shoots clothed with a bluish-grey glaucescence.

*Var.* atheniense : A. atheniense, Hort.

I cannot find this name in any botanical work. The variety was distributed originally from some of the Belgian nurseries, and the name given under the impression that the plant was a native of Greece. The young shoots exhibit the same glaucous bloom as do those of A. Lobelii, and the rather smaller leaves are the same in outline and texture as are those of that species.

*Var.* laciniatum : A. Lobelii, *β*. Tenore, *Flora Neapolitana*, vol. v., p. 291, fig. Lobel, *Stirpium Adversaria*, p. 443.

A parallel form of A. Lobelii to the one of A. platanoides, described under the same varietal name.

In some catalogues A. Lobelii macrantha and A. Lobelii macrocarpa are given ; what these are I am not now in a position to say. *G. Nicholson, Kew.*

## TOWN AND COUNTRY.

It is difficult to refrain from smiling when we read in some gushing article in the papers of the ecstacy exhibited by the town dweller when comparing the delights offered by urban parks and gardens with what simple delight may be found in rural scenery and beauty. With him the attractions of the universe centre perhaps in Hyde Park, or in some equally famous rendezvous of the towns-people. There are just now luxuriant leafage, bright green grass, and many shrubs and plants in gorgeous flower. These he fondly imagines excel all that the country can offer, yet if he will but analyse his tastes he will have to admit that, after all, it is not the trees and the greenery which constitute the picture upon which his thoughts are centred. These, indeed, are but the setting which encloses the picture of fashionable life, of brilliant society, of living, moving beings which people and give to these parks and gardens the only charms which please and satisfy his wants and desires. The true ruralist, on the other hand, marvels that the rich should just now prefer to leave behind all the delights the country offers for those questionable enjoyments found just now in large towns. What park, however wide its extent, what gardens, however costly in construction, can give the beautiful undulations, the magnificent woodlands, the sweet songs of the birds, the unceasing yet delightful hum of insect life, the picturesque winding rivers and streamlets, the leafy lanes and woodland footpaths, the meadows aglow with wild flowers, the commons rich in golden yellow—nay, the quietness and solitude, the delicious retirement from noise and worry of business, the sweet refreshment of repose ? These are indeed delights which no town life, let it be ever so brilliant or so exciting, can offer ; these are beauties of Nature's own production that no art of man can excel. If the world would but give to the winter its town life and to the country its summer existence how much happier it might be, and still more how much that is beautiful would it gain and enjoy. Some day perhaps we shall awake to our folly in this matter.

## NEW INVENTIONS.

The Pall Mall Lawn Edger.—Several attempts have been made to introduce a simple and easily worked tool for cutting the edgings of lawns, verges, &c., but none that we have seen so well supersedes the old back-aching shears as Adie's patent,

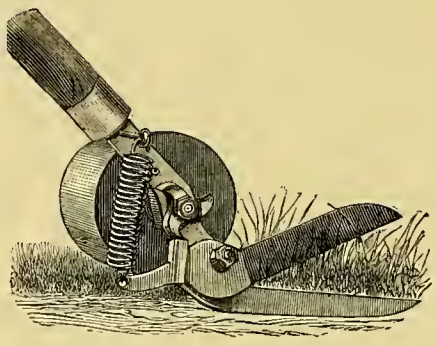

Fig. 141.—The Pall Mall Lawn-edger.

here illustrated (fig. 141). In properly kept gardens, where the edgings are cut every spring with the edging-iron, this tool will save an immense deal of labour, and soon save its cost. What we have seen were strong and durably constructed, and so simple as to be little liable to getting out of order. The implement judges at South Kensington recognised its usefulness by giving it a Certificate of Merit.

## COLONIAL NOTES.

North-west Australia. — Baron Ferd. von Mueller, whose restless energy knows no relaxation, has just published an enumeration of the plants collected in the Nickol Bay district (West Tropical Australia) during Mr. Forrest's trigonometrical survey. Among the plants enumerated are the true Caper plant, Capparis spinosa, not distinguishable from the Mediterranean plant ; Strychnos nux vomica, yielding strychnine ; the Haricot Bean, Phaseolus vulgaris ; Hibiscus Goldworthii, a highly ornamental species ; Nemophila Fraseri, a bush of showy splendour ; the glorious Marie Palm, Livistona Mariæ. The dwarf Bamboo-like appearance of the tall evergreen Reed, Phragmites Roxburghii, is spoken of as quite unlike West Australian vegetation further south. Ferns are almost entirely absent, Acrostichum aureum being the only one mentioned. Orchids are totally wanting, so far as is yet known. A Begonia, the first detected in Australia, has been found in the country between De Grey River and La Grange Bay, but the specimens are imperfect.

Botanic Garden, King Williams' Town.

The annual report of this establishment, now under the charge of Mr. J. C. Nelson, is before us. It appears to be in a transition state, and the Curator's energies seem to be largely taken up with the nursery, a commercial undertaking, which must assuredly interfere with the proper work of a botanic garden. We learn that on December 10 the highest reading in the shade was 109° !

## CONSERVATORIES.

Messrs. Boulton & Paul, of Norwich, have kindly placed at our service an illustration of the handsome conservatory (fig. 142) which formed such a conspicuous feature in their very large collection of horticultural structures and appliances shown by them at the recent exhibition at South Kensington, and for which they obtained one of the only two Gold Medals awarded.

## PINKS AND CARNATIONS.

It will, I think, be generally admitted that Pinks and Carnations are the most beautiful among hardy plants, and yet there are few gardens now in which they are to be found in quantity, the taste for summer bedding having almost driven them out of cultivation ; but now that the good old-fashioned mixed borders are coming into favour again it is to be hoped we shall see more of them, and that they will assume the position they once occupied when Hogg and other enthusiastic florists like him had them in hand. It is gratifying to know that they still have a home at Slough, which has been their headquarters for years, and if any one wants a feast of these lovely flowers they have only to go there in the season when they are in bloom, to see them in all their beauty and splendour. There seems to be something in the air or soil at Slough that suits them better than anywhere else, as they grow with great freedom, and have such healthy-looking "grass" that one might suppose there never was a wireworm in the place, or other underground boring insect to molest them. That they shall not do so in pots every precaution is taken in looking carefully over the loam before being used, and I well remember how particular they were in doing this at the Wellington Road Nursery some thirty years ago, when Carnations were thought a good deal of and pains were taken to grow them to a high state of perfection—a condition we seldom see them in now.

It is not, however, their pot culture that I wish to particularise or advert much to, but to bring them more under notice for beds and borders, as it is there one can enjoy them, without the toil and labour they entail when more artificially treated. The way they look best, I think, is in patches of three, planted about 9 inches apart, when they soon get together and form a fine mass. To grow them well it is necessary to dig good-sized holes, and refill them with turfy loam from the roadside, with plenty of grit in it, which being fresh, sweet, and wholesome, is sure to maintain them in health. To ward off wireworm there is nothing so effectual as soot, which not only renders the plants safe from their attacks, but is the most suitable and agreeable stimulant Pinks and Carnations can have. A shovelful to a barrowload of soil is quite enough to use, as, being of a hot nature, that is as much as the roots will bear with safety, and rather than add more it will be advisable to work in some short, rotten manure, or, better still, give it in a liquid form when the plants are beginning to bloom. A good way of supporting the flowers is to cut small wire into lengths of about 3 feet, and give each piece a spiral twist, by running it round a smooth stick or rod of iron, when by thrusting these in the ground, the stems may be quickly worked in the coils, and the labour and time of tying thus saved.

Perpetual Carnations, being more tender and straggling in their habit, are best planted against low south walls, where they can be tied or nailed and trained, in which positions they yield a long and continuous supply of their fragrant blossoms for cutting. Pinks, too, are very serviceable for this purpose, and make excellent edgings to Carnation beds or borders, especially the common white kind, the plants of this kind being dwarf, and the habit close and compact. The marked varieties are exceedingly chaste and beautiful, and having stiff stems with erect flowers they all dress well in vases, and as they force readily they are deserving of extensive cultivation in pots, to be brought on to succeed the perpetual

Carnations. One of the most serviceable with which I am acquainted is Anne Boleyn, a kind that used to be in great repute; and another I can strongly recommend is Clarke's Derby Day, which no one can fail to admire.

When required for pots, the best way to get good strong plants is to take cuttings as soon as they can be obtained in spring and strike them in heat, when in May they can either be planted out in a prepared border, to be grown on there for lifting in the autumn, or potted in 32's and plunged; but the former method generally gives the best results, besides which there is a saving of time and labour in watering. Later in the season Pinks root readily under handlights in the open ground if it is previously prepared by working in some sharp sand, as do also Carnations and Picotees; but the surest way of increasing these latter is by layers, as when carefully done scarcely one in a hundred will fail. The proper season for layering is immediately the plants have ceased blooming, when all the young shoots contiguous to the ground may be operated on by giving them a cut half way through on the underside of a joint, turning the knife gradually while doing so, to cause a slit up the middle of the stem, extending half an inch or so, when by the use of pegs to keep the shoots in position, and some sandy soil to lay around and bury the cut parts, the work will be complete, and all that is necessary after is to keep them well watered, which will soon encourage the formation of roots.

Carnations and Pinks may likewise be easily raised from seed, which should be sown in pans of finely sifted soil in February or March, and covered lightly, and then placed in gentle heat on a dung-bed or stood in a forcing-house, where they will quickly germinate, and if then nursed on in less warmth and hardened off in a cold frame previous to being planted out, they will attain great strength and size by the autumn, and yield a fine crop of flowers the year after. *J. S.*

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Monster Cauliflowers.—The *Cape Argus* of May 18 states that Mr. Charles Ayres, seedsman, of Longmarket Street, Capetown, had on view at that time three monster Cauliflowers, grown by Mr. S. van Renen, Constantia, from seed supplied by him, the three together weighing 80 lb. Finer specimens of this vegetable were never seen of colonial growth, if indeed finer could be grown in any part of the world.

## Florists' Flowers.

Carnations and Picotees.—The hot weather of the last week in May caused the plants to spindle very rapidly for bloom; they are now well advanced in bud, and nearly all of them have been thinned out. Most of the stems carry three blooms, but those that are very weak have but two allowed for them. I fancy the hot weather checked the growth of the plants very considerably, and also caused the flower-stems to be weaker than they would have been if they had not passed through such forcing weather. When hot weather sets in suddenly after a cold period the change should be made as easy as possible by syringing the plants at least once a day, and taking care that none of them suffer for want of water at the roots. Now is the time to surface-dress. The best compost for this purpose is made of good loam, leaf-mould, and rotten stable manure in about equal proportions. Greenfly is rather a troublesome pest at all seasons, but they now settle thickly on the flower-buds, and if not removed cripple the flowers very much. Dust with tobacco-powder to destroy them, but frequent syringing also holds them in check. The weather changed to cold very suddenly after the heat, and this will be another check to their growth. The young plants of the tree section propagated early in the year should now be potted on as they require it. See that no green-fly is permitted on any of the plants. The early propagated plants will flower in 8-inch pots; those later will do well in 6-inch. *J. Douglas.*

### The Tulip.

I was truly glad to see that the National Tulip Show was again a success. The exhibits appear to have been numerous, and a great number of growers seem to be interested in the flower—at least in the Midland Counties. Our own bloom was a very good one, but it was quite over on the date of the Manchester Exhibition. It is a wonder that Tulips are not used in some way as a striking feature in the spring garden. They can be cleared off in time for summer bedding. In the South they can be lifted about the middle of June. The old growers used to advise the bulbs being taken out of the ground as soon as the stems would double up without breaking. Ours have now been taken up, each variety has been placed in a pot separately, and they have been placed in a dark loft. It is a mistake to dry them in the sun; as soon as the bulbs are dry they should be cleaned and stored away until planting time. The ground where the Tulip has been growing is usually deep and rich, and well adapted for Asters or Stocks; we have been planting our beds with these useful annuals.

### Pyrethrums.

Great as has been the improvement among most plants that admit of being raised from seed, none show it in a more marked manner than Pyrethrums, which have grown from the small Bachelors' Buttons of our early days till they have reached the size and fulness of the best Asters, to the flowers of which the double kinds of Pyrethrums bear a striking resemblance. The single varieties, too, are also exceedingly showy, and are in great favour with many. The taste for these and single Dahlias is, I think, a retrograde one [?], and yet when one looks at them there is much to admire in the regular form of the petals and their lovely rich colours. For semi-wild places, such as woodland walks and shrubbery borders, these single Pyrethrums are unrivalled, as, judiciously planted about, and associated with Chrysanthemum Leucanthemum, they look quite at home; but unfortunately rabbits are very fond of them, and when able to get at them crop off their leaves in the spring. This is a great drawback to their cultivation where these rodents abound, and it is only in enclosed grounds that such plants can be kept. There, in herbaceous borders, the double sorts may be grown, and for general usefulness and decorative value they are quite unsurpassed, coming in as they do so early in the season, when there is little else in bloom to make gardens gay, or yield flowers for cutting, a purpose for which double Pyrethrums are of great use, as they not only pack and travel well, but last a long time in water. To have them at their best they must be planted in deep soil, where they can send their roots well down, as, being moisture-loving subjects, they soon suffer if they cannot ramify freely. The finest I have ever seen were in beds, planted at wide distances apart, and the ground between mulched and kept well soaked with liquid manure, which assisted them so much that they were able to bloom till a very late period. The best way to start with double Pyrethrums is to get a few of the most striking varieties in pots, as established in that manner they may be planted at any time; and if an increase is desired the proper season to effect that is in spring, just as the young leaves are forming, as then they may be cut through the crown and divided without risk of harm. *J. S.*

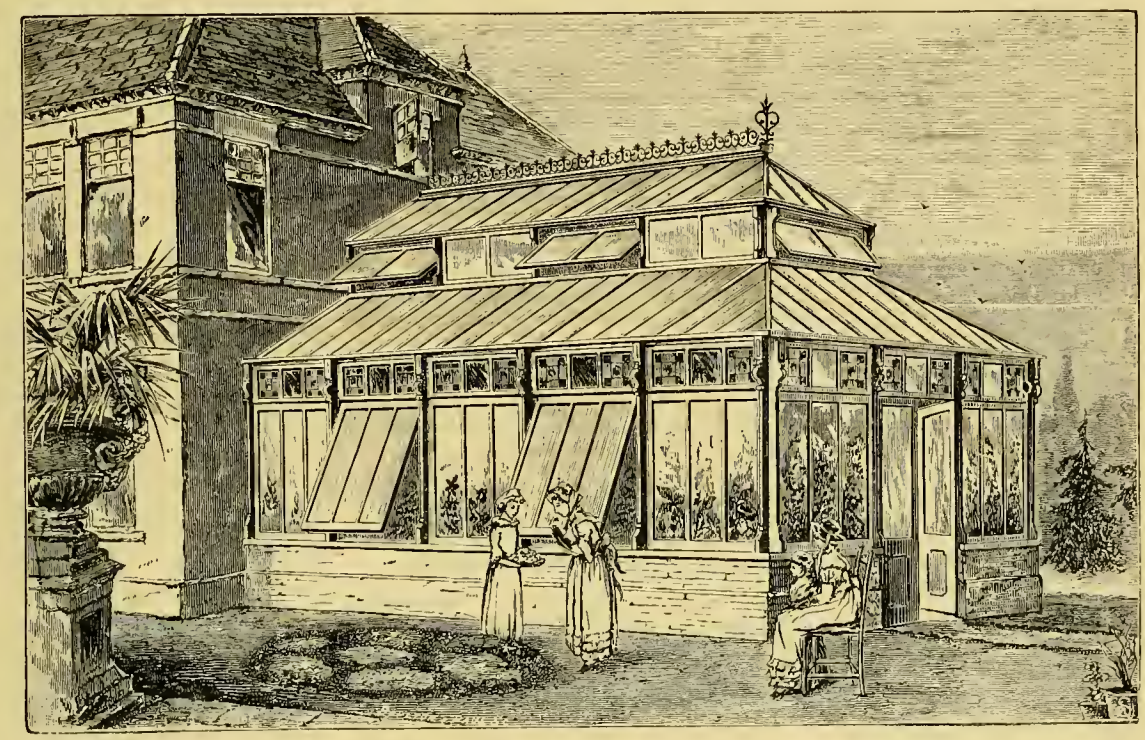

Fig. 142.—Messrs. Boulton and Paul's Conservatory. (see p. 788.)

## PLANT PORTRAITS.

Dendrobium thyrsiflorum, *Floral Mag.*, t. 449. —A fine variety, with a dense spike of whitish sepals and petals, and orange lip. From the collection of Messrs. Veitch.

Kirke's Plum, *Bulletin d'Arboriculture*, April, 1881.—Fruit above middle size, with a shallow suture, deep purple spotted with yellow, and with a thick bluish bloom. Flesh greenish, juicy, sweet, and fragrant, easily separating from the stone.

Lachenalia Nelsoni ×, *Floral Mag.*, t. 452—A cross between L. luteola, set with pollen of L. aurea. Flowers golden-yellow, in a long very many flowered raceme; raised by Rev. J. G. Nelson.

Lastrea Richardsii multifida, *Flore des Serres*, t. 2401.—A handsome crested form of Lastrea introduced by Messrs. Veitch & Sons, and described by us at p. 104 of our present volume. It is supposed to have been derived from the South Sea Islands.

Lisianthus glaucifolius, *Garden*, April 23, 1881.—Differing from L. Russellianus in its broader and more glaucous leaves.

Meconopsis Wallichiana, *Garden*, March 19.—A hardy biennial, blue-flowered Poppy. Native of Sikkim Himalaya.

Melianthus Trimenianus, Hook. f., *Bot. Mag.*, t. 6557.—A shrub with alate pinnate leaves, whitish beneath, the leaflets linear, with recurved margins; flowers reddish, in close terminal spikes, capsule 4-winged. Native of Namaqualand. Nat. ord. Sapindaceæ.

Musschia aurea, Dumort., *Bot. Mag.*, t. 6556. —A Madeiran herbaceous perennial, with short stout stock, crowded, glabrous, lanceolate dentate leaves, tapering to a stalk, and loose panicles of golden-yellow flowers. It is the Campanula aurea of *Bot. Reg.*, t. 57.

Odontoglossum Phalænopsis var. luxurians, Lind. and Rchb. f., *Illust. Hort.*, t. 418.—Sepals and petals whitish, lip large, unequally three-lobed, blotched and striped with crimson.

Oleander, *Floral Magazine*, t. 431.—1, Felix Duval, semi-double salmon-pink; 2, Professor Duchartre, deep crimson, single. These specimens, grown at Chiswick from a French source, should tend to make these showy plants more popular.

Pandanus furcatus, *Revue Horticole*, May 1, 1881.—Fruiting specimen, with details.

Peach Sea Eagle, *Florist*, May, 1881.—"A grand gland-leaved late fruiting Peach," of the large-flowered section, very vigorous and hardy. Fruit large, rich, juicy, and piquant in flavour. Mr. Stevens, of Trentham, considers it the best of all late Peaches. It was raised by the late Mr. Rivers.

Pelargonium (Double Zonal) Vesta, *Floral Magazine*, t. 432.—A fine bright scarlet variety, raised by Mr. Laxton.

Pelargonium Mrs. Potten, *Floral Mag.*, t. 450. —One of the decorative section, with large white flowers, shaded with blush, pink and purple blotches on the upper petals.

Potentilla unguiculata, Gray, *Bot. Mag.*, t. 6560.—A very delicate silvery herbaceous or suffrutescent plant, with linear leaves and spreading cymes of white flowers. Native of California. Hort. Kew.

Protea penicillata, Meyer, *Bot. Mag.*, t. 6558. —Shrub, with subsessile oblong leaves, silky when young, subsequently glabrous; flowers numerous, yellowish, in close heads, surrounded by oblong obtuse greenish bracts, margined with brown. Native of the Cape of Good Hope.

Pyrethrum, New Double Vars., *Floral Mag.*, t. 451.—1, Rembrandt, rosy-magenta; 2, Captain Nares, bright magenta; 3, Lady Derby, white, tinted with blush. Messrs. Kelway.

Pyrus coronaria, *Garden*, April 16.—An American species of Crab, with oblong-stalked leaves and corymbs of pale rose flowers, 2 inches and upwards in diameter.

Quesnelia roseo-marginata, *Belgique Horticole*, 1881, tab 4.—A tufted Bromeliad, sometimes called Bilbergia, sometimes Lieveoa princeps. The leaves are strap-shaped, obtuse apiculate and serrulate, the flower-spike dense, obtuse, with scarlet bracts and purplish flowers. Guiana?

Rubus deliciosus, Torrey, *Flore des Serres*, t. 2404.—A beautiful hardy Bramble, with palmately lobed leaves, and large white flowers with coarsely notched petals. Native of the Rocky Mountains.

Salvia Bruanti splendens, *Floral Mag.*, t. 447. —See *Gard. Chron.*, p. 781, vol. xiv. Hort. Cannell.

Saxifraga oppositifolia var. pyrenaica, *Gartenflora*, t. 1039.

Sedum Alberti, Regel, *Gartenflora*, t. 1019 (2). —Stems ascending, leaves terete, like those of S. album; flowers white, in erect panicled cymes. Nearly allied to S. gracile. Eastern Turkestan. A. Regel.

Sedum sempervivoides, *Garden*, April 2, 1881. —A Stonecrop, with oblong ovate leaves, and dense trusses of scarlet flowers; native of the Caucasus. Though stated to be hardy our own experience in the past winter leads us to conclude that it is not invariably so.

Senecio cruentus, *Garden*, April 30, 1881.

Tulipa Gesneriana Strangwaysii, *Florist*, May, 1881.—Flowers large, gorgeous crimson. Said to have been found originally near Florence by Hon. W. F. Strangways, and to be figured in the *Bot. Reg.*, t. 46 (1838).

Tydea hybrida, *Belgique Horticole*, Jan. 1881. —A group of hybrid varieties, accompanied by a list of the species and varieties.

Veronica longifolia subsessilis, *Garden*, April 30, 1881.—With this is given a descriptive list of hardy species and varieties, from the pen of Mr. Wolley Dod.

## THE GENUS NEPHTHYTIS.

This genus, the name of which is so strange to English ears, is named after Nephthys, the mother of Anubis, the wife of Typhon, a fact of great interest to Egyptologists, but scarcely so to botanists, still less to gardeners, is an interesting little group of tropical West African plants of which very little has hitherto been known. The genus was founded by Schott upon an imperfect specimen, in fruit only, collected by Afzelius in Sierra Leone; and Engler seems to have seen no other specimens. The Kew herbarium, however, contains specimens of another species, collected by Mr. Mann in Fernando Po; and I have just been favoured by Mr. Bull with a living specimen of a third species, that he has recently introduced from Liberia. From these materials I am enabled to fill up the gaps in Schott's generic description, and add descriptions of two new species.

The genus is well marked by its more or less creeping stem, sagittate leaves, with scarcely any sheath to the petiole, terminal inflorescence, expanded spathe, and one-celled ovary with one pendulous ovule. It is allied to Cercestis and Anubias.

Mr. Bull's plant, to which I give the name Nephthytis liberica, cannot exactly be called a horticultural prize, but the distinct form of the leaves, which are of a cheerful green, and probably remain on the plant throughout the year, render it worthy of a place in every good general collection.

*Nephthytis*, Schott. — Spathe concave-expanded, erectly-spreading, slightly convolute at the base, and shortly decurrent on the scape, persistent. Spadix free, subsessile, erect, straight, cylindrical, obtuse, androgynous, densely many-flowered; the basal third female, the upper two-thirds male and closely contiguous to the female part; no sterile organs. Flowers destitute of a perianth. Ovary globose or obovoid, one-celled, with one large anatropous ovule, suspended by a very short funicle from the side of the cavity just below the apex. Stigma sessile, discoid, depressed in the centre. Stamens subquadrate, truncate; anther-cells opposite, separated by a thick connective, dehiscing by terminal pores. Berries large, ellipsoidal, one-seeded. Seed ovoid, suspended from near the apex of the cavity, exalbuminous.

West African herb, with a more or less creeping caudex. Leaves sagittate, on long petioles, which are dilated at the very base into an extremely short and very indistinct sheath, that merely embraces the stem at the origin of the petiole. Primary lateral veins uniting in a series of a few large loops at a short distance within the margin of the leaf. Inflorescence terminal; scapes one or two to a stem, shorter or longer than the petioles, surrounded at their base by a few closely convolute, imbricating, brownish, membranous scale leaves, which arise from the apex of the stem above the last foliage leaf.

*N. Afzelii*, Schott, in *Oest. Bot. Wochenbl.* 1857, p. 406; *Gen. Ar.*, t. 51; *Prodr.*, p. 218; Engler in *D. C. Monogr.* II., p. 302.—General outline of the sagittate lamina forming an isosceles triangle; basal lobes as long or longer than the front lobe, overlapping each other, gradually very acuminate; midrib with about five primary lateral veins on each side; postical ribs denuded in the sinus for about a quarter of an inch. Habitat, Guinea. Afzelius.

*N. liberica*, N. E. Brown.—Caudex about ½ inch thick; petioles from 6 inches to probably a foot or more in length, slender, terete, green; vagina not more than ⅜ inch long; lamina sagittate, in general outline nearly forming an equilateral triangle, bright green above, rather paler beneath; front lobe 3—6 inches long from insertion of petiole, deltoid or roundish-deltoid, somewhat abruptly and shortly acute; basal lobes as long or a little longer than the front lobe, not overlapping each other, oblong-ovate, acuminate 1½—3½ inches broad; midrib, with three to four primary lateral veins on each side; postical ribs denuded in the sinus from ¼—½ inch, each giving off two strong distant branches from the upper edge, and one from the lower edge. All the primary veins much curved, and, as well as the ribs, impressed above, prominent beneath. Scape overtopping the leaves in the living plant seen by me (but this may be due to an imperfect development of the leaves under cultivation, as a native dried leaf, also sent to me by Mr. Bull, is very much larger than those on the living plants), terete, with a few minute scattered prickles, green; spathe ovate-oblong, shortly cuspidate, 2½ inches long, 1¼ inch broad, green on both sides; spadix 1½ inch long; ovaries globose, light green; stigma whitish; stamens cream coloured.—Habitat, Liberia. Introduced into cultivation by Mr. W. Bull in 1881.

*N. constricta*, N. E. Brown.—Caudex ½ inch thick; petioles 1—2 feet long, terete; lamina trilobate-sagittate, constricted above the insertion of the petiole; front lobe elongate-ovate acuminate, 4½—8 inches long from insertion of petiole; basal lobes longer than the front lobe, obliquely and rather broadly lanceolate, very acuminate, not overlapping each other; midrib, with four to six primary lateral veins on each side; postical ribs denuded in the sinus from ¾—1 inch, each with one strong branch from the upper and lower edges; scape shorter than the petioles, slender, terete, furnished with a few very minute prickles; spathe oblong acuminate, 2 inches long, green; spadix 1 inch long.—Habitat, Fernando Po. Mann, No. 106, December, 1859. (Herb. Kew.) *N. E. Brown.*

## Notices of Books.

*Dickens' Dictionary of London.*—Londoners and country cousins alike will appreciate the new edition of this informal but trustworthy guide. It is impossible to indicate what is in this guide—something of everything—even "Dust" is not forgotten, but it is classed with "Ashes."

—— *The Revue Horticole.*—It is announced that next year M. Ed. André will join M. Carrière in the editorship of the *Revue Horticole*. Those conversant with M. André's powers as a landscape gardener, a director of a public garden, botanical traveller and journalist, will best appreciate the accession of strength which our French contemporary gains by this addition to its editorial staff.

—— *Potatos.*—M. Henry Vilmorin has just published a classified descriptive list of Potatos, which will be studied with interest.

—— *The Journal of Forestry.*—A prominent feature of the current number is a tabular statement of the prices per cubic foot of timber of various kinds realised during 1880-81 in various parts of Britain and Ireland. The general price is rather lower than during the previous four years, but the reduction is slight compared with that of other agricultural articles. The return is rendered the more valuable by the addition of the average cost of labour—forest planting per 1000, bark-stripping per ton, fencing per rod, ditching per rod, draining per rod.

—— *Rabenhorst's Cryptogamic Flora.*—Dr. Winter is proceeding with this useful publication. Two parts are before us devoted to the Ustilagineæ and Uredineæ of Central Europe. The descriptions are in German, with woodcut illustrations of the several genera.

## Garden Operations.

### PLANT HOUSES.

New Plants.—This being the season of the year when these are distributed, a few hints concerning them may not be out of place. In selecting any given kind choose those which exhibit sturdiness and freedom of growth. It is not well to always select the largest plant obtainable at any given price, for oftentimes a smaller plant with better constitution will soon eclipse the larger one. When purchased examine the plants closely as to their general habit and adaptability, and treat them accordingly. If a climber, do not commence at once to train it on a trellis, but rather run the growths up some pieces of string till a fair-sized plant is obtained. Examine the plant at the root, do not shift at once, but rather wait till the

plant commences to grow in its new quarters; then this operation can be safely performed. Do not at first give large shifts, smaller ones and often will be better. This is an error that is frequently made in the anxiety of the cultivator to grow the plant on quickly. Every attention should be paid to new plants, even beyond what the general collection receives. This is but reasonable, having regard to the higher price paid, and should end in securing more gratifying results, and giving in most cases general satisfaction, instead of ending in disappointment and failure, and in the condemnation of the plant before it has had a fair trial.

STOVES.—Give attention to previous Calendars with regard to temperatures, &c. During the hottest weather red-spider will often gain a foothold; stop it at once, either by a more liberal use of the syringe—not forgetting the soot—or by sponging the leaves of the more tender plants. Where there is an odd corner in the stove in which a plant or two of Euphorbia jacquiniæflora can be turned out into a bed of soil, a most liberal growth will soon result from this treatment, giving a far larger amount of sprays for cutting during the winter. If the plants can be trained near the glass so much the better, the colour of the flowers being more intense, and also more durable when cut. Plumbago rosea may be treated likewise. Keep young plants of Clerodendron fallax pinched, if a nice compact plant with several nice heads of flower are desired during the autumn months. Gloriosas will now be growing rapidly; if requiring a shift perform this before the plant becomes pot-bound, using good fibrous soil with plenty of drainage. Eranthemum Andersoni, a beautiful plant when in flower, with its somewhat Orchid-like blooms, if allowed to have its own way will soon become leggy; treat the plants to a somewhat cooler atmosphere during the summer, and pinch the strongest shoots a few times. Large plants of Stephanotis that have flowered early should have the weaker wood well thinned out, if the plants are turned out in a bed of soil the growth will always be more vigorous and plentiful, in which case this operation is the more essential. If started into growth now, after having been kept dry at the root for a time, an abundance of young shoots will soon fill the allotted space. Thus treated, and exposed later on to all the light possible, an early crop of flowers next spring will be the result. The flower trusses will show during the autumn, and with the increased heat and sunshine in the early spring will soon develope themselves. Where a few plants only of Caladium argyrites are possessed give them every attention to encourage a good growth, in order to be able to divide the bulbs and increase the stock by next spring of this, the most useful of all the Caladiums. Any stove plants that are being grown on into specimens, if requiring to be shifted again this season, should be seen to soon, so that the pots may become well filled with roots before the advent of winter. Crotons and such-like plants, where growing fast, should be kept shapeable by giving an occasional tie and an extra stick as required before the shoots become weighted down, thereby causing the points to turn up.

GREENHOUSE.—Mildew is very liable to attack some of the kinds of Ericas now and a little later on—E. Cavendishiana and the varieties of E. tricolor in particular. Where the least indication is seen of this pest check it at once by dusting the plants with sulphur, or if the plants are dense in growth the sulphur should be mixed with water, and the plants syringed therewith. If allowed to gain a foothold now, but a scanty crop of bloom may be looked for another season. Plants of Pleroma elegans that are "knotting" for bloom must not be allowed to become dry at the root or they will oftentimes throw their buds; it will be well on hot days to give them a syringing as the sun declines; young plants of this that are not flowering should be stopped frequently. The present is a good time to sow some annuals in pots for late autumn use—Scabious of the improved dwarf strain, the blue Cornflower, Rhodanthe, and Mignonette—these are all valuable, the two first-named being the least grown, but none the less useful. Those who have to supply a large quantity of cut bloom will find them especially valuable, being distinct from the general run of flowers at that season of the year. If through want of room any Camellias have to be turned out-of-doors, gradually inure them to the sunshine, keeping them syringed in the evening during hot weather. *James Hudson, Gunnersbury House Gardens, Acton, W.*

## *HARDY FRUIT GARDEN.*

The Pears on walls and espaliers will now require to have the breast-wood attended to. Part of the growths may be pinched back to the third or fourth leaf of varieties that are of medium growth, but with either very vigorous or weak growers the length of spur required must be taken into consideration rather than the number of leaves to be left. Where the shoots are numerous it will be well to break out a considerable number to avoid crowding; and in doing so retain and pinch-in those that are best placed for furnishing spurs close to the branches. The lower portions of espalier trees may be allowed freer spur development than the higher tiers if it is thought desirable to allow the base to carry more foliage in order to equalise the flow of sap, but it is not necessary if the removal of the rank growths from the upper portions is promptly attended to. The fruits are now of sufficient size to allow a decision to be arrived at as to which of them promise to be the finest specimens; therefore any thinning that is necessary may be done at once; leaving only the most perfect fruit of each bunch where there is a regular set over the tree, but where the bunches of fruits are not well distributed it may be necessary to leave two or more to have sufficient for a crop. For this operation an ordinary pair of Grape thinning scissors will be found more expeditious and less liable to injure the retained fruits than the knife. The Pear crop is likely to be heavy or the reverse this season according as it has been protected or not; and it is only in exceptionally favoured localities that the plentiful bloom where unprotected has been followed by a good set—here the espalier trees, which were protected, carry an abundant crop; while the unprotected pyramids have very few fruits set. If the foliage has been attacked by the Pear leech, apply a plentiful dusting of hot lime in the evening, and wash off with the garden engine or syringe the following morning. This can be repeated if found necessary; but if done carefully one application is usually effective. The maggot is unusually prevalent amongst the clusters of fruits on Apple trees this season. When the fruits are being thinned the grub can be destroyed and the injured fruits removed, but where time cannot be found for this, they may be cleared out by water driven with force from the garden engine.

Raspberries will require to be kept within bounds by the removal of all unnecessary suckers by the use of the hoe, retaining a sufficient quantity of those that are strong and well placed. Strawberries are bearing extraordinary crops generally where they have escaped the late frosts. They require abundant supplies of water while swelling the fruits in dry weather; and the rains of last week, although unseasonably cold, will have greatly assisted them, and saved labour in watering; indeed, where the quarters are effectually mulched the ground is sufficiently moist to carry the crop on to the finish, and fine weather is now only wanted to ripen the abundant crops. The sharp frosts experienced here on the mornings of the 8th and 9th (when Kidney Beans, Potatos, &c., were badly cut) have destroyed many of the trusses of fruit which were thrown well up so as to be unprotected by foliage, and the crop is consequently reduced to about one-half what it promised to be. Continue to keep walls of Morello Cherries frequently washed to ward off the attacks of the black-fly; and where it has been allowed to establish itself, it will be well to take off some of the worst affected points of shoots and apply soft soap at the strength recommended in a previous Calendar. May Duke Cherries will now require to be covered with nets to protect the fruit from the birds. A doubled net will be useful where small birds are troublesome, and the net will require to be kept from the wall by placing short sticks against the face of the wall with clefts in the outer ends in which the net will be held away from the fruits, which will be thus out of the reach of birds clinging to the nets.

Grafts that were put on in the spring will now require attention; removing all suckers and shoots from the stocks, and let the binding material be loosened before it cuts into the now quickly swelling shoots which may, however, be again lightly bound, and if secured to a stake as the growth advances they will be safe from wind or accidental breakage. Any seedlings of fruit trees that may have been sown in pots or seed-pans will now be better planted out in good soil in order to procure shoots suitable for yielding buds as soon as possible. As soon as the extension shoots of Peaches and Nectarines are nailed in, commence to lay-in the young wood in the interior of the trees with twigs, and give the general attention to fruit walls that is so indispensable at this time of the year. *R. Crossling, St. Fagan's Castle.*

## *FRUIT HOUSES.*

VINES.—The earliest house from which all the Grapes have been cut will now do without fire-heat if the wood is well ripened; if not, continue to use a little fire-heat by day, with an abundant supply of air, letting the pipes cool down before evening to ensure a lower night temperature. Succession-houses in which the Grapes are colouring must have a good supply of warm air by opening the ventilators back and front on bright days; but if the weather continues cold and damp they will require only sufficient to keep the air circulating, and not enough to make the Vines feel a cold draught. Keep a little fire-heat in the pipes all day, and have the temperature highest at mid-day. In succession-houses in which the fruit is swelling keep up a brisk growing temperature by closing early in the afternoon and thoroughly damping paths and borders with tepid water. Tie down any laterals that are required to cover the trellis, taking care to avoid crowding, for where Vines have broken badly if the laterals are allowed to run and cover the trellis it will induce the Vines to make more roots and break better the following year. Vines planted in both inside and outside borders must have the outside borders examined, and if dry be given a thorough soaking with weak manure-water; if well done and afterwards mulched over with short manure it will generally stand most of the summer. Our outside borders have all been well watered and mulched, for we have not had enough rain since February to go 6 inches deep. Keep Muscats in various stages as advised in last Calendar, taking care to give them a good supply of tepid manure-water when they require it. Houses of late varieties of thick-skinned Grapes will be better with a little fire-heat according to the state of the weather, on bright days only using very little, closing early and well damping the paths and borders. If the trellis is not covered with foliage let the laterals run a joint or two, so as to cover it without crowding. Houses in which Golden Queen and Lady Downe's are growing will require very careful ventilation to prevent the berries from scalding; the best plan is to leave a chink of back air on all night at this time of the year. Late houses of Hamburghs will now be ready for thinning, after which give them a good watering with tepid manure or guano-water, and a little fire-heat on cold dull days, enough to keep them healthy and growing. Give liberal supplies of clear tepid water to Vines planted in permanent houses, closing early in the afternoon with a moist atmosphere; have those planted in outside borders examined, and see they do not suffer for want of water, giving them always sufficient at one time to go through the border. The earliest pot Vines, both cut-backs and from eyes, will now be the required length, and must be stopped at the points, and if too close together thin them out, so that the wood may get plenty of sun and light, and give them liberal supplies of tepid manure-water. *Joshua Atkins, Lockinge Gardens, Wantage.*

### PINES.

The paragraph in my last Calendar, which read as follows: "Any rooted suckers in 5 or 6-inch pots should have a shift into 7 and 8-inch pots; these will form a batch for fruiting in August and September," should read "will form a batch for putting into fruiting-pots in August and September." Although the plan of planting-out in beds is not so common as it was some years ago, yet many growers still adhere to this method, and good fruit can be so grown. Where this is the mode of culture, hot-water pipes should supply the bottom-heat. I like thin slates for covering the pipes in preference to any other material. Slates about 3 feet square will be found to answer well, and these should be supported by brick walls, 4½ inches thick, placed betwixt the bottom-beat pipes, and pigeon-holed to allow the heat to circulate freely. If the slates are not thicker than ½ to ¾-inch, the heat will ascend into the soil. I like this arrangement better than placing brick-bats and other rubble over the pipes, for, however careful, the soil will in time get in among the rubble and block up the spaces, thereby impeding the heat from rising properly. The same thing occurs with plunging materials; it is the best arrangement for all purposes. There are also additional advantages: when the soil or plunging materials require refurnishing, they can be removed with more ease and considerably less trouble, without disturbing the drainage or bottom-heat arrangements. Small round holes should be made through the slates for drainage; for plunging materials this is not necessary. When making up the beds the depth of soil may be from 12 to 15 inches—the same soil as recommended for pots, only used in a much rougher state. Only about 1 inch of crocks will be required over the slates, then a layer of fresh cut loam, grass downwards, over the drainage. The soil should be thoroughly dry before using, and made firm before planting. There are two ways of planting—one is about the end of March or beginning of April to put in good rootless suckers: pull off the lower leaves, make a hole in the soil and put the suckers well down, making the soil firm and close round them. The other and the best way is to have a good sturdy lot of rooted suckers in 7 and 8-inch pots; before knocking out take out trenches 2 feet apart each way to the depth of about 8 inches, then slightly reduce the ball of the plants before planting, disentangle the roots and spread them out round the plants, then place the soil firmly round the collars of the plants, but care must be taken not to break off the stems. After this is completed give the bed a watering with water at 85°, and shade the plants well for a week or two. If the plants are about of one size they start more evenly, and present a more uniform appearance than suckers without roots. I should add that the plan of planting out rooted suckers may be done in May or beginning of June. *D. Wilson, Castle Hill, Devon.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Monday, | June 20 | Sale of Imported and Established Orchids, at the Mart, by Protheroe & Morris. |
| Tuesday | June 21 | Oxfordshire Horticultural Society's Show. Flower and Fruit Show at Salisbury (three days). Sale of the Fifth Portion of Mr. Day's Collection of Orchids, at Stevens' Rooms (two days). |
| Wednesday, | June 22 | Royal Botanic Society's Evening Fête. Burton-upon-Trent Floral and Horticultural Society's Show. |
| Thursday, | June 23 | Sale of Stove and Greenhouse Plants, at Womersley House, Crouch Hill, Hornsey, by Mr. Stevens (two days). |

THE SYRINGING OF VINES for sanitary reasons is an important point that needs more attention than it has yet received. Mr. GRIEVE, Mr. J. JEFFERSON, and Mr. ALFRED GANT all refer to it in their useful and instructive remarks (pp. 732 and 733). Sanitation, too, in this connection may include cooling and moistening, as well as the prevention or removal of insect pests and other defilements. Taking these two last first, there can hardly be a doubt that the virtual washings that heavy syringing amounts to are powerful aids to cleanliness. Some diseases have fitly been described as due to dirt in the wrong place. This definition or description is equally or more true in regard to insect pests. They not only cause, but in a sense they actually are, dirt or defilement. The majority of them do as much or more injury to plants, by blocking up or fettering the freedom of the functions of their life, than by feeding upon or devouring their tissues; hence many have long held that water is our best antidote against insect pests. With water in plenty, and used in sufficient force, we can dislodge and destroy nearly all insects that prey upon plants. Not only will water, judiciously applied, get rid of many insects, but, more important still, it will hinder them from gaining a footing. Cleanliness is the parent of health in the vegetable as it is in the animal kingdom. If there is any difference cleanliness is even of more vital importance in the vegetable than in the animal kingdom; so much at least seems certain—man and other animals seem able to carry about on their persons loads of dirt with less injury than plants can. And water alone can make either clean. Hence we may often be compelled to use more water for our plants for sanitary than we should for cultural or other reasons. This becomes the more apparent as we bear in mind that not only have we the defilements of insects to contend against but myriads of other impurities as well. Among these, soot, dust, impure water, are the more common. And each of these is itself a host. Soot with its solid deposit and sulphurous and other gases, is a most insidious, penetrating, and adhesive form of dirt. And then what abomination may not be included in the one word dirt! And the very water we use to cleanse with is itself not seldom full of vile though more subtle germs of pollution. The last thought suggests a caution against the copious and indiscriminate use of the syringe for sanitary purposes. Horticulturists should know, what housemaids and washerwomen are so slow to learn, that no floor, linen or plant can be one whit more clean than the water used to cleanse them with. The lesson is obvious—prevent dirt as much as possible, and employ only clean water for the overhead syringing of Vines and other plants.

But here a pressing practical difficulty arises: Where shall we find clean water? It may startle many readers to be told that it is not to be found in a state of Nature as water. Had we sanitary inspectors in the provinces, as there are in large towns, and did they extend their labours to our gardens, their reports of the state and condition of our horticultural waters would probably do more to check overhead syringing than all the science and practice that may appear in these columns on the subject. It was the residuum left on the leaves, stems, and fruits of plants, after syringing, that has modified the practice of many cultivators in regard to it. This led us to ask, What is the use of syringing for sanitary reasons if the water used is itself fouled with atmospheric or mineral impurities? Why not distil the water before use? Well, that seems a simple solution; it would, however, need a very large still always in use to supply the syringing wants of a moderate-sized garden. The process needs fire, skilled labour, and is necessarily expensive. No doubt overhead syringing with distilled rain-water would be beneficial, and free from such objections as the vain attempt of making plants clean with impure water.

But Nature is always distilling pure water for plants, without any still but the waters of lakes, rivers, seas, earth, the sun for heat, and the air for a condenser and distributor. Why should not we copy her example? All the horticulturist has to do is to provide evaporating pans and wet surfaces—the sun and the air, and the changes of temperature within his houses will do the rest. No matter what the water used, the vapour from it must be pure, for Nature draws her supplies of aqueous vapour from the foulest as well as the cleanest source, and it is all pure alike—the whole of the grosser impurities are left behind. Aqueous vapour is practically as pure as distilled water; in fact, it is distilled. The impurities of rain-water are collected, not in the rising from but in its falling down to the earth, and the aqueous vapour in our ferneries and other plant-houses is equally pure.

The practical question is, Is it sufficient for cultural and vital wants and for sanitary purposes? That it is for the two first seems to be pretty well proved. Something more may be needed at times for sanitary purposes. Insects may have to be forcibly removed, dirt driven off by sheer force, and in these cases the mechanical force of water from syringe or garden-hose may be useful or necessary; but probably in almost all others aqueous vapours in the atmosphere of the houses would be better and more readily available for the plants than water itself.

The leaves of plants can, as a rule, no more drink water as such, than they can eat manure as such—the one must be dissolved, the other vaporised, before either can be absorbed. There is probably a great loss of heat in getting rid of the gross water before it becomes available to supply the wants of plants. All this loss may be got rid of by presenting them at first hand with water sublimated into vapour. As to the cooling and moistening of the surfaces of plants as a branch of vegetable sanitation this is, perhaps, better done by vaporising the enclosed atmosphere then by slushing the plants overhead. The latter causes a chill—a most dangerous thing for either vegetable or animal life. The water after sundown is chiefly evaporated by the heat of the plant itself. The depression of temperature by this means is too great and sudden to be good for the plant, and this loss is prevented by forcing the air to raise its own moisture from floors, walls, evaporating pans, or any other surface, with the exception of the leaves, branches, and stems of the plants; the moisture would thus be presented to every part of the plants in such a form as to be immediately available.

With the leaves of Vines further from the glass, natural dew would also be formed on the upper surface of the leaves, which is not only more natural, but which experience is daily proving to be more useful than the incessant syringing of the under-surface of the leaves. The syringe and garden engine cannot be dispensed with, but they are gradually losing their place of power and supremacy in many gardens; and it seems probable that, as we understand better not only the vital and cultural requirements, but sanitary potency and efficiency, overhead syringing will be less practised. As to their use out-of-doors on Peach walls, &c., that is a different matter. During very hot weather bricks sometimes get well-nigh red-hot, to use a figure of speech, and a flood of water from the garden engine not only cools the bricks and cleanses the trees, but waters the roots at the same time—a threefold benefit, which even copious root watering fails to accomplish.

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THE action for ejectment, on the ground of nonfulfilment of covenant, brought by Her Majesty's Commissioners for the Exhibition of 1851 against the ROYAL HORTICULTURAL SOCIETY—reports of which have appeared in our last two numbers, and the completion of which we give in another column to-day—has terminated with a decision in favour of the Society. Mr. Justice FRY has decided that the claim of the plaintiffs was not valid, and has dismissed the action with costs. Thus ends the dispute with the Commissioners on this point, unless, indeed, the judgment be appealed against, as we believe it may be within a twelvemonth. Amid the conflicting statements, the complicated agreements, the heated discussions, that have taken place, it was not easy for outsiders to understand the rights of the case, and still more difficult to predicate the legal issue. Indeed, we suspect that the result will surprise many people, and more especially those candid friends of the Society who have not been able to divest their minds of the notion that the transactions of former Councils, at least, were not always quite consistent with honourable dealing. The payments of rent and of debenture interest, which have only taken place at sparse and irregular intervals, have not unnaturally created a prejudice against the Society—a prejudice which is now shown to be unfounded, inasmuch as that while the Society, when it had the means, did make these payments, there was no moral and, as it now turns out, no legal obligation for it to do so when circumstances were not propitious. The Society, in fact, became tenants of the Commissioners by virtue of certain agreements which provided that certain sums should be payable as rent, provided the receipts, after payment of certain expenses connected with the maintenance of the gardens, should amount to a certain sum—and further, that if the rent so agreed on was paid in any one of five consecutive years, even though it were left unpaid in the others, the landlords were prohibited from ejecting their tenants. A Finance Committee, consisting of representatives of all the parties interested, was appointed to examine periodically into the receipts of the Society with the view of ascertaining, in pursuance of these agreements, what sum or sums should be paid to the Commissioners as rent. The Society, it appears, has fulfilled its obligations in this matter whenever its funds permitted it to do so, in accordance with the decisions of the Finance Committee; and, further, it was, as we understand, proved that it was in a position to do so, and willing to do so, on other occasions, or, at least, on one other occasion, but the Commissioners, though repeatedly pressed by the Society, would not allow the Finance Committee to meet, or, at any rate, failed to do so. So far, then, as the question of rent is concerned, it appears from this decision that the Society has not failed to comply with the requirements of the several agreements except when it was actually prevented from so doing by the failure of the Commissioners to act up to their agreement with respect to the meeting of the Finance Committee.

Now we come to the case of the debenture-holders. It will be remembered that when the Society became tenants at South Kensington they raised on debenture bonds a sum of £40,000, to be spent upon the Commissioners' property, together with another sum of £50,000 supplied by the Commissioners them-

selves. The raising of money in this manner, if not actually forced on the Society by the Commissioners, was done at least with their full sanction and concurrence, and the money was, as we have said, spent upon their property. This brings us to the present time and to the action just tried. Some time since, as we mentioned at the time, the Commissioners endeavoured to eject the Society for non-compliance with the terms of the agreement. This was resisted by the Society, and hence the present action. The Society has, however, complied with the agreements, or where it has failed to do so the failure rests as much, if not more, with the Commissioners than with the Society. Further, the Society resisted the attempt on the part of the Commissioners to eject them, from the feeling that, by assenting to such a course, they would endanger the rights of the debenture-holders, whose security would be practically annihilated unless they were compensated by the Commissioners, whose moral, if not legal responsibility to the holders of the bonds is obvious. The Commissioners, however, made no sign.

This question of the debenture-holders and their rights raises the question as to whether the relation between the Commissioners and the Society was one of co-partnership or not. Our own view of the case has all along been that the Commissioners were co-partners with the Society, and we have steadily maintained that view. It is not for us to express any legal opinion on such a question, but on moral grounds we have supported the partnership theory on the grounds that if there were no partnership why was the lease granted on such exceptionally favourable terms? Besides, how often were we told by the official representatives of the Commissioners in the course of the discussions that took place some years ago, that the Commissioners and the Society were partners? The Secretary of the Society and the Secretary to the Commissioners were, moreover, at one time, and for several years, one and the same person and there must be many who at various annual meetings heard him express the view we have mentioned. Of course no legal validity could be attributed to such utterances, but it is sufficient to show what was the feeling at the time. Subsequently, however, the tone changed, and any idea of partnership was officially repudiated. Another reason for considering the Society and the Commissioners as co-partners is derived from the fact that some few years since the Commissioners did actually offer to pay the debenture-holders the then market value of their debentures. Would they have done this if they had not felt that the responsibility rested with them? The offer was, as we know, rejected,

Fig. 143.—Mr. Bull's Odontoglossum House. (see p. 794.)

and at the time we thought the debenture-holders were not wise in thus rejecting the offer made to them; but the decision of the Judge has shown that they were quite correct.

We congratulate the present Council on the result. They came into office inheriting the consequences of the illusions and administrative blunders and shortcomings of some generations of preceding Councils. They have worked away steadily and quietly in the interests of horticulture so far as their means have allowed, and they have taken high moral ground as regards their relations to the debenture-holders.

The question on everybody's lips will be—What next? An appeal is one of the possibilities. But supposing no appeal be made against the present judgment, then the Society can, we believe, remain in undisturbed possession at South Kensington till 1883, subject to the payment once during that time of a rental of £2240, which will probably not be a difficult matter. In any case, however, it is to be hoped, that now the ground is so far cleared, some new arrangements may be made whereby the Commissioners may cancel existing agreements, allow the Society undisturbed possession of the only part of the garden really required for horticultural purposes, relieve it of the incubus of the remainder, and deal equitably with the debenture-holders. The interests of Life Fellows will remain unaffected so long as the Society remains in existence, and the interests of ordinary Fellows will, of course, be exactly as before. Many circumstances indicate the dawn of returning prosperity to the Society. May such indications not prove fallacious, and may the Society persevere in its attempts to be the national horticultural society, and to act up to its responsibilities accordingly.

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—— Mr. Bull's Odontoglossum-house.—In a recent issue (May 21, p. 661) we published some notes on the remarkably free manner in which Orchids grow in the new houses erected by Mr. William Bull in his new nursery at Ashburnham Park. To-day we supplement the details already given with an illustration (fig. 143) of one side of a house in which cool Orchids are grown, and among which Odontoglossums—and especially O. vexillarium—predominate. Our sketch was taken a year or two ago, and it is no exaggeration to say that this season the vexillariums have been finer than ever.

—— A Rose Market.—Messrs. William Paul & Son, of Waltham Cross, will hold a Rose market in the Crystal Palace from July 7 to July 14 inclusive, exhibiting about 5000 blooms each day, or 35,000 blooms altogether. The Roses will be sold each evening.

—— Dr. Asa Gray.—We are requested to state that Dr. Gray has returned to England for the summer. His address is Richmond House, Kew.

—— Manchester Whitsuntide Show.—We are informed that the great Whitsun Show of the Royal Manchester Botanical and Horticultural Society, a report of which was printed at p. 767, was attended by 44,000 visitors, and that the financial result to the funds of the Society is a profit of £700. Considering the unfavourable condition of the weather during a portion of Whit-week, this may be regarded as a highly satisfactory credit vote on the part of the Manchester holiday-makers. The excellent arrangements made by Mr. Findlay contributed greatly to the success of the exhibition, which is now in its "teens," having been established fourteen years.

—— The Perforation of Leaves in Spring.—A good deal has been said and written about the cause of the perforations which are so common in leaves in spring, whether under shelter or in the open air, some maintaining that they are caused by insects which exhaust the juices at the points where the apertures afterwards appear; others that they are due to drops of moisture which freeze and thus destroy the subjacent tissues. Our attention has lately been called to a diseased appearance at the growing point which seems universal this year in the Potato crop, at least in the neighbourhood in which we write. The point in question assumes a yellow blighted appearance, as if partially devoid of chlorophyll, but the leaves are not crumpled or disturbed. On examination the young leaves are found to be perforated, the edges of the apertures being dead and withered. The perforated parts are uniformly the most deficient in chlorophyll, the mischief, whatever its extent may be, having clearly been caused at a very early period of growth. At first we believed it to have been the effect of cold, but on examining the matter more closely we found a single large aphis, which was busy in sucking up the juices, and thriving on them, till in a condition to yield a multitude of offcasts. This naturally called our attention especially to a somewhat analogous appearance confined to the Early Rose Potato, a small proportion of which exhibited all the appearances which were so common on the first introduction of the American prolific varieties. It has been observed by those who grow the varieties for sale, that they are much improved in every respect since their introduction. Our own plants were the produce of tubers from a nurseryman who has been very careful in the production of good seed Potatos, and in consequence the number of diseased individuals is greatly reduced. The leaves, instead of, as in the case just stated, being chlorotised, are unusually green, wrinkled, and distorted, and the whole plant dwarf. At present we have not seen the resting-spores in the diseased leaves which Mr. Smith has taken such pains in studying; but there is no doubt that the disease is the same, and the unusually green colour is indicative of fungous matter in the tissues. *M. J. B.*

—— Geonoma gracilis.—A Palm grown under this name by Messrs. E. G. Henderson & Co. is considered by them as better for decorative purposes even than Cocos Weddelliana. With no less elegance of form it is a more robust plant.

—— Ficus radicans.—Messrs. E. G. Henderson find this better for decorative purposes in London than F. repens. The habit is similar, but its leaves are considerably larger, and broadly lanceolate.

—— White Lilies for Pots.—Calling the other day at Messrs. E. G. Henderson's nursery at Maida Vale, we were struck with the numbers of plants of the common Lilium candidum flowering in pots, and forming beautiful subjects for conservatory or room decoration. The bulbs are planted in 32-pots, and plunged in a cold pit all the winter. At this season they flower freely. The plant does not bear forcing.

—— Tulip Sport.—One of the most remarkable instances of sportiveness in flowers which we have yet seen occurred in a Tulip grown by S. Barlow, Esq., Stakehill House, Castleton, a champion Tulip-grower, and the winner of the cup offered by the Royal National Tulip Society at the recent Tulip show referred to at p. 768. The plant in question was a seedling of no particular merit as a florists' flower, but one which had broken as a bizarre—that is to say, yellow ground, with dark-coloured markings; five of the perianth segments were of this bizarre character, while the sixth had the colour and markings of a byblœmen—that is to say, white ground with dark markings. Truly the change was striking, and hitherto, we believe, unprecedented, but not so mysterious as might be imagined.

—— Roses at Cheshunt.—Notwithstanding considerable losses here during the past winter, the condition of the Roses now is such as to promise well for a fine bloom. In dwarfs part of the shoots of the first growth was in many cases cut back by the long-continued severe weather after they had started, but the plants are now growing away strongly. The maidens especially look well, and will be in flower about the first week in July. The last two winters have done much in the case of standards, and also in dwarfs, to show the marked difference in the hardihood of the varieties that have originated from particular parentage, nearly all the Jules Margottin race, such as Madame Lacharme, Edouard Morren, Clothilde Roland, and Marquise de Castellane, have stood well, whilst under like conditions the varieties that have sprung from more tender kinds show by the gaps here and there left in the immense plots devoted to Roses how different some sorts are from others in their ability to bear a very low temperature. The way in which the English-raised varieties have resisted the exceptionally severe winters is at once enough to stimulate home raisers to redouble their exertions, kinds like Duke of Teck, Glory of Cheshunt, Dr. Hogg, Emily Laxton, Marchioness of Exeter, Beauty of Waltham, John Bright, Duke of Connaught, and Miss Hassard, by their uniform vigorous condition, give unmistakable evidence of their cold-resisting abilities over many Continental varieties. The new Rose raised by Mr. Paul, now to be sent out (George Baker), has stood uninjured to a plant, as also has Brightness of Cheshunt. Captain Christy, although full of Tea blood, has likewise stood well.

—— Anthericum Liliastrum majus.—A fine bed of this beautiful hardy plant may be seen by the passers-by in the Wellington Road Nursery of Messrs. E. G. Henderson. The flowers are funnel-shaped, with recurved segments, and very chaste in appearance. For cutting it is very desirable. There are many varieties of this old plant, but this is the best we know of.

—— Aotus gracillima.—We saw but the other day some of these very beautiful flowering plants in abundant bloom at Syon. If plants of this kind, with long graceful spikes of bloom, could but be found in some of our plant groups at exhibitions, we should perhaps be less ready to tire at the stiffness and eternal sameness of the exhibits. It is one of the excellencies of this by no means common plant that it is not amenable to stiff training. Mr. Woodbridge said that once, in his plant-showing days, he tied out a specimen with many spikes so that each one should project from the plant in all its gracefulness of growth, and that it took the public by surprise; which it is easy to conceive. On one of the plants at Syon there were spikes of bloom some 18 inches in length, and singularly beautiful.

—— Lombardy Poplars.—Though of formal appearance when in lines, these noble trees present a fine effect when seen in groups, or when singly towering up amongst surrounding trees of a more compact habit. In the park at Syon, and within a few hundred yards of the Thames, where the soil is moist and alluvial, there are some noble trees of this Poplar of singularly even height, reaching to about 125 feet from the ground. So robust and healthy are these that there is reason to believe, if left untouched by the modern destructive, the builder, these trees may yet add some 20 or 30 feet to their present elevated proportions. Few groups of this grand tree would make a finer picture than these at Syon. At Feltham Hill, on the road to Sunbury and Chertsey, may be seen on either side, and growing in the hedgerow, lines of these tall spiral trees. There the soil is dry, no natural moisture being near, and yet the trees have attained to a great height—so much so, in fact, that it has been found desirable on the one side to lop off some 50 feet from each tree, lest in some storm "great should be the fall thereof." It is to be regretted that this striking tree should have suffered so much from frost in various places.

—— The Golden Elder.—We have often had occasion to allude to the effectiveness of this plant, and do so again, as in many places the even more resplendent golden Catalpa has fallen a prey to the winter. No frost appears to hurt the golden Elder.

—— Dicksonia antarctica.—By applying a thick ring of moss around the upper part of the stem and allowing the plant to root into the moss, Mr. Hudson, of The Gardens, Gunnersbury, manages to make the stem of this useful Tree Fern lengthen so as to form a fine trunk in a comparatively short space of time.

—— Lilium auratum at Pickering Lodge.—There are few things with which gardeners have to deal more variable in the way they succeed than imported bulbs of this fine Lily; sometimes they make better growth the first season than might be expected after the severe ordeal they are subjected to in the long journey to this country, and the often anything but good treatment they meet with after arriving; sometimes they are so weakened through the combination of hard usage they receive as to make little progress the first summer; and in other cases their first growth is of a middling character, after which they dwindle away, following the course that

has made them still not over plentiful, notwithstanding the millions that are imported. Mr. Hill, the gardener here, has this season a number of this Lily which have succeeded in a way that is not common; the bulbs were bought at one of Stevens' sales at the commencement of the year, and at once potted; they were put seven or eight together in 13 or 14 inch pots; the growth of almost every bulb is as even as if they had been several years in the country, running from 5 to 7 feet in height, proportionately strong, and bearing from seven or eight up to a dozen flower-buds each. One stem noticed was fully 9 feet high. The condition of the bulbs when received, and the after-treatment they have had, have no doubt conjointly brought about such a result, which is very different from that which many who have had to deal with imported bulbs attain.

—— Bœckia astarteoides. — From Messrs. Rodger, McLelland & Co., of Newry, we have received sprays of a very elegant Myrtaceous greenhouse plant, with slender, wiry, cinnamon-coloured branches, and minute linear leaves. The flowers are small, white shaded with pink, and in form like those of a small Myrtle. They are arranged in great numbers along the sides of the branches. The plants, we are told, are 3 feet high, drooping on all sides to the pots, and presenting a very elegant appearance.

—— Picea ajanensis.—The fine young specimen of this handsome Spruce Fir at the Cheshunt Nursery, which is some 10 feet in height, shows no more signs of having passed through two such winters in succession as the last and preceding than if they had been exceptionally mild, not a leaf being even so much as discoloured. P. Engelmanni and P. polita in the same way are not in the least injured, being as fresh as the first-named kind. These fine Firs ought to find a place everywhere where handsome, free-growing evergreen trees are held in estimation. As single specimens, or in groups occupying conspicuous situations in pleasure-grounds, they will be invaluable, and vastly preferable to many species of Conifers that have been used to fill such positions, where they go on thriving well enough so long as no exceptionally hard frost occurs, but when put to a severe test in many places are killed outright, or so far injured as to be more of an eyesore than an ornament.

—— Tabernæmontana Barteri is now in flower at Kew. It is a very handsome evergreen stove shrub, growing to a height of 6 feet, a native of West Tropical Africa. The leaves are opposite, rather large, elliptic-oblong, acute, and of a shining dark green colour. The flowers are large, about 2 inches in diameter, pure white; they are disposed in shortly pedunculate, subumbellate clusters, which spring from the forks of the branches. A good figure of it is given in the *Botanical Magazine*, t. 5859.

—— The Roses of Thirty Years.— Under this title Mr. Shirley Hibberd has announced for publication in the *Gardeners' Magazine* of July 9 a synoptical catalogue of the garden Roses that have been introduced to cultivation from the year 1850 to the present time. It is a matter of interest to learn that, although many worthless Roses are excluded from the list, it is nevertheless likely to comprise names, descriptions, and characters of nearly 1500 varieties. The list already, in its present nascent state, Mr. Hibberd informs us, comprises over 1200 sorts, and his principal task in completing it is to exclude as many as can be fairly spared from it. Lovers of the queen of flowers, whose court is now in full costume, will no doubt fully appreciate Mr. Hibberd's endeavour to render them a large and a lasting service. *City Press.*

—— Roman Hyacinths.—We have on various occasions had to notice the disease which attacks these bulbs. At first the bulbs appear quite sound, but after a little while the bulb scales become more transparent, and brown spots make their appearance. When examined under the microscope these brown spots are seen to consist of cells filled with a multitude of little worms or vibriones like those to which the Cucumber disease is due. M. Prillieux, the discoverer of these worms, describes them in a recent number of the *Bulletin of the National Horticultural Society of France*, under the name of Tylenchus Hyacinthi. The transparent appearance of affected scales is due to the disappearance of the starchy contents appropriated by the worms. The destruction of the affected bulbs is the only likely remedy.

—— Dendrobium canaliculatum. — In the Orchid collection at Kew this species is now in flower. The Kew plant has pure white yellow-tipped petals, the lower and central portion of the lip being white, whilst the sides and the crests at the tip are rich purple. Altogether it is a peculiar and interesting plant. On some of the pseudobulbs there are remains of three different crops of flowers; the first year's spikes spring from near the apex, those of the following year a little below, and the present season's inflorescence still nearer the base. According to Fitzgerald the species is variable in colour, and is not readily grown in Sydney, even in the hothouse, and soon languishes in either greenhouse or bush-house. The same author states that "it is the species referred to by Mr. Carron, as having attracted his attention when the ill-fated expedition under Kennedy was entangled in the swamps and backwaters of Rockingham Bay, and as such may well be associated with the memories of a thorough botanist and of an intrepid explorer." A figure is being prepared for the *Botanical Magazine.*

—— Nidulariums on Rockwork.—On a piece of rockwork on one side of a plant stove at the Cheshunt Nursery there are a number of these handsome Bromeliads planted out along with Ferns, Begonias and similar subjects, which are evidently quite at home. The kinds are Nidularium splendens, N. princeps, N. Innocentii, and Vriezia Malzinei. Most of the plants are flowering, in which state their deep red or crimson leaves and bracts are very handsome. Used in this way they have a charming effect even when not in bloom; the plants look well, their compact but elegant habit of growth contrasting well with the other things associated with them.

—— Ivory Nuts, Indiarubber, and Peruvian Bark in Guayaquil. — The British Consul at Guayaquil, reporting on the trade and commerce of Ecuador for the past year, says the continued depression in the price of ivory nuts in Europe has caused a notable decrease in the amount collected for export from Guayaquil, the total for 1880 being only 69,382 quintals as compared with 193,432 quintals in 1879. The principal trade in this article is now carried on at the coast ports of Mauta, Bahia, and Esmeraldas. In those districts the article is obtained at a cheaper rate and with more facility, owing to the fact that the land carriage is not so considerable; hence the merchants who trade in these cities have obtained nearly all their supplies from those districts, and the labourers who were employed gathering the nuts from the interior round Guayaquil have suspended in a great degree the collection. The exportation by sailing vessels from the coast ports above referred to has been very large indeed. On the subject of indiarubber it is stated that the considerable rise in the value of this article had the effect, as was anticipated, of increasing the amount collected for export in 1880. The total has been more than 40 per cent. over that of 1879. With regard to Peruvian bark we read:—"Though not so plentiful as in 1879, a very large amount of valuable bark was shipped during the year, amounting in all to 15,161 quintals. This article is gathered in the highlands, about 8000 to 10,000 feet above the sea level, and has to be conducted by mules to the coast for shipment. A larger proportion of this product was shipped to England during 1880 than has been customary in the past few years."

—— Strawberry Pauline.—This is a French variety, and promises to be the earliest of all; it was ripe with Mr. Paul, at Cheshunt, on June 10, three or four days earlier than Black Prince. The fruit of Vicomtesse Héricart de Thury, growing beside it, had not attained more than half its size. It seems to be a free-bearing kind, of good size, with a less proportion of small fruit than most of the earliest sorts.

—— Veronica carnosula.—In the herbaceous ground and elsewhere at Kew this pretty New Zealand Veronica is now in flower, and a figure is being prepared for the *Botanical Magazine.* In many gardens this has been grown under the name of V. pinguifolia, another New Zealand species, from which the subject of this note differs in its glaucous habit and glabrous capsules. V. carnosula is a native of the Middle Island, where, on Morse's Mountain, it ascends to 5000 feet above sea-level. It has withstood the past winter in the open without any protection whatever, except that afforded by the snow.

—— Cultivated Orchids.—In our present issue we commence the publication of what we trust will prove a boon to Orchid growers, viz., as complete a list as possible of species known to be in cultivation in Europe, with references to the books where the species are described or figured. The list is compiled for us by Mr. Hemsley, whose competence is well tested and appreciated. Mr. Bentham, moreover, has obligingly placed at his disposal for the purpose his manuscripts prepared for the *Genera Plantarum.* Mr. Hemsley will also have the advantage of consulting at Kew Dr. Lindley's Orchid collections as well as those of Sir William Hooker and Mr. Bentham, all enriched with notes and drawings by those eminent botanists, and specially with the notes of Professor Reichenbach. Systematic requirements place first a very large group of comparatively uninteresting plants—the species of Pleurothallis, but they are but the forerunners of Masdevallias and other more showy genera.

—— Quinine.—Mr. Henry J. Elwes exhibited at the Linnean Society, June 2, samples of pure sulphate of quinine, made by Mr. Gammie, Superintendent of the Government Cinchona plantation in Sikkim from bark of C. succirubra and C. calisaya, by a new process, discovered by himself, and requiring no expensive chemicals or apparatus.

—— Olearia ramulosa.—Messrs. Rodger, McLelland & Co., of Newry, send us specimens of a very charming cool greenhouse Composite plant, which they received from Chili under the name of Eurybia sp. It forms an undershrub with numerous thickset ascending branches covered with linear silky leaves with recurved margins; the lower ones more or less lobed. The flower-heads are about the size of a sixpence, white, and densely arranged along the sides of the branches. Unlike Eurybia ramulosa, to which it is closely allied, this is a spring flowering species. Plants in 5-inch pots, a foot or 18 inches high, are covered with bloom.

—— Publications Received.—*A Winter in Madeira:* an address delivered before the members of the Chichester Working Men's Institute, by Lord Henry Gordon Lennox, M.P. (Chichester: Wilmhurst).—*How to Dress Neatly and Prettily on £10 a Year* (E. W. Allen).—*Fifth Annual Report of the Aberdeenshire Agricultural Association.*

—— Gardening Appointments.—Mr. Cosh, late Gardener at Rounton Grange, Yorkshire, has been engaged as Gardener to Colin J. Mackenzie, Esq., Portmore, Eddlestone, N.B.—Mr. J. Hobbs, late Foreman in the Gardens at Syston Park, Grantham, Lincoln, has been appointed Gardener to H. B. Samuelson, Esq., M.P., Chelston Cross, Torquay, Devonshire.

—— The Weather.—General remarks on the temperature, rainfall, and duration of bright sunshine, for agricultural and sanitary purposes, during the week ending June 13, issued by the Meteorological Office, London:—The weather has been dull and unsettled, with showers of cold rain or hail in all districts. The temperature has been very low for the season, the readings being from 7° to 10° below the mean in all parts of the country. The minima were exceedingly low, shade readings of 30° to 32° being registered at Markree and Parsonstown on the 9th, and similar readings in the northern parts of Scotland on the 10th. Over England the sheltered thermometer did not fall below 33°, but on the grass a sharp frost was experienced. At Durham 6° of frost was registered, while even in the neighbourhood of Arlington (North Devon) ice was formed. Towards the close of the period the temperature was higher, maxima of 71° to 74° being recorded over Central England. The rainfall was a little less than the mean in all districts. Bright sunshine shows a decided decrease in duration; the percentage was greatest (57°) in "England, S.W.," and least (24°) in "England, N.E." Depressions observed:—From the commencement of the period until the 9th the barometer was highest in the west, and lowest in the east, and moderate or fresh northerly breezes prevailed all over the country; but on the 10th pressure gave way on our western coasts, and a shallow depression travelling in a south-easterly direction caused easterly winds in the north of England, north-westerly in the south-west, and southerly in the east. At the close of the week the depression had disappeared, and light northerly breezes again prevailed in nearly all parts of the country.

# Home Correspondence.

**Aciphylla Colensoi.**—Herewith I send you a leaf and a small portion of flower of one of the most striking plants I ever met with, the Aciphylla Colensoi (the Wild Spaniard), a spear-grass of the settlers (Kurikuric and Papaii of the natives) of New Zealand. This extraordinary evergreen herbaceous plant is described as forming a circular bush 5 to 6 feet in diameter, of bayonet-like spines, impenetrable to men and horses, having 6 to 9 feet high flowering stems, covered with spreading spinous leaflets. The plant from which the flower was cut is about 2 feet in diameter, with a flower-stem about 3 feet 6 inches. The plant is growing on the rockery in the garden of the late Mr. Wm. Gorrie of Rait Lodge, Trinity, from seeds which he procured direct from New Zealand, and forms a most interesting object. *Christopher Scott.* [At p. 341, of our volume i., 1874, will be found an illustration showing the plant growing in its native country, and illustrating its value for scenic purposes. Eds.]

**Mushrooms and Fowls' Dung**—My gardener wishes me to forward you herewith a Mushroom, which was cut to-day (and there are hundreds more coming) from a heap of fowls' dung that was only mixed with sawdust and put in the shed last October. May I ask in your next number for your opinion where the spawn could have originated? No horse-droppings were anywhere near. *James Bailey, Elmfield Hill, Southampton.* [The Mushroom spores must have been floating about in the air, and "fell on good ground," the fowls' dung being a suitable medium for its germination. Eds.]

**The Asparagus Beetle.**—Asparagus beetles are more than usually numerous this year. I have a man who goes over the beds twice a day with a 32-sized flower-pot containing a little water; this pot is placed as near the beetle as possible. When the branch or stem of the Asparagus is bent over the pot, and immediately it is touched, the beetle falls into the water and is thus secured. In this way I capture 300 or 400 beetles per day; but although I have followed this up for the past week, the Asparagus flower-stems are studded with the eggs laid, and some are just coming into the caterpillar state, when much damage will be done. It is very amusing to watch these very pretty beetles through a glass. Select one upon an upright stem, and as soon as the beetle sees you it will immediately shift to the opposite side; go round to that side and it will retrace its steps, and so will play the game until I do not know which would get tired first. *S. Fry, Addington Park, West Malling, Kent.*

**Ficus minima.**—I was much surprised on a recent visit to Cherbourg to find Ficus minima growing freely against an outside wall to a height of 4 feet. It resisted without any protection the winter of 1879-80 a temperature of 14° Fahr. and of 15° Fahr. in 1880-81. It would be interesting to know how low a temperature this plant bore without injury in England. Were the Laurels and Laurustinus and the Figs injured at Edgbaston (see p. 764)? *T. J. Lafosse.*

**The Excelsior Lawn Mower.**—In the description of the Royal Horticultural Society's Show at South Kensington, given in your number of June 11, you entirely omit to state that the Patent Excelsior Lawn Mower exhibited by us was awarded a Certificate for Special Merit—a distinction conferred on no other lawn mower. *Thomas Clarke, Manager, Chadborn & Coldwell Manufacturing Co.* [We obtained our list of awards from official sources, but probably before this Certificate for Special Merit was granted. Eds.]

**Calceolarias, &c., at Ewell Castle.**—When in the neighbourhood of Ewell the other day I called at this old and interesting place to see Mr. Scott's Calceolarias, and was much pleased with them. They vary in colour from pale lemon to a rich crimson, having all the intermediate shades of pink, rose, and yellow. Many of the plants measured over 2 feet across, and were one blaze of bloom; in fact the strain is everything that can be desired, the plants have a fine dwarf habit with the flowers carried well above the foliage, of large size and good shape. The Orchid-house also looked very gay, several specimens being in flower, notably Cattleyas, Oncidiums, Odontoglossums, and Dendrobes. The conservatory was very gay with all kinds of flowering plants—Calceolarias, Azaleas, Cinerarias, and other showy things, and on the roof was a grand plant of Tacsonia exoniensis, a mass of flowers. *H. Williams.*

**The Magnolia fuscata.**—This pretty species is undoubtedly rare in private gardens; it is worth growing for its peculiar fragrance—a scent quite unique so far as I am aware among flowers. It is also so strong that a small plant powerfully perfumes a whole house. It is, however, a plant of very slow growth, and rather miffy habit, and the flowers are even more fugitive thon those of any other of the Magnolias. They are very small, and are suspended, like tiny bells, with their mouths downwards. I tried this plant in a cool greenhouse, where it did not thrive, and have now kept it for several years in stoves in which we grow Marantas, Caladiums, &c., with Stephanotis on the roof. Here it continues in good health and flowers annually. We have had several, and I notice six more flowers in various stages yet to expand. This plant is over twenty years old, and is not yet a yard high nor through. It generally excites the interest of lovers of scarce and rare plants, and I have never seen it in any other private garden, so that M. Lavallée's idea of its scarcity is so far well founded as far as Great Britain is concerned. *D. T. Fish.* [We find this plant do well and flower freely in a cold close house in which there is no provision for heating, and in which plants and soil get frozen hard during severe frosts. Eds.]

**Linaria pallida.**—This hardy Toad-flax is now crowded with flowers, and is a first-rate rockery plant. It bears some resemblance to L. cymbalaria, but the flowers are nearly as large as those of the wild yellow Toad-flax. It roots as it spreads, and so is easily kept within bounds. *C. W. Dod, Edge Hall, Malpas.*

**The Onion Fly**—Enclosed I beg to hand you for your inspection a couple of Onions attacked by a peculiar grub, which is proving very disastrous in this neighbourhood. Since the last rains we have enormous quantities of these little pests, which are clearing off whole beds of Onions. Can you kindly inform me what they are, and if I can use a solution of anything to destroy them? *A. O. W.* [The grubs of the Onion-fly, Anthomyia ceparum, too common to be peculiar. Pull up the affected plants and burn them as soon as possible, and soak the beds with lime-water; or, better still, try a solution of carbolic acid, experimenting first on a few plants to ascertain the strength at which it can be used safely. Eds.]

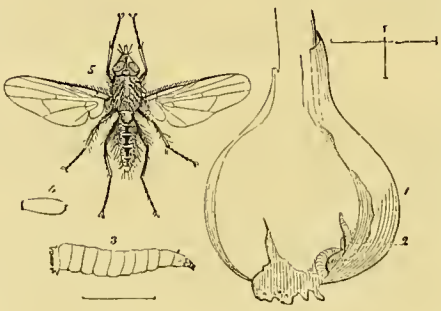

Fig. 144.—The Onion Fly.

**Columbines.**—The earliest Aquilegia to flower here, quite at the beginning of May, was the quaint but neat little A. viridiflora—seedlings of last year. It seems to do well in any situation where it is not smothered by taller plants. Then followed the canadensis section, red and yellow, including californica and truncata, and a long-flowered form, often called Skinneri, but distinct from that species. These red Columbines suffer much here from late frosts, and are often much distorted and stunted, and the end of their flowering is better than the beginning. Next come the endless varieties of A. vulgaris, double and single; the latter I think far the best. Amongst them are pure white, and white tinged with different shades of rose and of violet, and clear rose with a pure white corolla, and dark chocolate with the same. By constantly selecting the best flowers for seed, and discarding the inferior plants after their first flowering, the common Columbine becomes a most ornamental plant. A. glandulosa, of which I have many plants, failed as usual to flower well, some plants producing no flowers at all, others only two or three, but A. cœrulea quite made up for the deficiency. My two-year-old plants flowered better than ever, being quite uninjured by hard winter or May frosts. My best plant on a level rock border had more than sixty flowers, thirty of which were open at a time. Some of them I measured reached to 4½ inches. A. chrysantha and its hybrids are the most satisfactory of all Columbines in form and habit, making an elegant pyramid which requires no tying even in this windy place. It also reaches maturity sooner than any other kind. Some seedlings, sown at the beginning of last July, are now large flowering plants, 2 feet high. A. flavescens is another true species of good habit, though of dull colour, quite distinct in the appearance and shape of its flowers. I bought the seed as fragrans, a species I can never meet with. The true A. Skinneri, which I seldom see in gardens, though I very often see varieties of A. canadensis so-named, is just showing its flower-stalks above the ground, and will not be in flower for at least a fortnight. This lateness, fully a fortnight after all the other Columbines I know, is a marked characteristic of it, as is the bright green colour of the lower half of the flower. It is shy in growth, and easily lost. The finest Columbine I have seen this year was in a garden in Surrey, a few miles south of Dorking. It had the habit of A. vulgaris, with the large flower of A. glandulosa, and I believe it to be a hybrid between those species. It was bought of Mr. Ivery, of Dorking, as A. Witmanniana, but is vastly superior to the variety generally bearing that name. *C. Wolley Dod, Edge Hall, Malpas, June 13.*

**Rondeletia speciosa.**—There are among cool stove flowering plants few more useful than the old Rondeletia speciosa, a plant that is not nearly so often met with in private establishments as its merits deserve, for with a little management it may be made to bloom twice during the summer, and will stand for several weeks during that season without suffering the least injury. Young plants obtained now should be grown on in a moist heat, and be well syringed to keep down thrips and scale, to both of which they are very subject. When potting use good fibry loam, leaf soil, and a little silver sand, to keep the soil open and porous. Any that are now showing bloom should be gradually hardened off by putting them in a cool and drier temperature preparatory to being removed to the greenhouse or conservatory, where their beautiful bright trusses of flowers will be sure to be prized, and show to advantage among the commoner plants usually there at this season of the year. *W. J. C.*

**Fruit Prospects in Yorkshire.**—We have now arrived at that time of the year when we can pretty correctly estimate the condition of our fruit crops. Taken altogether, the crops in this neighbourhood are below an average. Apricots are thin in most places; the trees have suffered much from the last three or four years' unfavourable seasons. Peaches have set plentifully on trees that have withstood the last two unfavourable seasons. Many fine old trees have been killed, so that it will take some time to fill up the gaps. Nectarines are not much grown out-of-doors in this neighbourhood, as they rarely come to any perfection. Cherries are a moderate crop. Plums are in general light in most places; some kinds will probably be fair crops in various localities. Apples are a good crop; occasionally they will be above an average, but this will not be general. In some places many trees are heavily laden, whilst others have little or no fruit. Pears, though there was a good show of blossom, will be a light crop. They have set thin on walls, also on standard and pyramid trees. Gooseberries promised to be a most abundant crop, and in some places they are good, but in general they are not so abundant a crop as was anticipated. Currants are an abundant crop, and Raspberries will also be abundant. Strawberries will not be a heavy crop; the last two seasons have injured the plants in some places; there is only a moderate show of blossom, and in general it is rather weak. Some nice showers would do much to swell the fruit off and to prolong the season. Should hot bright dry weather prevail the fruit will be small, and the crop light and soon over. With the exception of Apples, Cherries, Peaches, Currants, and Raspberries, I believe the crops of other kinds of fruit will be below an average. Fruit trees in general look clean and healthy, and with a fine summer promise well for another season. *M. Saul, Stourton, Yorkshire.*

**Tacsonia exoniensis and Van Volxemii.**—If Mr. D. T. Fish has been able to manage T. exoniensis better than I saw T. Van Volxemii with him some time back, he must have had it fine indeed, as then this last-named variety draped the roof of the conservatory at Hardwicke in the most perfect manner, and hung with long pendulous shoots so full of flower as to be almost countless in number; but, as he admits, although T. Van Volxemii is grand at certain seasons, the other beats it in continuity of bloom, and, I may also add, in hardiness of constitution, as with us Van Volxemii has a provoking habit of dying off suddenly in some of the main branches, but this weakness may arise in our case through the plant coming in contact with the iron girders to which it is supported. Wood, as is well known, is naturally warmer, and does not conduct frost in the same way, and besides not being so cold in winter, it has the advantage of not absorbing heat in summer, and climbers are therefore in a more comfortable condition the year through when grown under it, but then against this there is its non-durability and less architectural adornment. As regards the Lapageria intertwining with the Tacsonia, I find our plant of the former is like Mr. Fish's—suffering from other roots being in the circumscribed border besides its own, for

though it has held on bravely for over twenty years it is giving way a little now, and does not make anything like the growth that it did. We are just trying to remedy this show of weakness by a liberal supply of fresh turfy peat and sand, and I mean to partition off the space, that each may have its allotted share without encroaching and getting through to the other one's larder. This I know is easier said than done, as roots have a wonderful instinct and power of finding out fresh food and getting to it, as they insinuate themselves through the tiniest crevice, and then send out a whole army of fibres. If they cannot elbow through sideways, down they go till they get to the bottom of the obstruction, when they speed their way under and up. It may be instinct, but it looks as if they possess other powers besides those alluded to and the wriggling already ascribed to them by Darwin, by which wriggling and winding in and out and about they certainly steal a march on our ingenuity. Going back to the Lapagerias again, the mixture that pleases me best is that of the long racemes of flowers of this plant with Cobœa scandens variegata, which I think is perfect, if the latter is kept properly thinned, so as not to hide too much of the other. *J. S.*

**The American Crab Apple.**—Your note on the late-flowering properties of this Apple suggests to me the desirability of encouraging a race of late-flowering Apples, the foundation of which is already laid in the Court-pendu Plat, which is still in bloom on this the 8th of June, while not a few Apples beside it are almost large enough for "codlings" and cream. This late flowering almost ensures a crop, be the spring frosts as hard and late as they may. Again, what a pity it seems that more Crabs and such Apples as the Fairy are not planted in pleasure-grounds. There is no plant or tree more beautiful in flower and fruit than these Crabs; and yet how few of them are planted for ornament. No doubt one great drawback is this, that birds devour the buds. We have seen Fairy Apples this season smothered with fruit-buds, as the cultivators say, and the bullfinches and chaffinches have left us never an Apple. This is very trying, and the balance of life needs readjusting in favour of the Fairies and the Crabs. The Siberian and other Crabs also form a beautiful garnish for other fruit. I have not noticed the sweet violet-like odour of the American Crab. This at least the birds cannot rob us of, and it would be worth growing the trees for, as the time of the falling of the leaf is by no means always a time of such sweetness that we can afford to lose a mere whiff of violet, even at that season. *D. T. Fish.*

**Cotoneaster microphylla and Queen Wasps.**—It is worth while calling attention to the great attraction that the flowers of Cotoneaster microphylla offer to Queen wasps. Four days ago I killed over 125 queens of five different species on them in about an hour and a-half. Later on the flowers of C. Simonsi are equally attractive to the workers. *Alfred O. Walker, Colwyn Bay.*

**Asplenium Adiantum-nigrum cristatum.**—In looking through the plant-houses in Messrs. Charles Lee & Son's nursery at Hammersmith a few days ago, my attention was drawn to the contents of a few small glass-cases which were situate on the end staging of the Palm-house (in which were a fine clean lot of plants), and upon lifting up the lids a beautiful batch of seedlings of the above Asplenium were disclosed. The large lumps of sandy peat were, like every other part of the surface of the bed, completely covered with the seedling plants, many of which were then developing the crested and fringed character. Until seeing the above batch of seedlings I was not aware that there was such a variety. In the long span-roof stove adjoining the Palm-house, I also noticed amongst a large and varied collection of clean, well grown furnishing plants, a gem of a decorative plant—Lomaria cycadæfolia—with long green fronds and of graceful habit. *H. W. W.*

**Rhododendrons.**—I notice that a correspondent complains of the price of the finer kinds of Rhododendrons, but at 3*s.* 6*d.* or so each most people think them marvellously cheap, and so in my opinion would "H." did he but know the time and labour it takes to bud, graft, or layer them, and the attention and room they require after in transplanting and growing them on before they are large enough to send out to a customer. "H." appears to forget, too, that the stock of any named kind must of necessity be limited, as they all have to be propagated by one or other of the methods adverted to above, and are therefore slow of increase. But if he wants plants for coverts seedlings can always be had cheap, many of which are little inferior to the named sorts, and the common varieties of ponticum I see marked in catalogues as low as £10 per 1000, a price less than many of the ordinary bedding Pelargoniums can be bought at. When one considers the heavy rent nurserymen have to pay for their ground, and the expenses they have to meet, the wonder is how they can sell shrubs at the price they do; and were I going into business that branch of it is not one I should at all care to take up, as I have heard several times on the highest authority that in many cases it is carried on at a loss. As to Rhododendrons growing in sand, clay or rock, the statement shows that "H." cannot have had much experience of them, for although they may live in clay they do not succeed in it, and the rock needs to be well covered with soil, and must not be impregnated with lime. What suits Rhododendrons best is peat, and next to peat decomposed leaves and vegetable *débris*, such as may be found on the surface of the ground in woods that have been long-standing, but in many places they do well in the natural soil. Here in sharp gritty land, where there is plenty of moisture, they grow freely, and are a grand sight this year, as one and all are laden with flowers, which the rain came just in time to help the plants to expand, and the dull cool weather since has been much in their favour. *J. Sheppard, Woolverstone Park.*

**The Bloom of Hollies and of Haws.**—Never surely did these bloom with such profusion, giving promise, as you say, of an abundance of berries for food of birds and Christmas decoration. The flowers were late as well as plentiful, and the welcome rains will help set the fruit, provided the cold north-east winds and the thermometer at freezing point on the morning of June 8 does not mar the promise of a full harvest of berries. *D. T. Fish.*

**The Hollyhock Disease.**—Will you please inform me through your paper what is ailing the enclosed Hollyhock leaves? I have not seen the disease; is this it? *Edw. Jones, Perrystone, Ross.* [Yes, the

Fig. 145.—The Hollyhock Disease.

true Hollyhock disease, Puccinea malvacearum (fig. 145), which we illustrate with a view of putting other growers on their guard. Every affected leaf should be picked off and burnt. Eds.]

**Hardy Kinds of Broccoli.**—The exceptionally severe winter we have so recently passed through has shown in an unmistakable way how much the different kinds of Broccoli vary as regards hardiness, and I am glad to see that several correspondents are giving their experience respecting them, as what they say will be a guide to many what sorts to plant in quantity. Like Mr. F. Jaques, I would add my testimony to the great merits of Model as a most reliable sort for standing severe frost, for while the ranks of others standing alongside and enjoying the same conditions have been thinned out to something like 90 per cent. with us, very few of the Model were killed, and it was late in the first week of June before we had done cutting the last. Previously to the trial of it a year or two ago, I had always relied chiefly for the late supply on Cattell's Eclipse, which is a really good hardy variety, but from what I have since seen of Model I am inclined to think it is by far the best of the two. The name is a very appropriate one, for it is in truth a model Broccoli, being perfect in shape, with pure white heads well protected by the leaves that fold regularly over. The plant, too, is sturdy and compact, with a stout woody stem, which accounts for its hardiness, as it is only such that the frost cannot shiver. Soft sappy roots stand no chance whatever, as owing to the moisture they contain ice is formed in them and the cells are riven asunder by the expansive force brought to bear on their sides. *J. S.*

**Delphinium nudicaule.**—Plants of this scarlet-flowered Larkspur are now very gay and effective on the south face of a limestone rockery. On the flat border it does not succeed so well, though it is quite hardy. Slugs are its worse enemies, and no plant is more thankful to Mr. Ewbank for having recommended us to use collars of perforated zinc. If sown early the plants flower late the first year, and seldom flower at all after the second year, though they have a tuberous root, and seem as if they ought to be perennial. My best plant shows about twelve flower-stalks to follow one another in succession. Three of these are already in flower, being nearly 2 feet high, and bearing about six flowers each, and as many buds. *C. W. Dod.*

**The Roses.**—Rosarians have had a quiet time lately. Whether the inclement winter has played so much havoc among their pets as to damp their well-known ardour in behalf of the queen of flowers, or they are undecided upon points of cultural doctrine that has cropped up lately, it would be difficult to say. One fact is patent—namely, that Roses have suffered, and there is silence in the rosarians' camp. The fact is significant. But surely if rosarians cannot afford to be jubilant there is at least hope. We have much to be thankful for even if we have suffered a little, as every day improves the prospect of our reaping a fair harvest of flowers. True there will be many deformed flowers, as is evidenced by the buds, but upon the whole I think the Rose harvest will be much better than was anticipated some time ago. A dry May does not augur well for Roses. What with roasting hot days alternating with nights of unusual coldness, it was well nigh impossible for Roses or anything else to make headway; but now they are making up for lost time, and plump, well-formed buds are fast unfolding their rich treasures to charm and gladden the hearts of rosarians. Both Teas and Hybrid Perpetuals are doing well alike, especially those of the former that were wintered in pots and were well protected from the action of the weather. It is barely two months since they were planted out, and their health, vigour, and floriferousness promise to more than repay the little extra trouble incurred. It would be wise, I think, to go over the plants and pick off all deformed buds, which are of no possible good, and are only draining the resources of the plants for no good purpose. By the way, people are talking about split buds, *i.e.*, ill-shapen distorted buds, which only develope into ungainly-looking lopsided flowers. Why is this? they ask—as if it were a wonder after the plants being bound in icicles the greater part of the winter, and then exposed to the exhaustion of the cutting east winds which prevailed for six weeks afterwards. The fact is, the plants were enfeebled after the winter, and when they attempted to start into growth the atmospheric conditions were such that healthy action between root and branch was partially suspended, hence the reason of the first-formed buds lacking their natural form and substance. But since the late rains their condition has improved so rapidly that the prospect of a fair harvest of Roses looks much brighter and I expect before long to hear the annual ode of the delighted and gratified rosarian, mingled perhaps with a few regrets for favourites either entirely lost, or crippled for the time being. If it were not for the sake of appearance, a good surface mulching of rotten manure would be a great boon to Roses at this season, and if weakly growths were removed, and a limited number of strong shoots only encouraged, the majority of plants would soon recoup themselves, and before long regain their ordinary health and vigour. *W. Hinds.*

**The Spring Beauty of Coniferous Plants.**—I was pleased to see you notice these in your leader on p. 728. Monotony of colour, indeed! It is all very well to bring this charge against Conifers in the autumn or winter when their leaves have reached maturity or have began to enter the sere, if not yellow stage. But not our best deciduous trees can rival the rich interest and variety of Conifers in the springtide. Take for example such a Silver Fir as P. Pinsapo; its catkins glow almost with the brilliance of coral, and its grey shoots are soft and rich with verdure that must be seen, as it is beyond description. Then such Spruces as the Smiths and Douglas are of the richest shades. The cones, too, of these and many other trees, such as Pinus excelsa and others, add a new feature of interest and beauty. These added to the catkins, the showers of golden pollen, the curious growing points of the wood, soft and apparently as succulent as juicy Asparagus at times, also, as in the case notably of P. Sabiniana, contrasted with the brown-grey masses of sere and falling leaves, form a combination of light and shade, interest and beauty, that can scarcely be found among deciduous trees. And the odours given out by Conifers are among the sweetest, and perhaps the most wholesome, in Nature. Some of our most powerful disinfectants and antiseptics are said to be derived from our Conifers, and if any reader wishes for a disinfectant in a sick room I should counsel him to hie at once to the nearest plant of the Douglas Spruce, cut off a small branch while it can be spared, carry it home, and bruise it in his hands, and inhale such an aromatic mixture of Lemons, turps, resin,

balsam, and many other good and wholesome scents as he has never inhaled before. Should you fear the prevailing epidemic I will send you a basketful of the Douglas Spruce, which may prove as good an antidote as calf or any other lymph, and will certainly neither give sore arms nor lay aside from business. I wish all the London and other hospitals would but try this new anti-fever, anti-disease plant. The odour is all but insensible until it is cut or rubbed, and the harder it is squeezed the sweeter it becomes. *D. T. Fish.* [We sympathise with our correspondent's enthusiasm, but he really must not try to prevent small pox without good vaccine lymph, or he will do mischief. Eds.]

**Soot.** — I have long had great faith in soot as a manure, and have here a covered box placed near the Castle into which the sweep puts all the soot from the chimneys and flues from time to time; this, in the course of the year, amounts to an incredible quantity of manure, and very handy and useful we find it. When a piece of ground is dug we give it a dressing with soot, and then, in gardening phrase, "break it down" for the crop: this really means running a harrow or rough rake over it, and it mixes the soot with the soil nicely, and the result is always most satisfactory in the crop. Last year our Onion crop showed unmistakable signs of "the maggot;" I immediately had the piece dressed with soot. Heavy rains set in just after, and soon the Onions were on their legs and the maggots were gone. The rainwater from off the roof of the kitchen runs into a tank, and is heavily charged with soot. This is handy to the flower garden, and we find it capital for watering flower-beds in summer. The park one autumn had a lot of what the country people here call "old toar" —why I know not, but it means a lot of old coarse grass—a good dressing of soot in the spring, and it soon gave place to fine young fresh grass, and ever since then the deer and Highland cattle may be found at pasture on this brow. While I am on the subject of home-made manures allow me to mention a few others, and the next shall be ashes, more especially wood-ashes. This is invaluable in a garden if kept dry till used. We all know what a dreadful plague "the club" is amongst the Brassica tribe; well, if the seed is sown on the surface and covered with ashes, and at planting time a hole with a large dibber is made in the ground and filled with the ashes, inserting the plant into this, I have never known "the club" trouble one, and it is the very best thing to dress lawns and meadow lands, encouraging the best grasses and Clovers. In a woody country like this there is plenty of charcoal dust at the bottom of the heap; this is most useful for potting or fruit tree border making: some say it makes Grapes extra dark in colour — this I cannot positively be sure of, although I rather side with the belief. Lime is not nearly enough used in gardens. Every bit of ground should, in my opinion, be limed once in five years; it kills slugs and insects and lichen on trees, and acts chemically on the ground, and is often better than manure for certain crops. I remember once seeing ground dressed in the grey lime produce barley 57 lb. per bushel. Horse-hoof parings make a most excellent manure for potting Pines, Vines, Pelargoniums, &c., and one can easily make arrangements with the nearest blacksmith to save them. When one reads of horn shavings being run after, I often think there are as good at the village forge. Bones are most valuable in a garden, they decompose but slowly, keep the ground open, and are invaluable in Vine border making. The champion bunch of Grapes shown at Edinburgh some years ago, weighing over 26 lb., did the clever gardener who grew it great credit; but it should also be known that there were heaps of bones in the border. A gardener, whom I had got a good situation for, took it into his head to send me a couple of geese at Christmas time. The geese were eaten, no matter where nor when, but the bones were saved; these with some others were put into the bottom of two vases on the terrace wall, two good plants of Tom Thumb Pelargonium were planted in them, and at the end of September they measured 17 feet 6 inches in circumference. So much for bones and plenty of water. *J. Rust, Eridge Castle.*

**The Crowbar Planting of Broccoli.** — "H. W. W." takes my chaffing criticism too seriously. I will not, however, apologise for adopting that particular step, as it has provoked this lucid, practical writer to give us a clear, full account of how his Broccoli withstood zero frost minus 1°. Permit me to thank "H. W. W." for his clear statement (see pp. 731 and 732). I agree with him in every word of it. His panacea against frost is fourfold—rather late sowing (May 4), thinness in the seed-bed, late planting (August 27) when the plants were in an advanced state, and burying the plants to the collar at the time of planting. Most of these conditions, especially the three last, were so likely to harden or protect the plants, that their safety was so far the natural result of the treatment, and by no means extraordinary. But it is just as well that we should all see that the crowbar had little or nothing to do with the escape of the Broccoli, though "H. W. W." will admit that this was by no means apparent from his first note. I have also tried the plan of transplanting Broccoli early in October; September, I fear, would be too early, as if Broccoli is transplanted or heeled over too soon, the hearts have a dangerous habit of turning themselves right up to the sun, and in that position the frost easily stings them through and through to their utter destruction. Hardy compact growth, induced by a severe check and plenty of space between the plants (where this can be commanded), and the earthing up of the stems to the collar, are points of the utmost importance in protecting Broccoli from the frost. It is little wonder that Broccoli drawn up among other crops should have their stems speedily frostbitten when the protection of those crops is withdrawn and they are left like plants on stilts to shiver in the blast, and bear the full brunt of the frost alone. A good many of these lanky ones may be saved if they are thrown over and earthed right up to or beyond the leaves. But I agree with "H. W. W.," that their chances of safety are much greater if a hardy, sturdy, robust habit of growth is developed from the first, and confirmed by every available means afterwards. *D. T. Fish.* P.S.—Was the frost of the past winter or the drought and cold of the spring responsible for the small size of the Broccoli of this season?

**Early Peas.**—These, like other vegetable crops, will be late this year, as the season is altogether a backward one, and it seems full soon to write of early Peas or to form any opinion of the merits of the different varieties, but from present appearances the much vaunted American kind named Early Sunrise will be behind some of our old favourites, as, sown the same day in boxes of leaf soil as Kentish Invicta and treated alike and planted on the same border, the Invicta is a few days or a week ahead of the other in flower, and will therefore no doubt maintain the lead in podding and filling. Although this is almost sure to be the case, I like the look of the Sunrise much, as it is a short-jointed sturdy stemmed sort, and seems as if it would bear well, as it is showing plenty of blossom. For the first gathering we depend now on the Invicta, for having grown it side by side with all the others, it comes in before them, and is better in every respect, as it is a prodigious bearer, of a beautiful green colour, and of superior flavour. To come in next, William the First is as good as any, and to succeed this there are none, in my opinion, equal to Advancer, which pods freely, and is very delicious when cooked. *J. S.*

**Stirling Castle Peach.**—May I ask "J. S." if he is acquainted with this variety? Without attempting to speak in terms derogatory of such well tried sorts as the Noblesse, Royal George, Barrington, and others mentioned by "J. S.," yet if I were called upon to plant only one Peach tree in a garden, I should certainly give the preference to Stirling Castle, more especially for outside planting, it being the hardiest constitutioned Peach I know, a certain cropper and altogether a reliable variety, at least so far as our variable climate will allow. Perhaps some of your readers can bear me out in this testimony, likewise as to its behaviour under glass. Whatever may be the characteristics of the Royal Vineyard Peach, mentioned by "Visitor" in a recent issue in his notice of the gardens at St. Giles', the seat of Lord Shaftesbury, I am not in a position to say, but according to the character it maintains there it certainly would make a fit companion to the Stirling Castle Peach, which, too, would, if I mistake not, tend to alleviate the many disappointments so often caused by planting varieties of more tender constitution, unless under more advantageous conditions than an open wall. *E. Morgan, The Butts, Harrow-on-the-Hill.*

**Canterbury Bells.** — The Campanula family is a large and varied one, including plants ranging in height from 3 inches to 6 feet; but there is no great variety of hue in the perennial kinds, the majority being either white or blue. It is in the biennial member of the family, Media — or, as better known, the Canterbury Bell—that we find the most luxuriant bloom, the most varied forms, and brightest hues. We are just now in the season of its blooming, and where the plants are strong, carrying several scores of flowers. There are few border plants just now more striking or beautiful; there are found the primary whites and blues, also rose, mauve, pink, purple, and hues intermediate that vary enough but are difficult to describe; then there are flowers pendent and erect, single, semi-double, and double; there are flowers with a floral calyx as seen in the calycanthema, and others in which some three or four cups are compressed one within the other. For form and size generally the finest are the semi-double kinds, which consist of one cup within the other. These not only retain all the best features of the single flowers, but are far more enduring. When well grown the Canterbury Bell is fairly self-supporting; it needs little extraneous help in the way of sticks. Then it is most invaluable to those who are in want of cut flowers. The single kinds, perhaps, do not last long, but the doubles do, and all have nice clean stems of suitable length. Seed should be sown, as a rule, under glass. It is small, and subject to many dangers, all of which are avoided if, instead of sowing in the open ground, it is sown in pans or boxes under glass. It is yet time to sow, but should not be later than the end of June if good blooming plants are wanted for the next year. *A. D.*

**Bloom or Mildew?**—I had the pleasure of seeing the Strawberries adverted to in the remarks made in last week's issue, and have no hesitation in saying that the thin pale *glacé* coating they had on was bloom and not mildew, and that all the best finished fruit have the same, more or less. Some kinds put it on more readily than others, as, for instance, Queens, Vicomtesse Hericart de Thury, and Hautbois, and the more glazed these and other sorts are the richer and better the flavour. Dull looking Strawberries without bloom, like Grapes that have not the same finishing mark, are never good, although some will aver that bloom and colour are no index to quality; but who ever found a jet black bunch of Hamburgh Grapes, or Muscats with their characteristic golden or amber tinge, without it, or Peaches and Nectarines with rosy cheeks other than luscious? *J. Sheppard.*

**Lombardy Poplar.**—It is possible that the boundary of the destruction of this Poplar by last winter's frost, coming after serious injury done by the previous winter, lies farther to the south than your correspondent "Diss" suspects. At Coulogne, a village about 3 miles S.S.E. of Calais, a long row of Lombardy Poplars is apparently killed. On June 11 they showed no signs of life, except a few weak shoots starting from the lower part of the trunks and some of the leading branches; but such shoots are neither more numerous nor more vigorous than they would have been had the trees been felled. It should be added that the soil is cold and wet, the situation low, yet bleak and exposed. The line of trees looks as if it had originally been planted to serve as a screen to a large garden to their leeward. Other Lombardy Poplars in the neighbouring country have suffered but slightly, or not sufficiently to strike the eye. The Aspens also in many places have had their terminal twigs and smaller branches killed. In central Europe, where the frost was more severe than near the coast, it is probable that the losses have been more serious. We do not hear very much about them, because people there in general talk more of their Vines and their fruit trees than they do of their ornamental shrubs and timber. *E. S. Dixon.*

—— The destruction of the Lombardy Poplar (Populus fastigiata) in this district (42° W.) is complete; fine old trees towering some 90 feet last summer wore but a ragged, partially defoliated appearance, and now, as I write, they appear quite dead. I am inclined to think that the work of destruction commenced with the frost of 1879, and cannot be attributed alone to this last winter. It is curious to note the variable effects of the late great frost on different trees and shrubs of one and the same species; one Sweet Bay is totally killed, while another by its side has escaped comparatively unhurt. Tops of very old, well matured common Laurels are being killed, while those more robust in growth, though quite defoliated, are again sprouting vigorously. It is singular that the flower-buds of Magnolia conspicua were killed, and all dropped during the frost of 1879-80, yet they have withstood the late great frost, and flowered with their usual strength and grandeur. We had winter again on Tuesday night, the 7th inst., thick icicles being formed of some length; there was also a heavy storm of hail; the Potatos in some situations suffered greatly, Beans and other tender plants were cut to the ground and looking quite black, the grass scrunched under one's feet, and the thermometer fell to 32°. *J. Mullins, Beaminster.*

—— I note your correspondent "Diss," at p. 764, commenting on the above having suffered in his locality from the effects of the late severe winter. With us it has also been much injured; on the lawn here we have a grand old specimen, such as one rarely sees, and which some forty years ago—so my informant says—was 90 feet high; but at the present time I very much doubt its being more than 80 feet. One very singular fact connected with the Lombardy Poplar I cannot help noticing, and that is, middle-aged trees do not appear to have suffered to the same extent as the old ones; in fact, there are some of the latter not very far from where I am now writing, which have passed through the late severe winter unscathed, whilst the veteran alluded to above has suffered severely. *J. Horsefield, Heytesbury, Wilts.*

—— In my garden at Halvergate there is a Poplar over 50 feet high, which is in a flourishing condition. Halvergate is about 7 miles due west of Great Yarmouth. The greatest cold observed here last winter was 10° Fahr. *A. S. Ormerod.*

The Manna Ash, Ornus europæus.—It is surprising how little this is planted. Just now (the first week of June) it is in great beauty, at a distance resembling a huge standard Spiræa japonica. The odour is not unpleasant at a distance, but rather fulsome when near. The flowers are, however, when out almost as fragile as beautiful. We used some the other day to fringe a white wreath for a grave, but they faded almost before the wreath got placed. But a few trees about the pleasure ground or park have a chaste and striking effect. The tree grows rather showy, and it forms a nice standard when worked on clean stems of the common Ash about from 5 to 8 feet in height. Independently of its beauty the tree is interesting for weeping down a sort of manna, though this property is by no means confined to the Manna Ash. *D. T. Fish.*

The Weather.—The weather in Sutherland during the first week of June has been most unusual. The last day of May and the first two days of June the maximum temperature in the shade was 70° to 71° and 74° respectively, the minimum at night ranging from 48° to 50°. Vegetation progressed at a great pace during the few days the heat lasted, and lost time was being rapidly made up when the wind on the 6th set in to the north, veering round to the north-east, bring with it a great fall of temperature and bitterly cold weather. The maximum temperature on the 7th was 49°, or 25° less than the maximum on the 2d. The minimum on the 8th was 31°, or 18° less than the 1st and 2d. There were showers of hail and sleet here, and a few miles back from the sea the ground was covered with snow during the nights of the 7th and 8th, which lay till 9 or 10 o'clock the following morning. We have not here at least had such a heat so early in the season for the last twenty years. During the same period the temperature has not been so low so late in the season as 31°, on June 8. The sudden change from tropical heat to cold, harsh, easterly winds, with low temperatures, is most unusual in the month of June. I can find no similar instance in the twenty years over which our meteorological records extend. The spell of cold weather has lasted till the 12th, and to-day (the 13th) the wind is more southerly and mild, and the temperature shows a maximum of 60° in the shade. Potatos are badly blackened on exposed ground. French Beans everywhere in this neighbourhood look yellow and unhappy. I hear of Dahlias and Heliotropes being cut down, and the common bracken Ferns have their young growth in some places quite cut to the ground. We have escaped the frost here so far, our proximity to the sea and sheltered situation having carried us through without injury to anything except French Beans. *D. Melville, Dunrobin Castle.*

—— During the present week we have experienced a change of weather which, while in some respects most welcome, in others has been productive of disastrous results. On Sunday there was a steady downpour of mild rain from the south-west, with a warm breeze—quite a refreshing growing rain. On Monday the wind veered round to the north, the temperature being reduced many degrees, until at night it fell below freezing point. On Tuesday night or early Wednesday morning, the thermometer went down to 27°, registering 5° of frost, and on Thursday morning the thermometer registered 29°, or 3° of frost. Gardens lying with northern or easterly aspects came in for the worst effects; Kidney Beans were cut up and withered like Jonah's Gourd; Potatos cut up and left with the unmistakable mark of frost upon them. Sad and serious are the prospects upon many of our cottager's gardens, and in several of our field plantations; in many instances the Potatos, being very forward, are seriously cut down, and I fear almost past recovery. Bedding plants have suffered severely. Pelargoniums well hardened off have lost nearly all their leaves; Dahlias and Heliotropes are quite black, and in a hopeless condition. The bush fruits are also somewhat affected; on examining the same this morning, I find some of the Gooseberries and Currants are falling. The temperature throughout the week has also been greatly lowered, with the natural outcome—a crop of complaints from those who have caught cold. *H. Battram, Cyfarthfa Castle.*

—— On the 9th inst. we had a sharp hoar-frost, which killed about half our Scarlet Runner Beans, and also severely injured the tenderest varieties of bedding plants which had just been put out. In low-lying meadows the common brake Fern has been completely cut down, and in some districts Potatos have suffered severely. *G. Griffin, Slebech Park, Pembrokeshire, June* 13.

—— Perhaps you will allow me to record the following fact, viz., that the very keen frosts on the nights of the 6th and 7th instant have quite cut down and blackened in the numerous districts of Breconshire and Radnorshire, just visited by me, the Potatos (in both field and garden), Scarlet Runners, Kidney Beans, young growth of Oak and Ash, Fern on the hedge banks, &c. With the exception of these drawbacks, and the taking of the young Turnip plants by the "fly," the country looks well—indeed better than for, at any rate, three years past—the grain crops offering the prospect of a very abundant harvest. *D. C., June* 11.

—— We had several degrees of frost here yesterday, and this morning the Potatos are cut, but not badly, in this garden. I hear, however, that both Potatos and Beans are cut to the ground a few miles from here. It is still very cold this evening. I have not noticed anything like it in this locality before. *C. Raffill, The Gardens, Tredegar Park, Newport, Mon., June* 9.

—— Five degrees of frost last night has made itself felt here. French Beans are killed, and the leaves of Marrows, Marigolds, Heliotropes, and Potatos are also frosted. *H. Little, Gr., Rusland Hall, Ulceby, June* 9.

—— Notes of temperature as registered here (Aberdeenshire); distance from the sea 17 miles, above sea level 280 feet:—Last few days of May was hot and parching; June 1, 80°; 2d, 83°; 3d, 72°. From the latter date to June 8 the fall in temperature was regular; on the 8th the highest was 44°, lowest 43°, or range 1°—most unusual at any season. On June 10, lowest 27°, or 5° of frost, or 56° lower than the highest, on June 2—almost within a week. On the morning of the 10th ice formed as thick as a shilling. Potatos look sadly disfigured; French Beans seem killed. Strawberries and a few late Apples were in flower: it would be premature to predict results, but I trust the dense foliage may have protected them. Recently bedded out plants suffered badly. Dahlias, Perilla, Tropæolums of sorts, look sadly used up. A few Cannas were completely spoiled, but they were not well hardened before being turned outdoors. Fortunately we do not use such as Coleus, Alternantheras, &c., which do so well further south. Pelargoniums of sorts have suffered more or less; those planted out of boxes suffered most. I presume those in pots were hardier, not being so close together as those grown in boxes. Variegated varieties seem to have stood the trial as well as the green-leaved varieties. Herbaceous border: Dielytra spectabilis, flower-stems remain useless; Marigolds killed; stems of Irises hung as if their necks were broken, but they have come up all right I think. Aquilegias of sorts slightly bronzed—I mean varieties raised by Mr. Douglas and distributed by Messrs. Veitch. They are showing their lovely flowers, and should find a place in every hardy border. Potatos are struck in the strangest manner. In some cases one plant in a line, next line probably not a plant touched, and a third line with two or more touched, but following each other, and remainder of line safe. The border has a boundary of large Beech trees on north side, but it does not overlap border. *M. A. D. C.*

—— This locality was visited with a most destructive frost on the night of the 8th inst.—10°. Owing to the spring bedding being late our summer bedders were still in their pots, but most of my neighbours are not so fortunate. French and Scarlet Runner Beans, Tomatos, Marrows, Dahlias, Iresines, Zinnias, Ageratums, and such-like things are either killed outright or to the ground. Pelargoniums fully exposed have all their leaves cut off, and many are killed half way down. The young growth of Hollies, Walnuts, &c., are killed right back, whole fields of Potatos are killed to the ground, and the young crop of Mangel Wurzel has suffered very much; it was 7 A.M. before the frost was all gone. *F. Bedford, Straffan, Co. Kildare.*

## Reports of Societies.

Royal Horticultural: *June* 14.—Major Mason in the chair. The Rev. G. Henslow commenced his lecture by describing the Sarracenia, a hybrid (S. melanorhoda) of Mr. Veitch's which received a First-class Certificate. It was remarkable for the bright red colour of the pitchers. He first described the flower, pointing out a curious observation lately made by Mr. W. G. Smith, that when the flower is in a dry atmosphere the petals hang down and obstruct the passage by which insects enter to fertilise the flower, but when in a moist atmosphere they become turgid, rise up, and so leave free access to the interior. He then described the structure of the pitchers and the method by which insects are entrapped. The lid and lip abound with attractive honey-glands. The honey appears to be slightly stupefying, so that insects do not fly away but crawl about; the surface, however, is covered with deflexed spiny pincers which develope into long needle-like structures below, so that it affords no foothold and the insect inevitably glides downwards till fairly caught. Numerous dead insects are always found wedged into a compact mass far down the pitchers. There is no doubt that the nitrogenous matter is beneficial to the plant when it is absorbed. Some insects, however, are too wary to be caught, but simply drop their eggs in, so that their grubs may thrive in the decaying matter and ultimately escape by perforating the tube. On the other hand birds slit open the tubes and extract the living grubs! A fine plant of Hydrangea Mariesii with blue flowers from Japan, found growing wild by Mr. Maries, next called for some remarks. Another species, with the central flowers perfect but those on the circumference barren, afforded the explanation of the enlarged barren flowers of garden Hydrangeas. It was the calyx enlarged and coloured, the internal parts of the flowers being aborted. In the Gueldres Rose, which presents a similar appearance, it is the corolla which is abnormally enlarged. Mr. Henslow showed how several organs can be highly coloured and give an attractive feature; thus besides the calyx and corolla in Iris the styles add to the beauty, while in Cactus the bracts assisted, and in Hyacinthus comosus it was the flower-stalks, the flowers being altogether aborted.

The family Iridaceæ, of which several genera, such as Iris, Gladiolus, Ixia, and Sparaxis, were exhibited by Messrs. Barr & Sugden, furnished remarks on the various methods of insect fertilisation carried out in one and the same family. Thus, while in Iris the bee enters under each "petaloid" style successively, and gets dusted on the thorax, the arching stigma then removes the pollen, when it enters another flower; but in Gladiolus the three stamens are so twisted as to lie side by side under the upper petals; hence the bee is dusted by all three anthers at once, but also on the thorax. On the other hand, in Ixia, Crocus, &c., the perianth is contracted into a narrow funnel-shaped structure, compelling the bee to go head-downwards and grasp the stamens with her legs; and since the anthers burst outwards, the bee is dusted below; flying to another flower, the erect bush-like stigma sweeps off the pollen.

Some double Pæonies, also exhibited by the same exhibitors, showed different methods of doubling. In one the carpels were represented by a central tuft of rather large erect petals, the stamens by smaller and yellower petals, the true corolla being below and having its petals multiplied. In another the petals and stamens were repeated in succession, so there were two whorls of each succeeding each other. In a third the flower consisted of a globular mass of petals, but the origins from stamens and carpels were undistinguishable.

Scientific Committee.—A. Grote, Esq., in the chair.

*Masdevallia Lindeni.*—Mr. James, of Castle Nursery, forwarded a remarkable leaf of this plant which was converted into a pitcher.

*Polyanthus* with foliaceous sepals, from Mrs. Owen, of Gorey, Ireland: remarkably fine specimens of these so-called "Jack-in-the-Green" Primroses have been received more than once this season from Ireland.

*Sarracenia* leaves not formed into the usual pitcher-like tubes came from the same place, though described as grown in boggy ground; it was suggested that a want of sun might have caused it. Such leaves are not at all uncommon.

*Viburnum lucidum var.*—Mrs. Owen also sent sprays of Viburnum, the variety appearing to be more hardy than the original form. The only plant lost in the last severe winter was the common Fuchsia, though the frost of June 8 cut the Potatos of Gorey severely.

*Rose Leaves.*—Mr. J. Tinsley forwarded some Rose leaves that exhibited blackish spots upon them, and were rapidly falling off the trees. They were given to Mr. W. G. Smith to report upon.

*Hybrid Lily.*—Mr. F. G. Wilson exhibited a hybrid between Lilium Washingtonianum and probably L. columbianum. It was from seed sown in 1873, and possessed the foliage of the former species, but had a very distinct flower.

*Cacti, &c.*—Mr. E. Giles Loder exhibited a fine and interesting series of plants from the Rocky Mountains of Colorado. Many were in blossom. Some were collected at an elevation of 10,000 feet, and are perfectly hardy. He records measuring plants of Echinocereus phœniceus 13 feet in circumference. They will probably prove to be a very valuable acquisition to rockery gardens. A vote of thanks was unanimously given to Mr. Loder for the exhibition of the collection.

*Miscellaneous Specimens.*—Rev. G. Henslow exhibited a form of Cardamine pratense, in which double flowers were issuing from the side of the ovoid ovaries, remaining after the flower had fallen. They were received from Mr. Gibbs, of Chelmsford. Lychnis Githago: Blossoms of this plant were shown in which numerous flies had been entangled by the long hairs of the calyx and perished, illustrating Dr. Kerner's theory of the various methods by which "unwelcome guests" are excluded from flowers. A Daisy with ligulate florets proceeding from near the centre of the disk florets was received from Mr. Tinson, of Holloway. Impressions taken by the cut end of a Water Lily stalk appearing to afford a natural dye, by which the exact representations of the air canals could be made. A malformed Melon shoot, forming a Cabbage-like mass of foliage, was referred to Dr. Masters and Mr. Smith for examination and report. It is suspected of having been attacked either by Acari or else Anguilla.

Floral Committee.—J. McIntosh, Esq., in the chair. First-class Certificates were awarded to-day to Messrs. James Veitch & Sons for Hydrangea Mariesii, a very distinct new species with cordate, deeply-toothed leaves, and cœrulean-blue flowers, introduced from Japan; for Sarracenia melanorhoda ×, a hybrid between S. Stevensii × and S. purpurea, of medium upright growth, with the pitchers of a bright chocolate-red colour; and for Tree Carnation Lady Musgrave, a very large compact flower, deep crimson-scarlet in colour. To G. F. Wilson, Esq., for Lilium Washingtonianum "Scott Wilson" ×, a remarkable hybrid from L. Washingtonianum raised from seeds sown in 1873, and being identical in habit of growth with that species, but most distinct from it in the flowers, which are orange-yellow, medium sized and reflexed, and heavily dotted with small brown spots. To Messrs. John Laing & Co., for Caladium candidum, white ground with boldly marked pea-green coloured venation; for Caladium J. R. Box, rose-pink ground, and rose-coloured venation; and for Caladium Mithridate, a large-leaved form, bronze-green in colour, with crimson centre. To E. G. Loder, Esq., for Echinocereus Fendlerii, and E. gonacanthus, noticed last week. And to Mr. King, gr. to G. Simpson, Esq., Wray Park, Reigate, for Coleus Miss Simpson, of the same style and character as C. Queen Victoria, but much more intense in colour. Mr. Green, gr. to Sir Geo. Macleay, showed cut flowers of Stigmaphyllum ciliatum and Bauhinia corymbosa, both fine old greenhouse climbers, that have recently been noticed in these pages. Mr. T. Dale, gr. to E. Edwards, Esq., Blackheath, showed a good form of Cattleya gigas; and Messrs. Veitch, in addition to the plants above-named, had a small group which included several rich crimson-coloured seedlings from Begonia Davisii; the new pink-flowered Zephyranthes macrosiphon; the pretty little hardy, white-flowered Pratia angulata, a charming rock plant; and another species of Hydrangea from Japan, similar in habit to H. Mariesii, but pale rose-pink in colour. Mr. Cannell sent from Swanley a nice selection of cut blooms of double Pyrethrums, and cut spikes of Foxgloves. From M. H. Voss, Esq., De Montfort House, Streatham, came a plant, with one fine spike, of Odontoglossum citrosmum Vossii, which was not considered distinct from the variety roseum figured in Warner's *Select Orchidaceous Plants*. Mr. Hooper, Bath, submitted some new Pansies; and Mr. H. Coppin, Shirley, Croydon, some new Begonias. Messrs. Laing & Co. also had some new Begonias, amongst them being one named B. campanuliflora, with double white flowers, much resembling those of C. persicifolia flore-pleno alba.

In the large conservatory there were a few nice groups of Orchids, including a very fine batch of Odontoglossum Alexandræ, shown by Mr. Ebbage, gr. to J. S. Bockett, Esq., and which gained a Silver-gilt Flora Medal. Mr. Croucher, gr. to J. P. Peacock, Esq., took a Silver Flora Medal for a pretty group of Odontoglossum vexillarium, and other Orchids, which included some very high coloured Masdevallias. Mr. Henry James also contributed a good mixed group, and took a Silver Banksian Medal. To Messrs. Barr & Sugden a similar award was also made for an extensive group of cut hardy flowers, rich in variety and tastefully grouped; and Mr. Henry Hooper, of Bath, took a medal of the same character for a capital lot of cut blooms of Pansies and Pyrethrums, &c.

Fruit Committee.—H. J. Veitch, Esq., in the chair. Mr. Gilbert, gr. to the Marquis of Exeter, Burghley, sent two new Melons, a green-fleshed variety named Richard Gilbert, raised by Mr. Carmichael, between A. F. Barron and Dickson's Exquisite, almost smooth-skinned, with thick flesh; and Gilbert's Burghley Pet, a heavily-netted variety, but neither proved to be any advance on existing sorts. Mr. Gilbert also sent examples of his Criterion Tomato, a cross between Vick's Criterion and Jackson's Favourite or Stamfordian, and said to be a very abundant bearer. Messrs. James Veitch & Sons showed a fine sample of Stot's Monarch Rhubarb; and from Chiswick came ripe fruits, from the open air, of Noire précoce de Strass and Early Lamaurie Cherries, both small but of fairly good flavour. A handsome dish of British Queen Strawberries came from Mr. Woodbridge, Syon House Gardens; and several other Melons were shown, but none of any merit.

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**Scottish Horticultural Association:** *June 7.*—The monthly meeting of this Society was held in 5, St. Andrew Square, Edinburgh. There was a large attendance of members. The President, Mr. John Downie, in the chair.

Dr. Paterson, Bridge of Allan, gave a short address on the culture of Orchids. He said that a great many people erred in growing these plants in too high a temperature, which he thought was a great fallacy. He strongly approved of the cool treatment of Orchids, and felicitously referred to the hot treatment applied to persons in consumption, which was now believed to be a mistake, and pointed out that the same rules which were understood to guide the animal kingdom were equally applicable to the vegetable world. During an experience of over thirty years in the culture of Orchids, he had only killed one from too cold treatment, the plant being Cattleya Leopoldi. He advised his hearers to give less heat and more air, and he was certain that they would find their labours better rewarded. They were easily cultivated plants, in fact they required much less care than Heaths.

In conclusion, the Doctor stated that he had sought for pleasure in many sources, but he could honestly state to them that in none did he find more delight than in the pleasure he derived from the cultivation of plants, and more particularly of the Orchid family. The Doctor also exhibited on the table a grand plant of the Orchid Odontoglossum vexillarium; it was a wonderful plant, of good culture, having 200 flower-spikes upon it in fine condition. He stated that he had purchased the plant four and a-half years ago for the sum of £3 3s.

A paper on "Present Day Flower Gardening," by Mr. R. P. Brotherston, Tynninghame Gardens, was read by the Secretary. He said that to arrive at a somewhat correct idea of the flower gardening of the present day it will perhaps be of some advantage to cast our minds for a few minutes back into the past, say fifty years' back—that glorious period for the gardener when no propagating in spring and autumn ever disturbed the serenity of his quiet life, when the trimming of a hedge, the building up of a hotbed, the correct nailing of a fruit tree were only relieved by the gentle excitement of carrying torches of burning paper through his hothouses to supplement the heating power of his flues in keeping King Frost at bay. These were the days when a gardener could afford to do things well; when he planted fruit trees to benefit the succeeding generation and established Vines to outlast the vineries that covered them. In these days one of the chief accomplishments of his assistants was the knowledge of the names of the greatest possible number of flowers, the days when he received the knowledge of the means of setting Melons as a mystery, and when he occasionally went to sleep in an out-of-the-way walk until the weeds he had been deputed to search for and destroy had time to grow to a size he could discern with the unassisted eye. No *Magazine*, *Chronicle*, *Cottage Gardener*, or *Scottish Gardener*, had arisen to tempt the gardener out of the easy rut he travelled along. The railway locomotive, the telegraph, gas, and the postage-stamp, were either in their infancy, or their time had not yet come; but during the next quarter of a century the world made way in great strides. One of the greatest changes was the introduction of the "bedding system" into our gardens, and the discarding of many of the old herbaceous plants. The bedding-out of to-day is something quite different to what it was even so late as fifteen years ago; the glaring contrasts and overpowering colours of that time have been done away with to a very great extent. The trimness of that period has been modified by the introduction of plants of graceful habit or beautiful foliage, selected from the subtropical subjects, which were fashionable for a short space. Carpet bedding in its worst aspects is being got rid of, and the gardener has begun to see that the cutting up of a small rectangular or circular piece of ground into a lot of ingenious lines, and planting the whole with a combination of various colours neither constitutes beauty, nor has the slightest approach to it. As with beds filled with flowers, so with those filled with these carpeting plants—simplicity in arrangement and colouring gives the greatest amount of pleasure. In autumn we cannot dispense with strong colours, but it is not a necessity that we should make them glaring in their intensity by placing strong colours in proximity. By using neutral tints and harmonising the strong colours we are obliged to use the most fastidious taste need not be offended. At the present day, when we have a greater number of good perennials to choose from than there was in former days, when to the limited number of flowers which florists had taken in hand, and improved in form, and multiplied in variety, we have so many more species to select from there is no necessity for allowing any of the bedding squad to vulgarise as it were these borders. The great majority of hardy perennials must sink to their own level in the course of time, only the cream being allowed in gardens, while the improved forms of the florist will be more and more appreciated and cultivated. Shrubbery gardening, which is a mixture of flowers amongst shrubs, has taken a start within the last few years, and there was evidence that the whole arrangement of shrubberies was changing for the better.

The Secretary read a paper from a correspondent in Adelaide upon the gradual development of the culture of Orchids in South Australia. The great difficulty was in the importation, as the distance from England was so great, but this drawback was daily growing less as improved forms of Wardian cases for their transit were now being constructed. The climate of South Australia was particularly favourable for the cultivation of Orchidaceous plants, and the writer of the paper expressed a strong hope that more of these fine plants would soon find their way into the colony.

Mr. Isaac Anderson-Henry, of Hay Lodge, Honorary President, exhibited on the table some very interesting plants:—Veronica salicornioides, from high elevations in New Zealand; it is extremely like a dwarf Conifer, and will become a very popular plant when spread about. The New Plant Committee awarded it a certificate. Androsace incisa from Rawalpinde, Punjaub, is a little like a miniature Chinese Primrose; it is just coming into flower, and will be exhibited again at the next meeting. Both plants are entirely new to cultivation, having been introduced by Mr. Henry. He also exhibited Veronica epacridea, Veronica chathamica, and Smillacina (Clintonia) Andrewsiana, Messrs. Downie & Laird exhibited a stand of seedling Gloxinias and seedling fancy Pansies, one of the latter, named Mrs. Doctor Paterson, received a certificate. Messrs. Dicksons & Co. exhibited Phlox frondosa Edina and Phlox frondosa lilacina, and Saxifraga MacNabiana. Mr. Robertson Munro, Abercorn Nursery, also exhibited Saxifraga MacNabiana accompanied with a painting of the plant by Miss Stirling. Mr. M. Dunn, Dalkeith Park Gardens, exhibited flower-spikes in fine condition of Vanda teres, Vanda suavis Veitchii, and Cochliostema Jacobianum. *Alex. Milne, Secretary, June 13.*

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**Edinburgh Botanical:** *June 9.*—The Society met in the class-room at the Royal Botanic Garden, Professor Balfour, and afterwards Professor Dickson, in the chair.

The death of Dr. Ludwig Rabenhorst, of Messen Saxony, Editor of *Hedewigia*, and a foreign and corresponding member, was noted.

The following communications were read:—

I. Notice of the Trip of the Scottish Alpine Club in July, 1880, in the Spittal of Glenshee and District. By Dr. Charles Stuart, of Chirnside. Communicated by W. B. Boyd, Esq., of Fuldonside.—The Club proceeded to their destination by Blairgowrie and the Bridge of Cally, gathering on the way Tofieldia palustris, Carduus heterophyllus, Habenaria viridis, and other plants of a subalpine character. In a corry above the Spittal, Splachnum vasculosum was found growing and fruiting in profusion. Further up the country the Holly Fern was found, associated with occasional specimens of Polypodium alpestre and other forms. The rarer plants were rather scarce, but the common alpines grew in great profusion. Ascending Glen Taitneach and Glen Tulichan, 3400 feet high, the Rubus chamæmorus, or Cloudberry, as well as the Cornus suecica and Sibbaldia alpina, were found carpeting the moors. The party gathered a curious variety of San-stellaris, somewhat in appearance like Montia fontana; Armeria maritima var. alpina, Betula nana, and a pink-flowered variety of Thymus Serpyllum, as well as Thlaspi alpestre. Loch Calletar and Corry Kandor was visited on August 2. The Crowberry and Cloudberry carpeted the heather in many places. No one had ever seen the Empetrum nigrum so covered with fruit as here, and the grouse appeared to relish its fruit much. The party picked by the sides of Loch Calletar, indeed, in the lake itself, beautiful specimens of Lobelia Dortmanni, in fine flower; also Subularia aquatica, and Isoetes echinospora (a new plant for this loch); Sonchus alpinus was again seen, though in an inaccessible habitat, and also Carex rupestris, C. atrata, as well as Salix lanata. The scrambling in the corry was very difficult, from the position of the loose stones washed down by the mountain torrents; the vegetation is not great; common mountain Ferns covered the stones, while Cochlearia groenlandica and Saxifraga oppositifolia grew in the fissures. In the ascent, a nest of a red grouse, with all the eggs abortive, and less than half the usual size, was discovered, and it has since been deposited in the Edinburgh Museum of Science and Art. On the return journey, the botany of Cluny Loch was examined, and beautiful specimens of Naias flexilis obtained; mixed up with it were also Elatine hexandra, Subularia aquatica, Myriophyllum verticillatum, and fine specimens of Utricularia minor.

Dr. William Craig also exhibited specimens obtained on this excursion.

II. Report on the effects of the winter 1880-81 on vegetation in different parts of Scotland; and temperatures on and progress of open-air vegetation at the Royal Botanic Garden from the beginning of March. By Mr. John Sadler, Curator.

During March there were twenty-one frosty nights. The five lowest temperatures registered were on the 1st, 15°; 2d, 20°; 3d, 20°; 22d, 19°; 30th, 18°. There were registered collectively for the month 132° of frost. During April the thermometer was at or below the freezing-point on twelve occasions. The five lowest readings were—1st, 21°; 4th, 22°; 5th, 25°; 6th, 21°; 8th, 25°. There were registered collectively 67° of frost. During May the thermometer never fell to the freezing-point, though the night temperatures of the first fortnight were very low—on the 1st, 38°; 2d, 38°; 3d, 36°; 4th, 38°; 5th, 37°; 8th, 38°; 10th, 33°; 11th, 35°. The month began with rainy weather and north-easterly winds. From the 12th to the end of the month the temperatures were high, and vegetation grew very rapidly. Upwards of 150 species and varieties of plants came into flower during the month on the rock garden, which at present was well worth a visit by all interested in alpine and herbaceous plants. During the first week of the present month the night temperatures were all high, the lowest being on the 3d, when the thermometer stood at 45°, and the highest on the 4th, when it stood at 53°. From the 5th to this date the nights had been cold, the temperatures being all under 40°. On the 7th the thermometer fell to 35°. Notwithstanding the damage done to vegetation in the garden by the last severe and protracted winter, it was seldom that such a large amount of blossom and foliage was to be seen as at present. Mr. Sadler also read extracts from voluminous reports he had received on the effects of last winter on vegetation in different parts of Scotland. Almost every report stated that the winter had been the most severe in the experience of the writer, if not on record. Mr. J. Forrest, Haddo House, Aberdeenshire, reported that from October 18 till March 12 the thermometer, which was 2½ feet from the ground, and protected, was at or below the freezing point every night, with the exception of 24. Mr. William Reid, Cortachy Gardens, Forfarshire, said the lowest temperature registered during the winter was on January 16, when the thermometer stood at 4°. Mr. A. M'Kinnon.

Scone Palace Gardens, wrote that the long-continued frost was very disastrous to vegetation; Laurels were nearly killed to the ground. Peaches, Nectarines, Apricots, Plums, and other fruit trees on the open wall escaped without injury. There was no doubt this was because the young wood was in a thoroughly ripened state. Mr. Malcolm Dunn, Dalkeith Gardens, reported that every day brought fresh effects of the winter before them, as the trees and shrubs burst into growth, or began to die off from the effects of the frost, and till all were in full leaf it could not be told in many cases which would survive and which would succumb. There was no doubt the fine summer and autumn of last year had considerably mitigated the injury done by the severity of last winter. Dr. Charles Stuart, Chirnside, Berwickshire, wrote that it was in the courses of the Blackadder and Whitadder that the great damage to trees and shrubs had taken place in that district, comparatively little harm having been done in more elevated situations. These reports, it was stated, would be printed in the Society's *Transactions*.

Mr. Jenner called attention to the great destruction of Holly leaves during the winter.

Mr. W. B. Boyd stated that in the Kelso district those bearing fruit were killed, whilst those yielding leaves only were perfectly intact.

Mr. Sadler mentioned that he had never seen so many wasps in the garden as during the past fortnight, and suggested that something should be done to keep them down. The Chairman said he had also noticed the unusual number of wasps, and thought this was to be accounted for by the uniform severity of the winter, which kept them wholly within-doors, whereas in an ordinary season many of them were tempted out by mild weather to be destroyed by a sudden change.

III. Professor Dickson exhibited a plant of Primula vulgaris with a green corolla he had obtained from Mr. Maclean, one of his students; the plant was grown in the garden of Miss Redpath at Gilmerton, but its previous history was unknown.

IV. Mr. Taylor exhibited dried specimens of plants recently sent to the herbarium by Mr. John Buchanan, Shire Highlands, Central Africa, and at the same time some living plants grown from seeds and bulbs also sent by him to the garden. The dried specimens, of which there were 150, had been provisionally named by Professor Oliver, who wrote in most commendatory terms of the pains taken by Mr. Buchanan, specially in collecting fruit as well as flowers. Figures of several of the new genera and species will soon appear under the direction of the Kew authorities. One of the dozen plants on the table was raised from seed sent with the specimens, the Æschynomene Schimperi, H., a beautiful papilionaceous genus, several varieties of which Mr. Buchanan sent home had been hitherto noted as peculiar to Nileland or Southern Africa. Again, the Oxalis sensitiva, called by the natives "His Father has Died,"! had been found in this mountain district of the tropics. So, too, have a Composite, Dioscorea Schimperiana, a Yam, and Lapeyrousia abyssinica, both eaten in the Shire, only in famine times, but known generally over Africa. A species of Thesium, used as a native cure for sore eyes, must have been brought here by emigrant tribes, as the genus itself finds no place in the *Flora of Tropical Africa*. The like reasoning covers the appearance on the table of Datura alba and Cucumis Melo, though Rhynchosia var. R. caribæa, DC., also exhibited, is known at the Cape as well as in tropical America; but an Oxyanthus in the parcel, used by the natives to sharpen the scent of hunting-dogs, seems confined to the specific habitat, as is also Cadalvena spectabilis, a lovely Iris with yellow flowers, whose leaves, usually four, spread square on the ground. The Sanseviera longiflora is sent as a fibre producer. Several new species of Indigoferas were found in the parcel, as well as a new species of Garcinia, from which the natives take a red dye; and Khaya senegalensis (?), Jus., out of whose long straight trunk the natives fashion canoes; the Goniona, peculiar to tropical Africa, yielding a white juice, allied to indiarubber; likewise Erythroplæum guineense, Don, used here, as throughout Africa, for the purposes of the ordeal; and two new Ferns.

Professor Dickson commended the judgment and care shown by Mr. Buchanan in sending this new parcel of specimens. Altogether he had been a most satisfactory botanical correspondent.

V. Microscopic Demonstration of Embryonic Specimens of Salvinia natans. By Mr. R. Kidston. A series of preparations of the protballium of Salvinia natans were exhibited under the microscope. The stomata of this plant have been described by Schleiden as consisting of small slits without guard cells. On the upper surface of the scutellum, however, the stomata are of considerable size—about five times as large as those of the floating leaves, and distinctly provided with guard cells. There seems little doubt but that guard cells are also present on the leaf "slit like" stomata; but they are very small, and require very careful focussing to see them.

VI. Miscellaneous communications:—

1. Dr. William Craig intimated that he had obtained seeds of true Jaborandi from Brazil, through the courtesy of Dr. Paterson, of Bon Vista, Grange, and he had given these to the garden.

2. Professor Dickson called attention to a plant of a new species of Allium from Cabul, on the table, the seeds of which had been sent by Mrs. Colonel Maclean.

3. The Rev. H. Evans, of Scremerston Vicarage, near Berwick-on-Tweed, sent specimens for the garden of Cypripedium Calceolus and Aspidium rigidum, from Craven.

4. Mr. Taylor intimated that members might now have an opportunity of seeing in flower at Rait Lodge the Aciphylla Colensoi, or Wild Spaniard, one of the New Zealand introductions of their late President.

On the table were placed a collection of alpine and other plants in flower, among which were the following:—Primula capitata, having a spiral fasciated flower-stalk; Daisies, abnormal flowering vars.; Aloe socotrina and a crassulaceous plant, brought from the Island of Socotra by the President; Lewisia rediviva, Vella spinosa, Ramondia pyrenaica, Myosotis alpestris, Dianthus alpinus, fine seedling forms; Saxifraga MacNabiana, and other seedlings of Saxifraga pyramidalis; Allium, species from Cabul; Sarmienta repens, Lilium kamtschaticum, Veronica saxatilis, purple variety; Silene quadridentata, Ixiolirion alatavicum, Erinus alpinus, Thalictrum tuberosum, Saxifraga Caryana, Silene Elizabethæ, &c.

## Law Notes.

High Court of Justice: Chancery Division (*before Mr. Justice Fry*).—The Commissioners for the Exhibition of 1851 *v.* The Royal Horticultural Society (see pp. 737, 769).—The hearing of this case was continued on Tuesday and Wednesday last.

Mr. De Castro addressed the Court at some considerable length in support of the case of the debenture-holders. He contended that the right of re-entry was only exercisable subject to the charge of the debenture-holders. He also supported the argument of Mr. Cookson that, as regarded the debenture-holders, a partnership existed between the Commissioners and the Society. The agreement of July, 1860, was an ingenious attempt to do two impossible things—to create the relation of landlord and tenant without a tenure, and to give each party the benefits of a partnership without incurring its liabilities, and any right of re-entry which the Commissioners might have was as second mortgagees.

Mr. Justice Fry said, the only point upon which he really wished to hear the plaintiffs in reply was, as to whether the right of re-entry had arisen, having regard to the fact that the committee for regulating the sums to be allowed for expenses, &c., prior to payment of rent, had not sat in any of the years on which the claim was based.

Mr. North submitted that the certificate of the Expenses Committee was not a *sine quâ non* in the right of re-entry. Even if the amount which would have been payable for rent had not been ascertained, it was proved that the Society had not set apart any sum for such payment, but had expended the whole of their income upon the gardens, and in paying the interest on the debentures, which was equivalent to spending other people's money, and was a dishonest act. With reference to the debenture-holders, he argued that they had no charge upon the property, but that all they were entitled to was three-fifths of one moiety of the surplus receipts provided for by the agreement. They had no separate rights as against the Commissioners, and they must stand or fall with the Society.

Mr. Justice Fry, in delivering judgment, said that although several agreements had been entered into between the parties the present action turned upon the instrument of July, 1860. The plaintiffs, the Commissioners of 1851, were the owners of considerable property, and it was part of their duty to promote the knowledge of certain sciences. In July, 1860, they agreed to lease to the defendants, the Royal Horticultural Society, for a term of thirty-one years, a portion of their land at Kensington for the construction of horticultural gardens. The Commissioners undertook to expend a sum of £50,000 upon improvements in the property, and the Society were to lay out a like amount, the latter raising £40,000 by debentures, the balance of £10,000 having been already received by them for subscriptions. His Lordship then referred to the various provisions of the agreement, especially with reference to the appointment of an Expenses Committee and the mode of ascertaining what amount was to be paid as rent.

The plaintiffs claimed re-possession of the property on the ground that during the five years, 1873—78, the Society had failed to pay the rent agreed upon, and the evidence clearly showed that they had so failed, they having, in fact, made no payment in respect of rent during any of those years. Various arguments had been set up by the defendants in answer to that claim, but most of them had no weight at all with his Lordship. It had been said that the plaintiffs' pleadings were defective, inasmuch as the statement of claim did not state the exact day on which the forfeiture took place, and some old case had been cited in support of the contention; but the Common Law Procedure Act dispensed with that objection years ago. The pleadings in the present case were quite sufficient, and the defendants should have had them amended if they felt embarrassed by them. It had also been said that a demand for rent was necessary; but the present action was to enforce a right of re-entry, not for non-payment of rent, but because a certain sum had failed to equal a given amount it was a failure of equation. With reference to the contention of the debenture-holders, that a partnership subsisted between the Commissioners and the Society, that would not prevent one partner from exercising his right of re-entry against the other. Assuming a partnership to have existed, it was entered into upon the faith of the agreement of July, 1860, and the terms of that agreement would have to be enforced notwithstanding the partnership. But there was one point to be considered which was a most important one. The agreement provided that a certain sum should be payable as rent, subject to certain prior charges to be allowed for year to year by an Expenses Committee to be appointed by the parties. There had been differences of opinion between the members of that committee, and no meeting had been held for many years. Consequently the question whether during the five years relied upon there had been a failure in the payment of rent could not be decided, inasmuch as it had not been ascertained that anything was so payable during that period. The Commissioners had had full power to require a meeting of the committee, and they had not exercised it. It was also plain that the debenture-holders had subscribed their money upon the faith of the terms of the agreement, and they were entitled to see that those terms were complied with. It had been urged on behalf of the plaintiffs that the accounts of the Society which had been produced acted as an estoppel to the defendants' plea, but his Lordship differed from that view. He was convinced that the allowance of the committee was absolutely necessary in order to ascertain the amount of rent due, which was dependent upon the allowance for expenses under the agreement, and as no certificate of the committee was before the Court, it was not shown that any rent was due for the five years in question. His Lordship therefore held that the forfeiture had not arisen, and that the claim of the plaintiffs was not sustainable.

The action was dismissed, with costs.

## The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
For the Week ending Wednesday, June 15, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Wind: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| June | In | In. | ° | ° | ° | ° | ° | ° | ° | | In |
| 9 | 29.93 | +0.13 | 56.4 | 39.7 | 16.7 | 47.0 | −10.9 | 37.0 | 69 | N. | 0.00 |
| 10 | 29.87 | +0.08 | 60.0 | 43.0 | 17.0 | 50.5 | − 7.6 | 38.8 | 65 | N. : W. | 0.00 |
| 11 | 29.84 | +0.05 | 61.6 | 46.0 | 15.6 | 53.5 | − 4.8 | 44.9 | 72 | N. : S.E. | 0.00 |
| 12 | 29.86 | +0.07 | 68.5 | 53.0 | 15.5 | 59.3 | + 0.8 | 48.0 | 68 | W. | 0.00 |
| 13 | 29.89 | +0.10 | 70.0 | 53.0 | 17.0 | 58.4 | − 0.3 | 48.4 | 69 | W. : N.W. | 0.00 |
| 14 | 29.85 | +0.07 | 68.0 | 51.2 | 16.8 | 57.8 | − 1.1 | 49.7 | 73 | E. : S.E. | 0.00 |
| 15 | 29.78 | 0.00 | 72.6 | 50.0 | 22.6 | 59.2 | + 0.2 | 51.3 | 75 | S. : SW. : N. | 0.00 |
| Mean | 29.86 | +0.07 | 65.3 | 48.0 | 17.3 | 55.1 | − 3.4 | 45.6 | 70 | N. : W. | 0.00 |

June 9.—Dark, heavy clouds; blue sky in patches. Bitterly cold day and night.
— 10.—A fine day, but cold, and sky cloudy. Fine, cloudy night.
— 11.—A fine, still day; sun shining brightly occasionally. Fine, still night.
— 12.—A fine day, and warm in comparison with recent cold days. A fine, warm night.
— 13.—A fine day but dull; fine, quiet night.
— 14.—A fine day; sun shining brightly. Dark, cloudy night. A few drops of rain at midnight.
— 15.—A fine day; frequently dull. Fine night, with thin clouds.

London: *Atmospheric Pressure.*—During the week ending Saturday, June 11, the readings of the barometer at the level of the sea decreased from 29.93 inches at the beginning of the week to 29.42 inches by 3 P.M. on the 6th; increased to 30.25 inches by the morning of the 10th; decreased to 30 inches by the morning of the 11th; and was 30.06 inches at the end of the week. The mean reading for the week at the level of the sea was 29.84 inches, being 0.31 inch lower than that of the preceding week, and 0.14 inch below the average of the week.

*Temperature.*—The highest temperatures in the week were 62° on the 5th, and 61°.6 on the 11th. The lowest of the high day temperatures were 52°.6 on the 7th, and 56°.4 on the 9th. The mean of the seven high temperatures was 59°.1. The lowest temperature in the week was 39°.7, occurring early in the morning of the 9th day (and this reading was 41°.9 lower than the highest temperature on the 4th); the next in order was 43°, taking place early in the morning of the 10th. The highest of the low temperatures was 54° on the 5th. The mean of the seven readings was 44°.9.

The mean temperatures were, on June 5, 55°.8; on the 6th, 49°.7; on the 7th was 46°.5 (being more than 20° of lower value than that of the 4th); on the 8th was 49°; on the 9th was 47°; on the 10th was 50°.5; and on the 11th was 53°.5, being every day below its average, by 1°.5, 7°.8, 11°.1, 8°.7, 10.9; 7°.6, and 4°.8 respectively.

The mean temperature of the week was 50°.3, being 11°.9 lower than that of the preceding week, and 7°.5 below the average of the same week for sixty years.

The highest reading of a thermometer with blackened bulb placed on grass in the full rays of the sun was 136° on the 8th and 11th; the mean of the seven readings was 111°.

The lowest reading of a thermometer with its bulb resting on short grass was 37°, and the mean for the week was 43°.

*Rain* fell on June 5 to the depth of 0.42 inch; on June 6 to 0.57 inch; and on June 7 to 0.20 inch, and in the week to 1.19 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, June 11, the highest temperatures were 80°.4 at Nottingham; 75°.7 at Wolverhampton; and 73° at Sunderland; at Bristol the highest in the week was 59.°5; at Liverpool, 59°.8; and at Sheffield, 60°. The mean from all stations was 66°.8. The lowest temperatures in the week were—34°.8 at Wolverhampton; 35°.7 at Bristol; and 36° at Nottingham. The mean from all stations was 38°.2; and these low readings took place on the morning of the 9th day generally.

The greatest ranges of temperature during the week were 44°.4 at Nottingham, and 40°.9 at Wolverhampton. The smallest ranges were 18°.3 at Liverpool, and 22° at Sheffield. The mean from all stations was 28°.6.

The mean of the seven high day temperatures was 61°.9 at Nottingham, and 61°.5 at Sunderland; and 54°.7 only at Liverpool. The mean from all stations was 58°.8.

The mean of the seven low night temperatures was lowest at Wolverhampton, 40°.9, and Hull, 41°.4; and highest at Truro, 47°.1, and Plymouth, 46°.7. The mean from all stations was 43°.9.

The mean daily range was greatest at Nottingham, 18°.8; and least at Liverpool, 9°.9. The general mean was 14°.9.

The mean temperature of the week was highest at Plymouth, 51°.9; and lowest at Wolverhampton, 47°.4. The general mean was 49°.6.

*Rain.*—Some fell on an average of four days at all stations; on the 5th the fall exceeded 1 inch at Brighton, Bristol, and Cambridge; on the 6th the fall was general, exceeding 0.5 inch at many stations. The smallest fall in the week was 0.13 inch, at Sunderland, and 0.14 inch at Hull. The heaviest falls were 1.96 inch at Cambridge and 1.85 inch at Brighton. The mean from all stations was 0.84 inch.

SCOTLAND: *Temperature.*—During the week ending Saturday, June 11, the highest temperatures were 66° at Dundee and 64° at Glasgow. At Paisley the highest in the week was 59°, and the general mean was 62°.5, being 15°.9 lower than in the preceding week.

The lowest temperature was 34° at Dundee and Paisley, and the mean of all 35°.6, being 9°.1 lower than in the preceding week.

The mean temperature was highest at Leith, 48°.8, and Edinburgh, 48°.6. The mean was lowest at Paisley, 46°.3, and Aberdeen, 46°.6. The general mean was 47°.8, being 12°.3 lower than in the preceding week.

*Rain.*—The largest falls were, Paisley, 0.83 inch, and Dundee, 0.70 inch. The smallest falls were 0.26 inch at Aberdeen and 0.30 inch at Greenock. The general mean was 0°.35 inch.

JAMES GLAISHER, F.R.S.

## Obituary.

WE regret to announce the death of Mr. J. LANE, one of the best practical gardeners which Ireland could boast of for the past half-century. Many of our readers will remember Mr. Lane in connection with the Royal Horticultural Society of Ireland, at the exhibitions of which he was a most successful competitor during a period of close on thirty years. In the cultivation of fruit and vegetables Mr. Lane had few equals, and in the other departments of gardening, though perhaps not attaining the same amount of fame, yet he was equally successful; for whatever he took in hand he did thoroughly and well. Mr. Lane was for many years gardener to Mr. Barlow, Sybil Hill, Raheny. Some seven or eight years ago he was appointed gardener at Kilcroney House—Mr. D'Arcy's beautiful residence near Bray—at which place he expired on Wednesday, the 8th inst., at an advanced age. *Gardeners' Record.*

## Enquiries.

*He that questioneth much shall learn much.*—BACON.

COAL *v.* COKE.—What do you consider the comparative advantages in heating boilers, say for 1500 feet of piping, with good hard coal, free from slack, or coke? *Ignis fatuus.*

TACSONIA EXONIENSIS.—I find this difficult to flower. Will some correspondent kindly give me a hint as to its management? *M.*

## Answers to Correspondents.

CALCEOLARIAS: *R. Walker.* A strain of good average merit, but not the best.

DISEASED POPPY: *J. B.* In the flower sent the stamens are replaced by carpels. It is a not uncommon monstrosity, and has been often figured in the *Gardeners' Chronicle.*

DUPLEX CUCUMBERS: *J. Walton.* By no means a rare occurrence. We have seen many specimens of twin fruits even more perfect than what you send, and several have been exhibited this year, the last one at Kensington a few weeks ago.

INSECTS: *J. B.* The Plague of Caterpillars. The Oak trees are entirely defoliated in some places by the larvæ of the small green Oak Tortrix (T. viridana), now changed to chrysalids. We know no remedy beyond that of sharply beating the branches with a pole over sheets laid on the ground beneath to catch the falling caterpillars, pupæ, or moths, which fall in great numbers. The trees will push out a fresh but weaker foliage. *I. O. W.*

MELON DISEASE: *A. G.* It appears to be the old and now too familiar disease, for which there is no remedy yet discovered but stamping out. Clear out the pits or houses entirely, and have them thoroughly cleansed and purified, and start again with entirely fresh healthy soil.

NAMES OF PLANTS: *T. C.* 1, Cotoneaster frigida; 2, Calycanthus floridus (the Carolinian Allspice; 3, Euonymus japonicus variegatus, not often seen in flower.—*W. Abrey.* Asclepias curassavica.—*H. K.* Leucothoe axillaris. — *P. B.* Albizzia lophantha. — *T. Smith.* Olearia (Eurybia) ramulosa, and Bœckia astarteoides. — *Diss.* Trifolium pratense var., with white flowers.—*W. Marshall.* Bunias Erucago.—*E. B.* Avena elatior. — *R. S. M.* 1, Metrosideros lanceolata; 2, Vitis heterophylla variegata; 3, Diplacus glutinosus; 4, Calycanthus floridus; 5, Passiflora hybrida floribunda; 6, Selaginella uncinata.—*A. J. Hinds.* 1, Kœleria cristata; 2, Phleum pratense minor; 3, Avena elatior; 4, Poa nemoralis; 5, Bromus mollis; 6 and 7, Bromus secalinus.—*G. Randall.* Limnanthes Douglasii.—*W. Milne.* 1, Staphylea pinnata; 2, Viburnum Lantana; 3 and 4, Begonias, decayed past recognition; 5, Valeriana dioica; 6, Meum athamanticum. — *Connon & Reid.* Quite dried up, but probably Clematis Lucie Lemoine.—*J. H. B.* Apparently a hybrid Amaryllis between A. vittata and A. formosissima.

PEAT CHARCOAL. — In reference to the enquiry about peat charcoal in a recent number, p. 770, a copy of a letter was forwarded to me some time ago, from the Rev. Ben. Street, The Vicarage, Barnetby-le-Wold, Ulceby, Lincolnshire, containing a good deal of information as to the benefit he derived from the use of it, and the communication between this place and Doncaster is so direct by rail probably the direction could be got from Mr. Street, if your correspondent applied. *O.*

SPECIMENS BY POST: *C. S.* Pray do not wrap them in cotton wool. Gutta-percha membrane, or the stearine paper, is far better, and much less troublesome to the recipient. Damp moss is, besides, infinitely preferable to the cotton wool.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

COMMUNICATIONS RECEIVED:—F. Sander & Co. — H. Correvon.—A. G. — H. A. B.—T. H., Mentone.— H. B.—J. B.— H. J. E.—R. McL. & Co.—E. S. Dodwell.—G. Maw, with thanks. —C. S. S.—T. F. L.—J. M.—F. & F.—E. R. C.— Hugh Low & Co.—R. D.—G. N.—G. Randall.—C. M. O.— F. & P.—J. G. B.—J. Day, jun.—G. R. C.—G. D.—M. H.

## Markets.

*COVENT GARDEN, June 16.*

Business still quiet, and prices generally lower. The first consignments of outdoor Strawberries to hand from the South-western district, and reaching us in good condition. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apricots, per box | 1 6– 2 6 | Lemons, per 100 | 4 0– 6 0 |
| Cherries, per box | 1 6– 2 6 | Melons, each | 3 6– 5 0 |
| Figs, per dozen | 6 0– 9 0 | Peaches, per dozen | 6 0–20 0 |
| Gooseberries, ½-busb. | 2 6– 3 6 | Pine-apples, Eng., lb. | 2 0– 4 0 |
| Grapes, per lb. | 2 0– 6 0 | Strawberries, per lb. | 1 0– 4 0 |

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Herbs, per bunch | 0 2– 0 4 |
| Asparagus, English, per bundle | 6 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Beans, French, p. lb. | 1 0– .. | — Engl. Cos, score | 1 6– .. |
| — Broad, per lb. | 1 0– .. | Mint, green, bunch | 0 4– 0 6 |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 7 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 0 9– 1 0 | Parsley, per bunch | 0 4– .. |
| Cauliflowers, English, each | 0 6– 0 9 | Radishes, per bun. | 0 2– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Rhubarb, per bund. | 0 4– 0 6 |
| Cucumbers, each | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 2 0– 2 6 |
| Garlic, per lb. | 1 0– .. | Tomatos, per lb. | 0 9– 1 0 |
| | | Vegt. Marrows, each | 0 6– 0 8 |

POTATOS, NEW:—Kidney, 12s. to 14s.; Round, 10s. to 12s. Malta, 8s. to 10s. per cwt.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Arum Lilies, per doz. | 9 0–18 0 | Fuchsias, per dozen | 6 0–12 0 |
| Begonias, per doz. | 6 0–12 0 | Ivy Geranium, doz. | 4 0– 6 0 |
| Calceolaria, per doz. | 6 0–12 0 | Lilium longifl., doz. | 24 0–42 0 |
| Creeping Jenny, doz. | 3 0– 4 0 | Lobelia, per dozen | 4 0– 6 0 |
| Cyperus, per dozen | 6 0–12 0 | Marguerite, white, per dozen | 18 0–24 0 |
| Dracæna terminalis | 30 0–60 0 | — Yellow, per doz. | 12 0–30 0 |
| — viridis, per doz. | 12 0–24 0 | Mignonette, per doz. | 5 0– 8 0 |
| Erica, in variety, doz. | 18 0–30 0 | Myrtles, per doz. | 6 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Palms in var., each | 2 6–21 0 |
| Evergreens, in var., per dozen | 6 0–24 0 | Pelargoniums, doz. | 9 0–30 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | — tricolor, per doz. | 3 0–12 0 |
| Ficus elastica, each | 1 6– 7 6 | — scarlet, per doz. | 4 0– 9 0 |
| Foliage Plants, various, each | 2 0–10 6 | Roses, various, doz. | 12 0–30 0 |
| | | Spiræa japonica, doz. | 9 0–18 0 |
| | | Stocks, per dozen | 4 0– 6 0 |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Marguerites, 12 bun. | 0 4– 0 9 |
| Antirrhinum, 12 bun. | 6 0– 9 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Pelargoniums, 12 sprays | 0 9– 1 0 |
| Azalea, 12 sprays | 0 6– 1 0 | — zonal, 12 sprays | 0 4– 0 9 |
| Bouvardias, per bun. | 0 9– 1 6 | Pæony, 12 bunches | 9 0–24 0 |
| Calceolaria, 12 bun. | 9 0–12 0 | Pinks, white, 12 bun. | 3 0– 6 0 |
| Carnations, 12 blms. | 1 0– 2 0 | — coloured, 12 bun. | 4 0– 6 0 |
| Cornflower, 12 bun. | 3 0– 4 0 | Primula, double, per bunch | 0 6– 1 0 |
| Daisies, 12 bunches | 2 0– 6 0 | Ranunculus, 12 bun. | 3 0– 6 0 |
| Eucharis, per doz. | 4 0– 6 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Forget-me-not, 12 bunches | 3 0– 6 0 | — (outdoor), 12 bun. | 4 0– 9 0 |
| Gardenias, 12 blms. | 1 6– 6 0 | — (Moss), 12 bun. | 12 0–15 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | — (de Meaux), 12 bunches | 4 0– 6 0 |
| Hemerocallis (Day Lily), 12 blooms | 1 0– 1 6 | Spiræa, 12 bunches | 8 0–12 0 |
| Iris, 12 bunches | 6 0–18 0 | Stephanotis, 12 spr. | 3 0– 4 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| — red, 12 blooms | 1 0– 3 0 | Tuberoses, per dozen | 2 0– 3 0 |
| Lilium longiflorum, 12 blooms | 4 0– 6 0 | Woodroffe, 12 bun. | 3 0– 6 0 |

## SEEDS.

LONDON: *June* 15.—There were very few buyers on the seed market to-day, and scarcely any business doing. Choice parcels of red Clover seed suitable for holding over on speculation are with difficulty met with. For spring Tares somewhat firmer rates prevail; the stocks recently held in London have been appreciably diminished by the export movement to the Continent. There is a moderate inquiry for sowing Mustard and Rape seed at late prices. Hemp seed continues remarkably cheap. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

## CORN.

At Mark Lane on Monday English Wheat, which was scarce, ruled fully as dear as on that day fortnight. Foreign red Wheats were more firmly held, and in some cases 6*d.* more was obtained, but white descriptions were no dearer. Egyptian Beans were 1*s.* dearer, and Peas 1*s.* cheaper on the fortnight. Maize and Oats met a quiet sale.—On Wednesday Wheat was held for fully Monday's rates. Flour was a dull sale, but not pressed on lower terms. Barley receipts being light rates were firm. Beans and Peas were without alteration, and the market quiet. Maize rather steadier. With large shipments of Oats from Russia purchases were made with reserve, and the tendency was adverse. Averages prices of corn for the week ending June 11:—Wheat, 44*s.* 8*d.*; Barley, 31*s.* 1*d.*; Oats, 23*s.* 2*d.* For the corresponding period last year:—Wheat, 44*s.* 11*d.*; Barley, 32*s.*; Oats, 26*s.* 5*d.*

## CATTLE.

At Copenhagen Fields on Monday, except for the best qualities of beasts, prices ruled easier, though hardly enough to affect quotations. Sheep and lambs were numerous, and about 4*d.* per stone lower than on the previous Thursday for the former; lambs declined more heavily. Quotations:—Beasts, 4*s.* to 4*s.* 8*d.*, and 4*s.* 10*d.* to 5*s.*; calves, 4*s.* 8*d.* to 6*s.* 4*d.*; sheep, 5*s.* 2*d.* to 5*s.* 6*d.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; lambs, 7*s.* 8*d.* to 8*s.* 4*d.*; pigs, 4*s.* 2*d.* to 5*s.* 2*d.*—Thursday's cattle trade was very quiet, and supplies were ample for requirements. Beasts were drooping in price, and sheep and lambs were quoted 2*d.* to 4*d.* per 8 lb. lower than on Monday. Calves very flat.

## HAY.

Tuesday's Whitechapel Market report states that supplies were shorter, with a good demand at the following quotations:—Prime meadow Clover, 100*s.* to 126*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 90*s.* to 116*s.*; inferior, 30*s.* to 80*s.*; and straw, 30*s.* to 46*s.* per load.—On Thursday there was a fair supply of fodder on offer. With a good trade, prices were as follows:—Prime Clover, 100*s.* to 126*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 116*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 46*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 112*s.* to 120*s.*; inferior, 70*s.* to 90*s.*; superior Clover, 120*s.* to 130*s.*; inferior, 90*s.* to 100*s.*; and straw, 40*s.* to 48*s.* per load.

## POTATOS.

From the Borough and Spitalfields Markets reports we learn that the season is nearly over for old Potatos, and prices irregular. New are in moderate supply, and steady demand. Old Scotch Regents, 80*s.*; Champions, 60*s.* to 80*s.* per ton. German reds, 3*s.* 6*d.* to 4*s.*; and Belgian kidneys, 3*s.* 6*d.* per bag. New Jersey kidneys, 11*s.* to 12*s.*; round, 9*s.* to 10*s.*; Cherbourg 10*s.* to 11*s.* per cwt.—The imports into London last week were as follows:—1229 bags Stettin, 269 bags Ghent, 5262 bags Bordeaux, 155 packages St. Nazaire, 200 packages Lisbon, and 686 cases Malta.

## GARDEN REQUISITES.

**COCOA-NUT FIBRE REFUSE,**
3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
**H. G. SMYTH,**
17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

PEAT.—Best in England, Brown Fibrous, 7 inches thick. Sack, 5*s.*; Cask, 10*s.*; Truck, £5 10*s.*
W. SHORT, Landscape Gardener, &c., Redhill, Surrey.

**Fibrous Peat for Orchids, &c.**

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.
Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per bag.
WALKER AND CO., Farnborough Station, Hants.

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SUPPLY EVERY GARDEN REQUISITE
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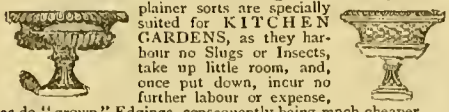

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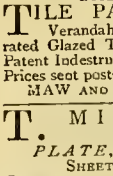

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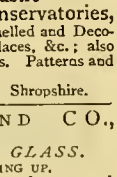

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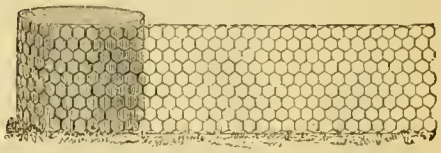

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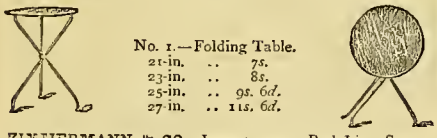

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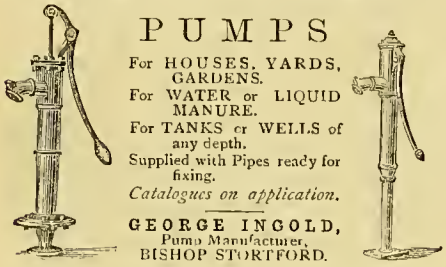

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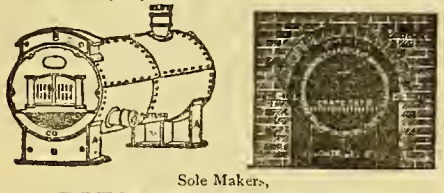

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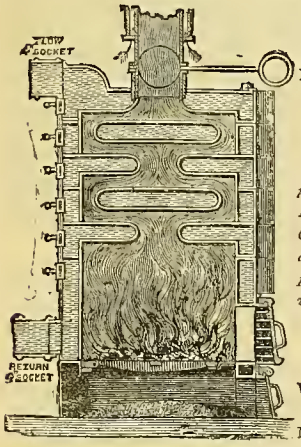


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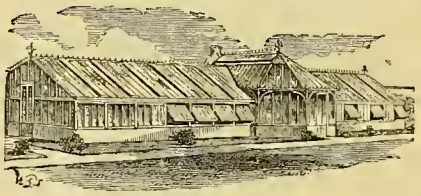

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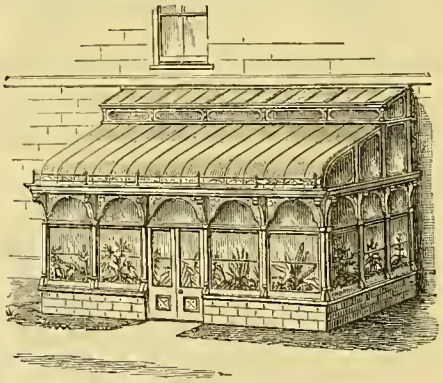

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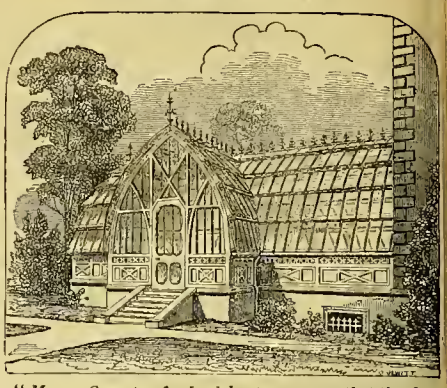

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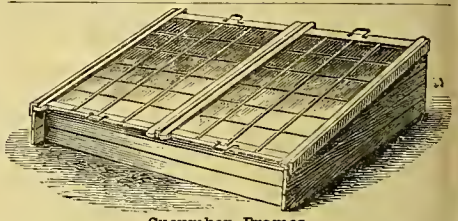

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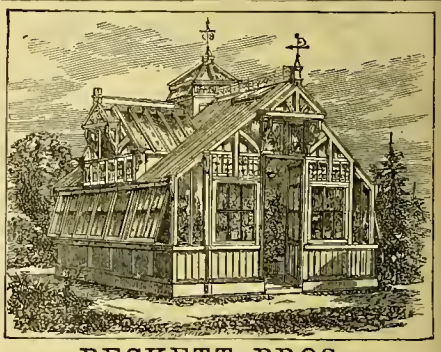

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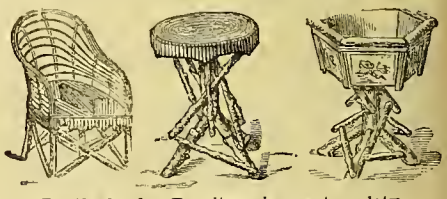

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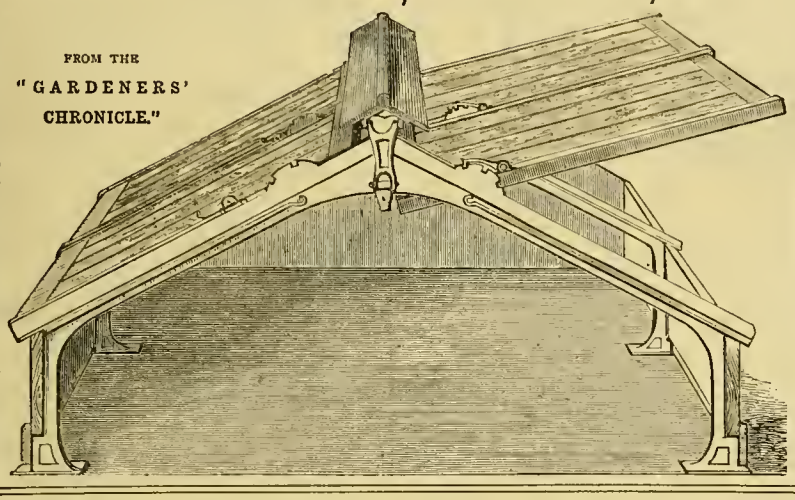

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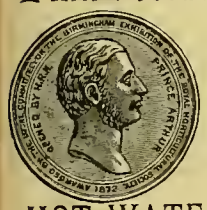

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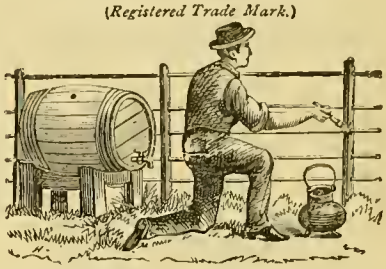

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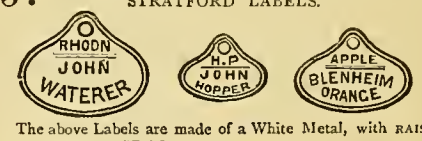


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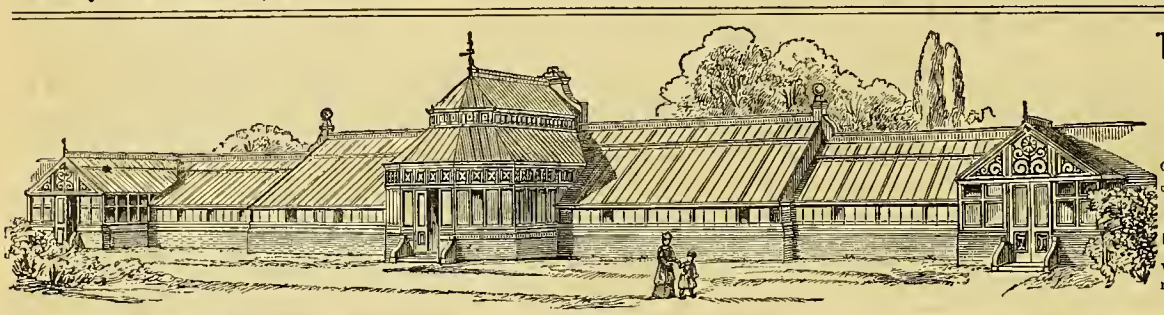

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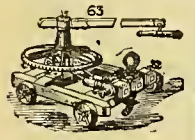


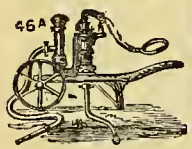


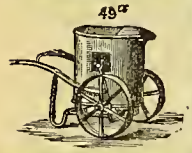


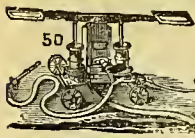


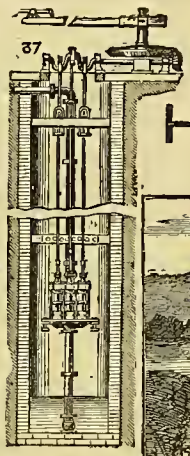


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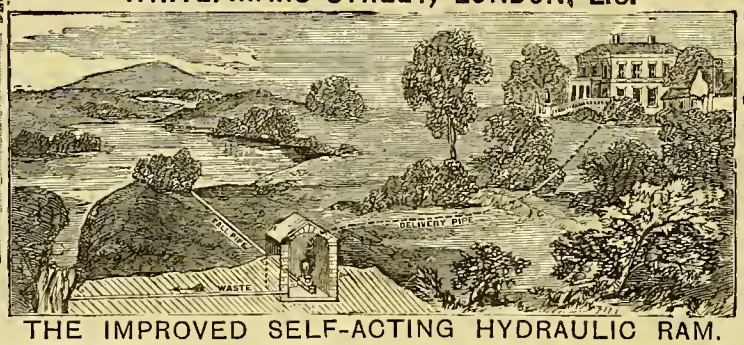

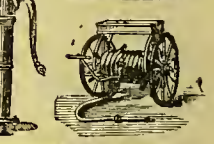

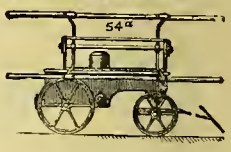


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It is sold in five sizes, with or without trays.

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| Ditto, without Roller and Tray | 24s. |
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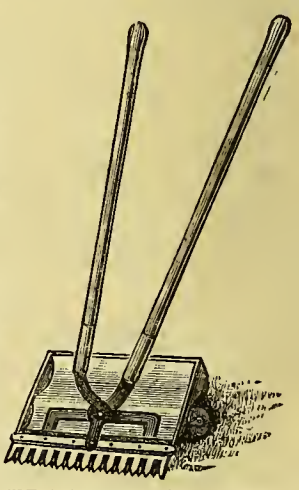

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Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

# GARDENERS' CHRONICLE.

Established 1841.

No. 391.—Vol. XV. { New Series. } SATURDAY, JUNE 25, 1881. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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**Tenth Census of the United States.**
FORESTRY :—Report on the Forest Wealth of the United States, and Catalogue of the Forest Trees of North America.

NOTICE.

**THE GARDENERS' CHRONICLE**
for SATURDAY NEXT, JULY 2, will contain a
PAGE PLATE OF PORTRAITS
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Prof. G. ENGELMANN, of St. Louis.
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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
GREAT ROSE SHOW and EXHIBITION by the Pelargonium Society, TUESDAY, June 28, and WEDNESDAY, June 29.
Band of the Royal Horse Guards each day.
Admission :—TUESDAY, June 28, from 1 o'Clock, 2s. 6d. ; WEDNESDAY, from 10 o'Clock, 1s. ; or, by Tickets purchased before the day by Fellows, for the first day, 2s. Tickets at the usual Agents, and at the Office and Entrances to the Garden.
N.B.—The SPECIAL PRIZES offered by the General Horticultural Company (John Wills), Limited, for GROUPS of PLANTS ; Messrs. Laing & Co., for BEGONIAS ; Messrs. Webber & Co. and Rivers & Son for FRUIT ; and Messrs. Carter & Co., Sutton & Sons, and Webb & Sons for VEGETABLES, will be competed for at this Show.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
EVENING FÊTE and ROSE and PELARGONIUM SOCIETY'S SHOW, June 28, from 8 to 12 o'Clock P.M.
Bands of the 2d Life Guards and Royal Horse Guards.
Tickets, to be purchased only by Fellows or their Orders, at the Office, at 7s. 6d. each ; or on the Evening of the Fête holders of Fellows' Orders will be admitted on payment at the gates of 10s. each person.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral, at 11 A.M. ; Scientific at 1 P.M. ; General Meeting for the Election of Fellows, &c., at 3 P.M., on TUESDAY next, June 28.
Band of the Royal Horse Guards from 3 o'Clock P.M. Admission, 2s. 6d.

ROYAL HORTICULTURAL SOCIETY'S SHOW at South Kensington, JUNE 28 and 29.
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ROSE FAIR and PRIZE for the BIGGEST GOOSEBERRY, July 16.
GRAND FLORAL DECORATIONS and LILY SHOW, August 6.
J. FORSYTH JOHNSON, Horticultural Director.

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AMPELOPSIS VEITCHII. — Strong and well established plants in pots, 2 to 2½ feet high, with several branches. A large supply.
ANTHONY WATERER, Knap Hill, Woking, Surrey.

GERANIUMS.—The best of the New, all that took Prizes or Certificates.—Denny's Romeo, Dudu, &c., eight varieties, post-free, for 6s. ; Catlin's (Carter & Co.), five varieties, for 4s. ; Cannell's, ten varieties, for 7s. 6d. ; Pearson's, ten varieties, for 7s. 6d. ; Cuttings half-price. All the best Doubles in Cultivation. Also PELARGONIUMS Regal and others. See CATALOGUE.
RICHARD PANNETT, Nurseryman, Chailey, Sussex.

**Hardy Ferns.**
HUSSEY and SON offer a Collection of twenty choice varieties, including CYSTOPTERIS MONTANA, ONOCLEA SENSIBILIS, STRUTHIOPTERIS GERMANICA, and other rare kinds, for 15s.—LIST of the sorts on application.
Mile End Nursery, Norwich.

**Vines for Summer Planting.**
THOMAS METHVEN and SONS beg to intimate that their Vines are now in splendid order for summer planting. Their stock is a very extensive one, and well worthy the attention of intending purchasers.
Leith Walk and Warriston Nurseries, Edinburgh.

FLORAL COMMISSION AGENCY. —WANTED, CUT MARÉCHAL NIEL ROSES, and EUCHARIS.
W. CALE, Floral Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

**Cut Flowers.**
W. F. BOFF, 203, Upper Street, Islington, London, N., is a BUYER of all kinds of HOT-HOUSE and OUTDOOR FLOWERS. Cash by return of post if desired. Where money is objected to ORCHIDS, &c., MAY BE HAD in EXCHANGE.

WANTED, LATANIAS and other PALMS and FOLIAGE PLANTS. Good for furnishing.
E. COOLING, Mile Ash Nurseries, Derby.

WANTED, CONSIGNMENTS of PEACHES and other FRUITS, CHOICE CUT FLOWERS, CUCUMBERS, TOMATOS, &c.
WISE and RIDES, Fruit and Flower Salesmen, Covent Garden, W.C.

SUTTONS' CALCEOLARIA. THE BEST
"Really grand in size, colour, and variety"
Rev. T. J. W.
Price 1s. 6d., 2s. 6d., and 5s. per packet, post-free.

SUTTONS' CINERARIA. THE BEST.
"The best I have seen, both for variety of colour and size of flower."—J. R.
Price 1s. 6d., 2s. 6d., and 5s. per packet, post-free.

SUTTONS' PRIMULA. THE BEST.
"The admiration of all who see them."—W. P. J.
Price 1s. 6d., 2s. 6d., and 5s. per packet, post-free.

SUTTONS' BEGONIA. THE BEST.
"The form, size, substance, and colour of the flowers are perfect."—W. H.
Price 2s. 6d. and 5s. per packet, post-free.

SUTTONS' GLOXINIA. THE BEST.
"The Gloxinias are really magnificent."—W. M.
Price 2s. 6d. and 5s. per packet, post-free.

SUTTON and SONS,
The Queen's Seedsmen,
READING, BERKS.

FOR SALE, a Quantity of good Hothouse GRAPES. Apply,
G. J. WARREN, Gardener, Balcombe Place, Hayward's Heath.

**6000 Grape Vines.**
THE LIVERPOOL HORTICULTURAL COMPANY (John Cowan), Limited, The Vineyard and Nurseries, Garston, near Liverpool, have a splendid stock of VINES grown from eyes this year, suitable for present planting. CATALOGUES free. Trade supplied.

CINERARIAS.—CINERARIAS.—Very fine strain, 1s. 4d. per dozen, 8s. per 100, carriage free. The Trade supplied.
JAMES KIRK, Wollaston Nurseries, Stourbridge.

**Of this Season's**
WILD PRIMROSE, COWSLIP, HYACINTH, and FOXGLOVE SEEDS, offers (payable by Post-office Order, on delivery at Colinton Station, Caledonian Railway) may be sent to OFFICE, Dreghorn Castle, Colinton, Edinburgh.

J. LINDEN'S (Ghent, Belgium) Illustrated CATALOGUE of NEW, RARE, and BEAUTIFUL PLANTS is now ready (English and American Edition). Sent gratis on application.

MRS. POLLOCK GERANIUMS. — Nice healthy plants, well established in single pots, 20s. per 100. Package free. Cash with orders.
T. FLETCHER and SON, Florists, &c., Chesterfield.

COLEUS.—Splendid Collection of the newest and best varieties in cultivation, 2s. per dozen, 12s. per 100. Carriage free.
JAMES KIRK, Wollaston Nurseries, Stourbridge.

**Orchids, &c.**
THE NEW PLANT and BULB COMPANY'S SPECIAL LIST (No. 51) is just published. Post-free on application.
Lion Walk, Colchester.

LAPAGERIA ALBA, the finest and largest stock in Europe, strong hardy plants which have been wintered in cold frames, from 15s. to £15 15s.
LAPAGERIA ROSEA, good specimen plants, from 21s. to £10 10s. each. The Trade liberally treated, for cash.
W. HOWARD, Southgate, N.

GLOXINIAS.—Seedlings, from a very choice collection. Good plants, to bloom this year. 3s. and 4s. per dozen, 20s. and 25s. per 100. Carriage free.
JAMES KIRK, Wollaston Nurseries, Stourbridge.

ARAUCARIA EXCELSA.—Two splendid plants for SALE, splendid for a large Conservatory or Winter Garden. Height 20 feet, spread of branches 10 feet, in good health and well furnished.
ALEX. HAGGART, Moor Park, Ludlow.

**East Lothian Intermediate Stocks.**
THOMAS METHVEN and SONS beg to offer their choice strain of the above, in five colours, viz., Scarlet, Purple, White, White-wall-leaved, and Crimson, at 1s., 2s. 6d., and 5s. each colour.
15, Princes Street, Edinburgh.

SINGLE PYRETHRUMS.—Orders are now being booked for these lovely hardy decorative plants in their many attractive colours, which have the appearance of coloured Marguerites, varying from pure white to the deepest shades of pink and crimson.
Plants will be supplied shortly at 9s. per dozen, and the usual discount to the Trade.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London, N.

STRAWBERRY RUNNERS.—Strong, healthy, and well-rooted, from twenty of the best varieties in cultivation. Price LIST, &c., on application.
Manual on Strawberry Culture, with Sample Box of Plants and Fruit, post-free 1s.
W. LOVEL & SON, Strawberry Farmers, Weaverthorpe, York.

## SALES BY AUCTION.

**Holly Lodge, Main Road, Stamford Hill, E.**
CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS will SELL, on the above Premises, close to Stoke Newington Station, on WEDNESDAY NEXT, June 29, at 1 o'Clock, by order of Mr. Coombs, 10,000 well grown BEDDING PLANTS; an assortment of PALMS, DRACÆNAS, FERNS, FICUS, AZALEAS, &c.
May be viewed. Catalogues had on the Premises, and of the Auctioneers, 8, New Broad Street, E.C.

**Stoke Newington, E.**
EXPIRATION OF LEASE.

MESSRS. PROTHEROE AND MORRIS well SELL by AUCTION, on the Premises, the Tyssen Nursery, Tyssen Street, Stoke Newington, E., five minutes' walk from Rectory Road Station, on TUESDAY, July 5, at 12 o'Clock, by order of Mr. Copelin, the remaining BEDDING and GREENHOUSE PLANTS; also the erections of eleven GREENHOUSES, about 3000 feet of 4-inch Hot-water PIPING, eight BOILERS, STAGING, BRICKWORK, about 1000 cast FLOWER-POTS, several SHEDS, and numerous effects.
May be viewed. Catalogues had on the Premises, and of the Auctioneers and Valuers, 8, New Broad Street, E.C., and Leytonstone, E.

**Potter's Bar.**
By order of the Executors of the late Mr. R. Atkin.

MESSRS. PROTHEROE AND MORRIS have received instructions to SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, July 11, a detached FREEHOLD RESIDENCE of attractive elevation, known as Albemarle House, containing 12 rooms and spacious offices. Tastefully displayed garden, with large vinery and 14 span-roof greenhouses, built and heated upon the most approved principles. In the occupation of Mr. Mott, and of the estimated rental value of £160 per annum. Possession at Michaelmas next.
Particulars may be had at the Auctioneers' Offices, 8, New Broad Street, E.C.

**Imported Orchids.**

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 28, at half-past 12 o'Clock precisely, importations of ORCHIDS, consisting of fine pieces of Odontoglossum Pescatorei, Odontoglossum nævium majus, &c.; also established and semi-established plants of CATTLEYA TRIANÆ, choice MASDEVALLIAS, ONCIDIUM MARSHALLIANUM and O. BALDERAMÆ, from The New Plant and Bulb Company.
On view morning of Sale, and Catalogues had.

**Odontoglossum crispum (Alexandræ), splendid** masses, and in fine condition.—SHUTTLEWORTH, CARDER & Co., Orchid and New Plant Importers, 191, Park Road, Clapham, S.W., beg to announce that

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 28, at half-past 12 o'Clock precisely, a fine Importation of ODONTOGLOSSUM CRISPUM (ALEXANDRÆ), in splendid condition.
On view the morning of Sale, and Catalogues had.

**Established Orchids.—Important Sale.**

MR. J. G. STEVENS has received instructions from Sir Trevor Lawrence, Bart., M.P., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 29, at half-past 12 o'Clock precisely, a portion of his renowned COLLECTION of ORCHIDS in consequence of the Houses being overcrowded. The Plants are in vigorous health, for which this Collection is well known, and comprise many rare varieties and fine specimens. Among them are:—

| | |
|---|---|
| Oncidium macranthum | Lælia anceps Dawsoni |
| Aerides Schröderi | Trichopilia lepida |
| Lælia elegans Turneri | Dendrobium Veitchiana |
| ,, ,, alba | Cattleya Dowiana |
| Eulophia Guineensis | ,, Dolosa |
| Masdevallia Macrura | Utricularia Endresii |
| Cattleya exoniensis | Mormodes luxatum eburneum |
| Dendrobium Falconeri gigantum | &c., &c. |

On view morning of Sale, and Catalogues had.

**The Collection of Orchids formed by the Late**
GEORGE CLIVE, ESQ., M.P.

MR. J. C. STEVENS is instructed to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 29, at half-past 12 o'Clock precisely, the COLLECTION of ORCHIDS formed by the late George Clive, Esq., M.P., comprising good plants of Odontoglossums, Epidendrums, Calanthes, Cymbidiums, Cœlogynes, Dendrobiums, Oncidiums, Vandas, Aerides, Angræcums, Pleione, Lycastes, &c.
On view morning of Sale, and Catalogues had.

**Thursday Next.**
VALUABLE ESTABLISHED ORCHIDS.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 30, at half-past 12 o'Clock precisely, a collection of Established ORCHIDS from France, among them extremely rare kinds. The collection contains a very fine specimen of ANGRÆCUM SESQUIPEDALE, about 2 feet high, and with three young plants from lower part of stem; also a plant with fourteen bulbs of LÆLIA PERRINII ALBA, and—

| | |
|---|---|
| Lælia elegans alba | Cattleya Eldorado |
| Vanda Lowii | Masdevallia chimæra |
| Masdevallia trochilus | Trichopilia crispa marginata |
| Cattleya Eldorado alba | Lycaste Skinneri alba |
| Cœlogyne Massangeana | Odontoglossum Andersonianum lobatum |
| Lælia purpurata alba | Oncidium ornithorhyncum album |
| Cattleya bogotensis alba | [leaves |
| Masdevallia rosea | Masdevallia Wagneriana, 150 |
| Angulоa Rückeri purpurea | Miltonia virginalis |
| Lælia Schilleriana splendens | Lælia Schilleriana marginata |
| Cattleya labiata (autumn) | |

At the same time will be sold a fine lot of ODONTOGLOSSUM ALEXANDRÆ, best varieties; ONCIDIUM FORBESII, ODONTOGLOSSUM ALEXANDRÆ LEHMANNI; also an importation of the fine ONCIDIUM VARICOSUM ROGERSI, and the new and very lovely EPIDENDRUM GHIESBREGHTIANUM.
May be viewed the morning of Sale, and Catalogues had.

WANTED to RENT, within 15 miles of London, a PIECE of LAND (with Glass) suitable for a Florist. Reply by letter to
A. K., 74, Navarino Road, Hackney, E.

FOR SALE, a FLORAL NURSERY, five Houses, 50 feet by 12 feet, in a first-class position, with or without Stock. Position suitable for any branch of business in a Gardeners' profession. Object of selling, the owner has a larger one 20 miles away.
M. KING, Florist, 4, Lawn Terrace, Herbert Road, Shooters' Hill, Kent.

**To Nurserymen and Florists.**

TO SELL or LET, near Brighton and close to important station, a Freehold 14-roomed Newly Built HOUSE, an acre of excellent Land, and about 6000 feet of Glass Erections. No stock or valuation to purchase.
J. W. T., Mr. Edwards, 25, Bishopsgate Street Within, E.C.

TO LET, IMMEDIATELY, an Old-established FLORIST'S BUSINESS. Apply
4B, Sloane Street, S.W.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 8, New Broad Street, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

NEW DOUBLE WHITE BOUVARDIA, "ALFRED NEUNER."
*The following is the Raiser's Description:*—"This is a gem of the first water, equal, if not superior, in profuse blooming quality and vigorous healthy growth to the valuable single white variety, Davidsonii. The flowers are rather larger than those of the single-flowering, and composed of three perfect rows of petals of the purest waxy-white colour, each floret resembling a miniature Tuberose. The trusses are large and perfect, and are freely and without interruption produced, even on the small side shoots. This double Bouvardia will prove indispensable in all fine cut-flower work."
Orders now being Booked for Execution in strict Rotation. Stock limited. Price, 10s. 6d., 15s. and 21s. each. Usual discount to the Trade.
Sole Agents in Great Britain:—JAMES CARTER AND CO., The Queen's Seedsmen, 237 and 238, High Holborn, W.C.

LILY OF THE VALLEY.—Best and earliest variety for forcing. Strong single crowns. Early orders will oblige.
SEEMANN AND GOEPEL, Wandsbeck, near Hamburgh.

SPECIAL OFFER of BEDDING GERANIUMS, &c.:—500 Vesuvius, 500 Tom Thumb, 300 Mrs. Williams Paul, 600 Christine, 800 Mixed Scarlets, 500 Sophia Dumaresque. Also
1000 CALCEOLARIAS, yellow; 500 PETUNIAS, 500 LOBELIAS, many thousands of PANSIES and VIOLAS, sorts and prices on application to
JOHN HAYWARD, The Nurseries, Cheadle, near Manchester.

CHARLES WILSON, of Summerhow Nurseries, Kendal, begs to offer to the Trade and large Buyers generally, Tea, Noisette, and China ROSES, in 4½-inch pots, at £3 3s. per 100, or £28 per 1000, purchaser's selection. C. W. having many thousands in stock, they cannot fail to give satisfaction. Also Scarlet, White, and Pink BOUVARDIAS, mixed, at 6s. per dozen, now ready for shifting into 4½-inch pots, being in 3-inch pots for convenience of carriage. ADIANTUM CUNEATUM, at 25s. per 100, or £10 10s. per 1000. Orders booked for Double White PRIMULAS, to be delivered in August. Price on application. An inspection of his large Stock and extensive Nursery is respectfully solicited. Plants given to compensate for carriage.
CATALOGUE on application. Please note the address—
SUMMERHOW NURSERIES, KENDAL.

THE VERY BEST PLANTING VINES extant are simply those that have fruited in pots this season. Sixty of various sorts, but mostly Hamburghs, to be parted with. Apply at once.
R. GILBERT, Burleigh, Stamford.
These Vines should be planted from now to the end of July.

**CHOICE SUMMER FLOWERS, 1881.** The LAWSON SEED and NURSERY CO. (Limited), Edinburgh, are booking Orders for the leading **BEDDING-OUT PLANTS,** viz., Verbenas, Geraniums, Calceolarias, &c., for present delivery. CATALOGUES may be had on application.

*Come and See.*

THE PELARGONIUM SOCIETY'S EXHIBITION, JUNE 28 and 29, at the Royal Horticultural Society's Gardens, South Kensington, promises to be the most brilliant of the year; and we shall (D.V.) show the New Splendid DOUBLE BOUVARDIA in full flower, and probably the finest Eight Stands of Zonal Pelargoniums ever seen, together with several other Novelties of great importance.

**Primulas and Cinerarias.**

H. CANNELL AND SONS beg to announce that the above are now in their best possible condition for potting and posting to all parts of Europe.
SWANLEY RED, ,, PURPLE, ,, KERMESINA — Splendid additions, 3s. per dozen.
The best old Rubra and White, 1s. 6d. per dozen, 10s. per 100.
CINERARIA, 1s. 6d. per dozen, 9s. per 100. See previous Advertisements.

THE HOME FOR FLOWERS — SWANLEY

**Gentlemen's Gardeners, Amateurs, and Others**
REQUIRING
GARDEN POTS
of best quality are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

ORDINARY POT.

LONG TOM.

LEE, BLACKHEATH and LEWISHAM HORTICULTURAL SOCIETY.
President—JOHN PENN, Esq.
The ANNUAL SUMMER EXHIBITION will, by kind permission, be held in the grounds of Mrs. Penn, The Cedars, Lee, S.E., on WEDNESDAY and THURSDAY, June 29 and 30. All particulars may be obtained of
Mr. C. HELMER, Secretary.
5, Boones Road, Lee, S.E.

CANTERBURY and EAST KENT ROSE SOCIETY.—The THIRD ANNUAL EXHIBITION will be held in the Corn Exchange, Canterbury, on THURSDAY, June 30.
OPEN CLASSES.
36 VARIETIES (Nurserymen).—1st, £6; 2d, £4; 3d, £2.
12 TEAS and NOISETTES (Amateurs and Nurserymen).—1st, £3; 2d, £2; 3d, £1.
24 VARIETIES (Amateurs).—1st, £5; 2d, £3; 3d, £2.
12 VARIETIES (Amateurs). — 1st, £2 2s.; 2d, £1 1s.; 3d, 10s. 6d.
The latter Three Prizes will be paid in Rose Trees, the gift of Messrs. Kinmont & Kidd.
ENTRIES CLOSE, Monday, June 27.

GRAND FLOWER SHOW.—WORCESTERSHIRE AGRICULTURAL SOCIETY STOURBRIDGE MEETING, JULY 5, 6, and 7 next. TWO HUNDRED and FORTY POUNDS in PRIZES for PLANTS, FLOWERS, FRUIT, and VEGETABLES, open free to all comers; also a COTTAGERS' SHOW. Entries close June 28. For Schedules of Prizes, apply to
J. S. HAYWOOD, Hon. Sec. Hort. Department, Seed Merchant, Worcester.

SHROPSHIRE HORTICULTURAL SOCIETY.
ROSE SHOW, July 7.
GREAT SUMMER SHOW, Aug. 17 and 18.
Schedules and full particulars may be obtained from the Hon. Secs., Messrs. ADNITT AND NAUNTON, The Square, Shrewsbury.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.
The 25th Grand ANNUAL FLOWER, FRUIT and ROSE SHOW will be held on FRIDAY, July 8, 1881, in the Great Hall, opposite the South-Eastern Railway Station, and in the Calverley Hotel Grounds behind the same. The full Band of the 2d Life Guards will attend. Schedules of Prizes may be obtained on application, and Subscriptions paid to
E. F. LOOF, Secretary, 26, Parade.

BRIGHTON AQUARIUM.—The FIRST EXHIBITION of ROSES and FINE FOLIAGE PLANTS, on SATURDAY, July 9. Schedule of Prizes on application to Manager. Entries should be forwarded not later than July 2.
J. WILKINSON, Manager.

LUDLOW ROSE SHOW.—The ANNUAL EXHIBITION of ROSES will be held at the Assembly Rooms, Ludlow, on TUESDAY, July 12. Liberal open money Prizes will be given to Nurserymen, Amateurs, and Cottagers. Schedules of Prizes and Regulations may be obtained from the
Rev. V. T. T. ORGILL, Hon. Sec., Ludlow.

DISS HORTICULTURAL SOCIETY.
TUESDAY, July 12.
SPECIAL OPEN ROSE PRIZES.
The Rectory, Scole. F. PAGE ROBERTS, Hon. Sec.

KINGSTON and SURBITON ROYAL HORTICULTURAL SOCIETY.
President—H.R.H. Prince LEOPOLD, K.G., K.T., &c.
SEVENTEENTH ANNUAL SHOW, WEDNESDAY, July 13. Liberal Prizes, open to all comers, in 40 Classes. ENTRIES CLOSE July 7. Schedules and information to be obtained of
W. CLAY, Esq., Hon. Sec.; or to Mr. MOORMAN, Secretary, Coombe Bank, Kingston-on-Thames.

WEST KENT HORTICULTURAL SOCIETY.—The ANNUAL EXHIBITION of FLOWERS, FRUIT, VEGETABLES, and TABLE DECORATIONS, &c., will be held in Camden Park, Chislehurst, on SATURDAY, July 16. The WEST KENT BEE-KEEPERS' ASSOCIATION will also hold their Exhibition in conjunction with the above Flower Show. T. A. MITCHELL, Hon. Secretary, Woodlands, Chislehurst. JOHN SCOTT, Jun., Hon. Treasurer, Elmstead Grange, Chislehurst.—Annual Subscriptions of One Guinea may be paid to the Hon. Treasurer.

SUTTON COLDFIELD CRYSTAL PALACE COMPANY'S GREAT ROSE SHOW, FRIDAY, July 22. For Schedules and all information apply to
Rev. J. A. WILLIAMS,
Yardley Wood Vicarage, near Birmingham.

THE ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.
GRAND SUMMER SHOW, July 30 and August 1.
TWELVE PLANTS, Six in Flower and Six Foliage, £20, £15, £10. EIGHT DISHES of FRUIT, £5, £3, £2, £1. And various other PRIZES, amounting to THREE HUNDRED POUNDS in value.
A Subscription of 5s., paid before July 1, enables the Exhibitor to Compete Free of Entry Fee.
C. S. FUIDGE, Secretary.
39, York Street, Lower Avenue.

WESTON-SUPER-MARE and EAST SOMERSET HORTICULTURAL SOCIETY.
The NINTH ANNUAL EXHIBITION will be held at Weston-super-Mare, on TUESDAY, August 9. TWO HUNDRED POUNDS in Prizes. Schedules now ready.
W. B. FRAMPTON, Secretary.

GLAMORGANSHIRE HORTICULTURAL SOCIETY.
The EIGHTEENTH SHOW will be held at Cardiff on WEDNESDAY, August 24, when TWO HUNDRED and FIFTY POUNDS will be given in Prizes. For Schedules and full particulars, apply to C. R. WALDRON, Hon. Sec.
74, St. Mary Street, Cardiff.

PANSIES and VIOLAS, for Bedding or Exhibition.—Many thousands of strong Plants on Sale, at low prices, our selection. CATALOGUE with LISTS of sorts, post-free :—

| | Doz.—s. d. | 100.—s. d. |
|---|---|---|
| BEDDING PANSIES, named sorts | 2 0 | 12 0 |
| " VIOLAS, named sorts | 2 0 | 12 0 |
| " PANSIES and VIOLAS, without names | 1 3 | 8 0 |
| FINE SHOW PANSIES, all named | 3 0 | 20 0 |
| " FANCY PANSIES, all named | 3 6 | 25 0 |

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

NEW CATALOGUE for 1881.—Interesting, useful, and valuable to all possessing either a Garden, Greenhouse, Stove, &c.

Prices and plants need only be compared with those of other firms, to prove that in no instance can buyers of plants who study both price and quality be supplied more advantageously than by ourselves.

The Collections are all of the finest sorts, and as varied in colour as possible, fine for exhibition or home decoration, and as certain to be satisfactory to purchasers as collections can be. All are our selection.

| | Per doz.—s. d. | | Per doz.—s. d. |
|---|---|---|---|
| Abutilons, in variety | 3 0 | Hollyhocks, Seedlings | 4 0 |
| Achimenes, in variety | 3 0 | Helianthemums | 2 6 |
| Ageratums, small plants, per 100, 5s. | 1 0 | Herbaceous Plants, per 100, 20s. | 3 0 |
| Ageratums, in pots, per 100, 15s. | 2 6 | Heliotropes | 2 6 |
| Antirrhinums | 3 6 | Iresine Lindeni, per 100, 10s. | 2 0 |
| Begonias, Ornamental | 4 0 | Lantanas | 2 6 |
| Caladiums | 9 0 | Lobelias, small, per 100, 4s. | 1 0 |
| Carpet Bedding Plants (see Catalogue). | | Lobelias, in pots | 2 6 |
| Chrysanthemums, in great variety, per 100, 15s. | 3 0 | Mesembryanthemum fol. var., per 100, 10s. | 2 0 |
| Coleus | 2 6 | Myosotis, per 100, 6s. | 1 6 |
| Dactylis elegantissima, per 100, 6s. | 1 0 | Pæonies, white, blush, crimson, and other shades | 6 0 |
| Dahlias, per 100, 20s. | 3 6 | Phloxes, per 100, 25s. | 3 6 |
| Epiphyllum | 9 0 | Pelargoniums, Show, Fancy, and French, 6s. to | 9 0 |
| Ferns, Stove and Greenhouse, 6s. to | 9 0 | Potentillas, Double | 6 0 |
| Fuschias, per 100, 15s. | 3 0 | Rock Plants, per 100, 15s. | 3 0 |
| Gardenia florida | 6 0 | Salvias | 3 0 |
| Greenhouse Plants | 9 0 | Saxifrages | 3 0 |
| Geraniums, Double | 3 0 | Sedums | 3 0 |
| Geraniums for Bedding | 3 0 | Stove Plants, 6s. to | 9 0 |
| Geraniums for pot culture, 3s. to | 6 0 | Tropæolums | 3 0 |
| Gloxinias, 6s. and | 9 0 | Violas (immense stock of best sorts), per 100, 8s. to 12s. | 2 0 |
| Hardy Climbing Plants, in great variety, 6s. | 9 0 | | |

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

W. CLIBRAN AND SON, Oldfield Nurseries, Altrincham, Cheshire.

**To the Seed Trade.**

MALDEN AND SON have a few Quarters of each of the following varieties of TURNIP SEEDS to offer—grown on their own Farms from fine Selected Stocks, Nett Crop, 1880 :—

MAMMOTH PURPLE-TOP WHITE TURNIP
STRATTON GREEN ROUND TURNIP
POMERANIAN WHITE GLOBE TURNIP
GREEN GLOBE TURNIP
GREY STONE TURNIP

MALDEN & SON can also offer several Thousands of selected DRUMHEAD CABBAGE PLANTS.

For prices, &c., apply to
MALDEN AND SON, Market Square, Biggleswade.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk, offers the following :—

PANSIES, seedlings from best named flowers, 5s. per 100, 45s. per 1000.
DIANTHUS, seedlings from best named flowers, 5s. per 100, 45s. per 1000.
CARNATIONS, seedlings from fine doubles, 7s. 6d. per 100, 70s. per 1000.
MIMULUS, seedlings, hybrida tigridioides, 7s. 6d. per 100, 70s. per 1000.

**Surplus Bedding Plants.**

WILLIAM BADMAN can still offer strong plants of the undernamed, all turned out of single pots and fit to plant at once :—

| | |
|---|---|
| PELARGONIUMS—Vesuvius, scarlet | 10s. per 100 |
| " Madame Vaucher, white | 12s. " |
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| " " Flower of Spring | 15s. " |
| " GOLD-LEAF, Crystal Palace Gem | 15s. " |
| VERBENAS—Purple, white, scarlet, &c. | 12s. " |
| AGERATUM—Imperial Dwarf, blue | 10s. " |
| LOBELIA—Emperor William (true) | 10s. " |
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Packing included. Terms cash.
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NEW DOUBLE CLEMATISES.

ENCHANTRESS, a very large and distinct variety, good habit, and bearing very double white flowers; the exterior petals are very prettily flushed with rose in the centre. First-class Certificate Royal Horticultural Society.
Plates of this variety, 2s. 6d. each.
VENUS VICTRIX, another double variety; colour a delicate lavender; sepals very broad and finely formed. First-class Certificate Royal Horticultural Society.
The above two Varieties are now ready for distribution. Price 10s. 6d. each. Trade discount.
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ALTERNANTHERAS.—100,000 well-established Plants for Sale, fit for Bedding-out at once, as follows :—.

ALTERNANTHERA amœna, 8s. per 100, 70s. per 1000.
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MILES' NEW ZONAL, "West Brighton Gem," the best scarlet Bedding Geranium yet introduced, awarded First-class Certificate by the Royal Horticultural Society, strong plants, in No. 60 pots, 6s. per dozen, 50s. per 100.
Special quotations to large buyers.
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A splendid variety for autumn sowing. Fine globular shape, with light brown skin. Weight, 2 lb. to 3 lb. each. Of the most delicate flavour. Highly recommended. Seed with cultural directions,

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The finest Onion ever introduced. Beautiful globular shape, with golden-yellow skin. If sown in autumn and well cultivated, will produce Onions of 3 lb. to 4 lb. each.

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Special quotations per 1000.
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FUCHSIAS, 12 best Exhibition varieties, 1s. 6d.; 12s. per 100.
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VERBENAS, 12, in 4 varieties, 1s. 2d.; 6s. per 100.
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CALCEOLARIAS, 1s. per doz. | LOBELIAS, 8s. per 100.
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Package extra.

CALCEOLARIA BURBIDGEI.—This beautiful plant is a cross between C. Fuchsiæfolia and C. Pavonii, and is exactly intermediate between the two parents. The foliage is downy, about one-third that of C. Pavonii in size; the habit of the plant is free and branching, and, unlike C. Fuchsiæfolia, not at all subject to sunscorch; the flowers are the same colour as the latter plant. It flowers during the autumn and winter months. It was raised by Mr. Burbidge, of the College Botanic Gardens, Dublin.
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**The best bedding Zonal Pelargonium ever sent out.**

# HENDER & SONS' CRIMSON VESUVIUS.

## Sport from Vesuvius.

We think when we say we have a CRIMSON VESUVIUS that this is a sufficient recommendation for our "sport." It will be plainly seen at once to be a bedder of the highest standard, which should be in every collection. The colour of the flowers is several shades deeper than the old variety, trusses much larger, and habit excellent. All who have seen it speak of it in the highest terms.

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"THE WELL-KNOWN ZONAL PELARGONIUM VESUVIUS is as much renowned for sportiveness as for its good qualities in whatever form it appears. Now, however, we have a form that promises to outshine all those that have become established in cultivation. This is Hender's Crimson Vesuvius, a very decided advance in form and colour. The fortunate raisers are Messrs. Hender & Sons, the Bedford Nurseries, Mannamead, Plymouth."—*Gardeners' Magazine, April* 30, 1881.

"NEW PELARGONIUM (W. Hender & Sons).—Your crimson 'sport' from Vesuvius is certainly a step in advance in the way of colour."—*The Garden, May* 7, 1881.

"CRIMSON VESUVIUS PELARGONIUM (Hender & Sons).—We had no difficulty in perceiving that the colour of your 'sport' is decidedly deeper and richer than the parent; the flower-stem is also stouter, and truss and flowers larger than those of Vesuvius."—*Journal of Horticulture, April* 28, 1881.

"In the Pelargonium named HENDER'S CRIMSON VESUVIUS we have another eruption or evolution of the old sportive Vesuvius. This novelty has flowers of a crimson-scarlet, many shades deeper in colour than the original; the colour is very rich and bright."—*Florist and Pomologist, June*, 1881.

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As far as I can judge the variety will probably be a useful one, and take a high position."—*From* THOS. MOORE, Esq., *Editor of Gardeners' Chronicle, May*, 1881.

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"Crimson Vesuvius will make the best bedder I have ever seen.—*From* Mr. SPEAR, *Devonport Park.*"

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**Price 5s. each, post-free (usual Trade discount).**

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## The Private View of Orchids at Mr. William Bull's Establishment

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It will be open during the week, June 27 to July 2, to those having received Invitations, and to Patrons of the Establishment.

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*PRICE:—*

**10s. 6d. each with 8-ft. pole, and 11s. 6d with 10-ft. pole.**

We also expect to have ready for exhibition both Pruners and Gatherers capable of being lengthened in five minutes to 20 feet.

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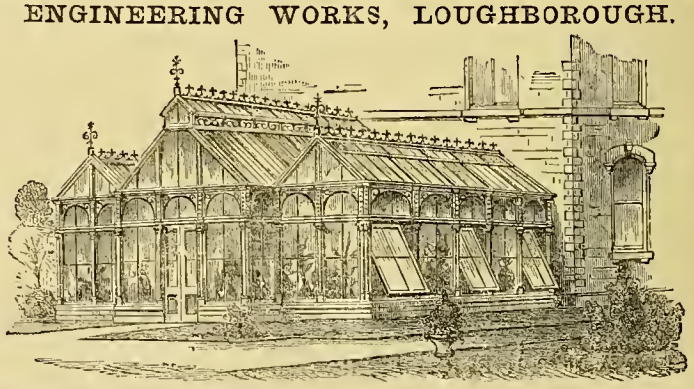

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An effectual and speedy Eradicator of

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**Parasites affecting Plants, without Injury to Foliage.**

*It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.*

**Especially adapted for the Destruction of Blight on the Coffee Plant.**

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general INSECTICIDE.

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It may be used as a Dip or Wash for any description of Out or Indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

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THE GREAT SUPERIORITY OF

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Over those of all other Makers is universally acknowledged.

**They will Cut**

**Either Short or Long Grass, Bents, &c., Wet or Dry.**

These advantages no other Lawn Mowers possess.

They are the only Mowers which have been in CONSTANT use from 15 to 20 years in the Royal Gardens, Windsor,

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And in most of the Principal Parks and Squares in the United Kingdom.

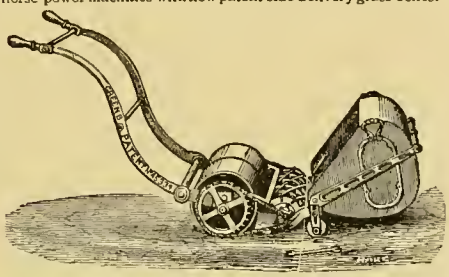
**Royal Horticultural Society's Show,** South Kensington, London, June 3 to 7, 1881.—The following Prizes were awarded to THOS. GREEN & SON (Limited), Leeds and London: **A Silver Medal,** the 1st and Highest Prize of the Royal Horticultural Society, was awarded to Green's Patent "Silens Messor" Lawn Mowers.

*The "Journal of Horticulture" of June 9 says:—*

"MOWING MACHINES.—The judges' work in this class of eight exhibitors, each having a number of machines, was no sinecure, for special advantages in some form or other were claimed for each kind of mower, and it may be safely said that all were good and did their work well. After a critical examination the Silver Medal was granted to the old firm of world-wide fame, Messrs. T. Green & Son, of Leeds and London. As the machines are known in all lands where good lawns are cherished, it is quite unnecessary to give any description of them."

*The "Garden" of June 11 says:—*

"Messrs. GREEN took the Silver Medal for their mowing machines, which were represented by their 'Silens Messor' and the horse-power machines with new patent side delivery grass boxes."



They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant. The above machines have proved to be the best, and and have carried off Every Prize in all cases of Competition. Every Lawn Mower is guaranteed to give entire satisfaction, otherwise they may be returned AT ONCE, free of cost to the purchaser.

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| To cut | 6 inches. | Can be worked by a lady .. .. | 1 | 15 | 0 |
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| ,, | 10 ,, | Can be worked by one person .. | 3 | 10 | 0 |
| ,, | 12 ,, | ,, ,, .. .. | 4 | 10 | 0 |
| ,, | 14 ,, | ,, ,, .. .. | 5 | 10 | 0 |
| ,, | 16 ,, | This can be worked by one man on an even lawn .. .. | 6 | 10 | 0 |
| ,, | 18 ,, | By man and boy .. .. .. | 7 | 10 | 0 |
| ,, | 20 ,, | ,, ,, .. .. .. | 8 | 0 | 0 |
| * ,, | 22 ,, | Two men .. .. .. .. | 8 | 10 | 0 |
| * ,, | 24 ,, | ,, .. .. .. .. | 9 | 0 | 0 |

* If made stronger, suitable for donkeys, 30s. extra.

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

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N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

GREEN'S Patent TUBULAR SADDLE BOILER had also the 1st and Highest Prize, a **Silver Medal,** awarded to it at the above show.

*The "Journal of Horticulture" of June 9 says:—*

"HEATING APPARATUS.—A great number of boilers, valves, &c., were exhibited by eight competitors, and considerable interest was manifested in the verdict of the judges, and much discussion was brought to bear on the merits and shortcomings of the different boilers. The apparatus for which the Silver Medal was awarded was a wrought-iron saddle boiler with a series of intersecting tubes, somewhat in the form of the letter X, but the tubes in ogee form, in the crown of the boiler. Most gardeners who examined the boiler expressed a favourable opinion of it. It is no doubt a quick and powerful boiler without being complex, the latter condition having, no doubt, had weight with the judges."

*The "Garden" of June 11 says:—*

"The premier prize, a Silver Medal, was taken by Messrs. Green & Son for their new patent tubular saddle boiler. It is a modification of their original patent, the boiler being longer and not so high. It is found to be a powerful and efficient boiler, and heats a large quantity of water quickly with a small consumption of fuel."

**THOMAS GREEN AND SON (Limited),**

SMITHFIELD IRONWORKS, LEEDS;

And 54 and 55, BLACKFRIARS ROAD LONDON, S.E.

THE

# Gardeners' Chronicle.

*SATURDAY, JUNE 25, 1881.*

## WINDSOR GREAT PARK.

THE great gathering of our popular citizen military force, the Volunteers, which is to be held in the Great Park at Windsor on July 9, will naturally attract to that magnificent demesne much public interest. We have within the bounds of that noble park a vast expanse of irregular woodland and turf; of pasture and of forest, perhaps one of the largest of similar enclosures in the kingdom, and, not least valuable, open at all times and freely to the people. Windsor as a riverside town sadly lacks elegance and beauty. It derives some importance from its giant royal castle, that is so large and lofty as to fairly overshadow the town, almost dwarfing it into insignificance. But from the lofty tower which forms for many miles round the one object of prominence, Windsor exhibits some charms, for distance lends enchantment, and the narrow streets and insignificant buildings seen from that height look picturesque. Still it does but form one little element in the grand picture spread out before the gaze of the spectator, for the silvery winding Thames flows through the landscape like a huge serpent, and just beyond lies the classic spires of Eton, whilst away in the distance Middlesex, Bucks, Oxford, Berks, and Surrey, outline the horizon.

But the finest scenery in all the view is that seen on the southern side, where the Home and Great Parks lie, bounded on the west by the remains of the old Forest of Windsor, which yet lends the charm of its natural beauty to frame in a setting of woodland all that portion of the picture. The most immediate object of notice in the scene is the famous Long Walk, that runs straight as an arrow from the Castle right into the Park. Avenues of trees no doubt owe much of their nobility to their straightness, and one of 3 miles, margined on either side nearly the entire length by double rows of lofty trees, seems to die off so remotely in the distance as to make it look even longer. Yet an avenue of such proportions would in a smaller space be deemed monotonous. Here the eye ranges through its vista rapidly, and it is soon lost because of the magnificent woody groups so far beyond. But if an avenue of 3 miles gives some idea of the extent of the Park, it must be remembered that still it terminates little less than half-way to its farther boundary, for the famous "Copper Horse" is almost equidistant from the Blackness Gate, just above Virginia Water on the one side and the Castle on the other. Visitors to Windsor Park always make a point of seeing that monster equestrian figure, designed to perpetuate the memory of the old Farmer-King of England, and now may fitly compare its somewhat decaying aspect with the grand monuments of Nature by which it is surrounded—the splendid trees; and perchance will ask whether these latter may not make more fitting and enduring memorials of men than ugly combinations of metal and stone.

Away to the right of the picture, however, there is yet another avenue, known as Queen Anne's Ride. This is grass throughout its entire length of 4 miles, and is margined by single lines of Elm for the first part, and Oak

and Lime beyond. Yet this ride begins quite a mile farther into the Park than over the Long Walk, for a long street has to be traversed before we reach Queen Anne's Gate, within which the Ride commences. Though of such exceeding length, however, the surface of ground through which it passes is so undulating that the eye cannot range along it to an exceeding distance. At the far extremity is the Sunninghill Gate, and by a rural lane of singular beauty, such as artists might well love to delineate, the new and regal entrance to the Ascot race-course is reached. Visitors to the volunteer review will find these noble avenues objects of special interest, for a large expanse of greensward that lies between them at the town end of the Park invariably constitutes the field of glory for the mimic contest or the imposing march past.

From Queen Anne's Ride the ground falls gradually away to the Long Walk, and the spectator posted on the higher elevation takes in a scene such as—in its combination of moving life, bright hues of colour, flashing sabres, and grand woodland—can be rarely excelled. On a huge plain a vast body of troops may execute evolutions that are grand to the eye but can never be picturesque ; in Windsor Park it is this very combination of dense green leafage and rich moving masses of colour that furnish charms of singular beauty. The thin red line on Alma's height meant only death and slaughter, but seen from the higher ground, as it emerges from beneath the lines of giant trees in the vale beyond, it presents a spectacle that arouses the artist to enthusiasm and the coldest to a feeling of strange delight. It is a scene that must be seen to be appreciated. Yet wide as are the expanses of the noble park, how 50,000 men and perhaps half a million of visitors will see and be seen is a problem for themselves to solve, but to thousands of our town population, whose opportunities to see the country are few, ample reward for long journeys and much exhaustion will be found in a day beneath the grand trees and amid the beautiful scenery of this Royal demesne.

The routes from London to Windsor are necessarily few, and those, whether per rail or road, somewhat monotonous. If travelling by road it is not till after Hounslow is passed that the country might be said to begin, and even then objects of interest are few. There are the ancient peacock Yew trees of Bedfont churchyard, the pretty reach of the Thames at Staines, and the famous Runnymede at Egham to be passed ere the journey ends just beyond Frogmore ; or, if a *détour* is made at Kew, dirty Brentford and its long narrow street is avoided, whilst in its place the pleasant Kew road, which skirts the Royal gardens, leads down to Richmond Bridge, the prettiest of those erections which span Old Father Thames ; and passing through yet half sleepy Twickenham, through Hanworth, Sunbury, and Ashford, the traveller turns into Staines, once more to cross the river on the way to Egham. Whilst the historical Runnymede may, however, have its charms for some, others may prefer perhaps to keep on through Egham town, and at the foot of Egham Hill turn up the long narrow incline which leads to Englefield Green.

Here at length true rural scenery is found. Lanes, commons, woodland, elegant residences, many charms and beauties. Past Cooper's Hill College, past Baron Schröder's picturesque but elegantly appointed residence, and through Bishopsgate the traveller is now in the Great Park, and if time permits and will inspires there is a charming drive before him if, taking the road to the left, he wends his way past Cumberland Lodge, the residence of Prince Christian, on to the upper extremity of Virginia Water, that lake so dear to Cockneys, and indeed to all who love the beautiful. Blackness Gate gives an outlet to the borders of Titness Park, and the road that leads up between that and the Great Park passes through a hamlet of Sunninghill parish, which rejoices in the mercantile appellation of Cheapside. Turning down the before-mentioned pretty rural lane and into the gate at its extremity, the far end of Queen Anne's Ride is reached, and this leads, straight as the crow flies, to the scene of the review. Throughout this wide circuit there is much to charm and delight. The lover of trees or of woodland aspects finds ample to gratify his tastes and excite admiration.

There are grand groups and single specimens of many kinds, and the student in forestry will note with pleasure that the date of planting is given in many places, thus enabling him to judge of the average age of trees by the development here shown. Sometimes there is a breadth of Bracken, tall and luxuriant, or perhaps a delightful grassy glade in which is peacefully feeding a herd of deer or cattle, and if the sun is declining in the west the charms of the Park will, by the long and weird shadows thrown by the trees, be greatly added to. One caution is needful. In many of the trees huge limbs in a state of decay may fall at any moment. The authorities should see to the removal of these at once, lest the multitudes who will inevitably swarm beneath the treacherous boughs should come to harm, and thus a shadow be cast over what otherwise may be a grand display and a national glory.

## New Garden Plants.

Bolbophyllum Bowringianum, *n. sp.**

This belongs to the group of B. Khasyanum, Griff. (Gibson and Lindl.), but it is much larger. The leaves are very fleshy, dark green, 0.28 m. long, 0.04 m. wide at their broadest place, cuneate, oblong-ligulate, blunt, then acute, solitary on a very small bulb. The flowers stand in an elongate, transverse raceme, which has a narrow sheath at its base. Bracts yellowish, with a red middle vein and a red top. Sepals ocbre-white, spotted and streaked with light and not very clear purple. Petals white, green at the tips, with a dark red spot at the base. Lip yellowish-green, with many small sepia-brown spots. Column yellowish-green.

It was imported from Assam by Mr. J. C. Bowring, Forest Farm, Windsor Forest. I dedicated it in December last with great pleasure to this gentleman, who is a great friend of botanic Orchids, and who has made highly curious experiments on the fecundation of Orchids, the results of some of which will prove exceedingly curious.

I have had great trouble and vexation with this plant to settle in my mind about its relation to the scarcely known, obscure Bulbophyllum cylindraceum of Wallich, *Pl. As. Rar.*, 60, to which this must stand very near. It has, from the representation which alone forms the material of our judgment, a very broad midrib to the leaves, upright inflorescence, with a wider sheath, linear bracts, pallid yellow flowers, and a long nailed lip, acute petals, distinct top of column. It comes from the summit of Mount Sheopur. I did not know where this mountain was situated, hence I addressed my excellent friend, Mr. N. E. Brown, who was most kindly assisted by Mr. C. B. Clarke, once Director of Calcutta Botanic Garden—now "*beatus ille, qui procul negotiis,*" devoting his power to Indian botany as an independent botanic labourer at Kew. Sheopur is in lat. 28° N., long. 85° E., in Nepal. *H. G. Rchb f.*

Cypripedium gemmiferum, *n. hyb.* (Hookeræ purpuratum).

This has the leaves of Cypripedium Hookeræ. The peduncle is dark reddish-brown. The upper sepal is broad elliptic with a small apiculus, white with a rosy hue towards rhe lateral margin, bearing eleven neat green nerves on each side of the middle rib. Inferior sepal narrow, more acute, not equalling the lip. Petals broad, ligulate, blunt, green at the base, purple in the middle, white at the extreme apex. Ciliæ around the margin. Lip with a blunt sepia-brown sac and upright horns of the same colour, nail lighter, greenish, excepting inflexed parts, which are light brown and adorned with numerous shining reddish-brown warts, which have suggested the name ; staminode transverse, crescent-shaped with a little apiculus in the middle, and an excision at the back, opposite to it. It was kindly sent me by Mr. John C. Bowring, Forest Farm, Windsor Forest. *H. G. Rchb. f.*

Vanda Denisonæ punctata.

A new variety, of the lightest sulphur-white colour, excluding the base and middle of the lip, which are white. There are numerous brown spots in rows on petals, and some on the odd sepal. It was kindly sent me by Messrs. Low & Co. *H. G. Rchb. f.*

* *Bolbophyllum Bowringianum*, n. sp. (Khasyana).—Pseudobulbis minutissimis subglobosis monophyllis; foliis cuneato oblongo-ligulatis obtuse acutis ; pedunculo elongato ; racemo elongato, cylindraceo densissimo porrecto vagina arcta supposita ; bracteis ligulato rhombeis abbreviatis ; sepalo impari triangulo parvo apice recurvo ; sepalis lateralibus multo majoribus semiovatis connatis apice paulo firmis apicibus triangulis obtusis, superficia velutinis, tepalis ovatis acutis ; labello carnoso oblongo brevi acuto, basi biggiboroso ; columnæ angulis antice validis, intus angulo altero sub acumine.—Assam. Intr. a cl. C. Bowring, Forest Farm, Windsor Forest. *H. G. Rchb. f.*

## THE PINE-APPLE NURSERY.

London is so vast that comparatively few among its residents can pretend to anything like a complete knowledge of its topography. The gradual merging of the outskirts of the great city into the more rural suburbs is in no wise more strongly marked than by the plants which occupy the gardens. When Thuyas look less like dishevelled and very dirty mops, and Roses begin to put in an appearance, then the explorer knows that he is gradually exchanging an urban for a suburban atmosphere, and every step he takes accentuates the difference in the vegetation. This is the common experience in every outlying quarter of London, but it is not so common to find in the town itself, surrounded by acres upon acres of brick and mortar tenements, a space itself of two or three score acres without a house, and as devoid of paving or gas lamps as a country road. A park some one will say, or a "green," of which there were once so many in suburban London. But the oasis we allude to is not one of that character. It is one which needs the descriptive pen of a Dickens to do it justice. To ordinary observers it is a large unsightly patch of ground bounded on all sides by houses and streets, itself unburdened by a single residence, bisected by a road without lamp or flagstone, but bordered on each side with manure-heaps, broken crockery, corpses of cats and dogs that have met with an untimely fate, and all the miscellaneous and unsavoury *débris* that one meets with in spots where "rubbish may be shot." On each side of this road are oblong plots of garden ground, separated by artificial boundaries, as immaterial as many of those which separate States of much greater political importance, destitute even of the old cask staves which so often do duty for fences under similar circumstances. At the far end of these garden plots is a row of contiguous sheds and shanties of the most varied character, but all alike dilapidated and wretched looking. Here and there may be seen a glass box with a chimney-pot, which, it may be surmised, does duty for a greenhouse. The æsthetic sense is shown in the distribution of clinkers, brickbats, fragments of glass, and shells, presumably intended to represent a rockwork, but upon which the most ubiquitous weed very wisely refuses to grow in the absence of all provision for its maintenance.

What the contents of these gardens is may readily be surmised ; each proprietor or tenant does what seems best in his own eyes, some evidently give pains and labour, others are not disposed to give either, and between the extremes there is every grade of transition. We presume these are allotment grounds, and we value these precious spots of ground too highly in general to say one word in derogation of them ; besides, one might as well attack the British Constitution as trench on the rights of allotment holders. Moreover, in this particular instance we are absolutely ignorant of the circumstances of the case, but this at any rate is clear to any one, that a great deal of valuable ground is here wasted, from the incapacity of the tenants to till it properly. It might be managed (if circumstances allow) for the benefit of all by a competent superintendent on co-operative principles, each co-operator receiving an equivalent in kind or in money according to the amount of capital he furnishes or the labour he gives or provides. But that would be an infringement of individual rights not likely to be popular with free and independent Britons. But what has all this to do with Messrs. Henderson's nursery? This much—that the spot we have been speaking of is within gun-shot of the nursery, and that no better illustration need be sought of the contrast between what may be effected by capital and well-directed enterprise, and what by inefficiency and muddle, under precisely similar conditions. Messrs. Henderson will, we are

sure, excuse us for drawing the comparison which is so entirely in their favour. It is a contrast, indeed, to pass from the spot we have mentioned to the entrance to the conservatory of the Pine-apple Nursery. The majestic foliage of the Musa Ensete which keeps guard in the centre of the structure, looks all the more striking after having traversed the wilderness we have spoken of. By the way, it may as well be mentioned that the direct route to the Pine-apple Nursery from most parts of London does not lie through this wilderness, though it suited our purpose to go that way.

In some nurseries we know of, groves of Camellias, in others massive Cycads, elegant Tree Ferns, or towering Dracænas form the chief features on entrance, but here Musa Ensete stands out in unquestioned supremacy. Musa is king here, and there are princes of the blood in the background, for in a tank, sending tassels of fine roots into the water, is an array of young plants of this very noble plant. It must be confessed that the other occupants of this conservatory look dwarf by comparison, but the impression is soon removed when details are looked into, and Norfolk Island Pines, Antarctic Dicksonias, and all the miscellaneous tenants of a winter garden are scrutinised. A noble Rice-paper plant, Aralia papyrifera, spreads out its fan-shaped leaves; New Zealand Flax (Phormium) sends up its sheaves of sharp sword-like leaves; Dicksonias and Cyatheas unroll their elegant fronds; and amid all this wealth of fine foliage and bold outlines provision is made for securing colour not only by the hosts of Fuchsias, Calceolarias, Rhodanthes, Japan Spiræas, and such-like, but also by small plants of the variegated Negundo grown in pots, and scores upon scores of the common white Lily, Lilium candidum, grown in pots in the manner we have already indicated. One side of this winter garden is occupied by a rockwork well covered with Ferns, among them a fine Cyathea medullaris, and climbing plants, such as Cissus antarctica, Ficus minima and F. radicans. Bamboos (Thamnocalamus Falconeri) lighten up the darker foliage with their light-green lance-shaped leaves; Rhopalas, Dracænas, Aralias, and a host of others lend the charm that variety and singularity of foliage always give.

Passing from this house visitor sees before him a small town of glasshouses of all sizes and shapes, some filled with Orchids, others crammed with Rhododendrons, others with Camellias, others with Heaths in bewildering profusion and variety. This nursery, in fact, does not deal so exclusively with specialities as some we could mention do, but it has something of everything that is grown under glass, and a good deal that is not. The reader familiar with the long-standing reputation of the firm will not want us to point out that there are, as there always have been, specialities here, in the way, for instance, of hard-wooded greenhouse plants, such as Rhododendrons, but at the same time it is true that the specialities are not allowed to oust other classes of plants, so that the plant-lover, be his proclivities what they may, is pretty sure to find something of everything, not forgetting his own particular favourites. An Orchid-house, for instance, attracts attention immediately on leaving the conservatory, filled when we saw it with a nice stock of cool Odontoglossums, such as vexillarium and Alexandræ. A little further on is a house of three spans, the basement of which is occupied by a huge tank of rain-water, calculated to hold some 45 feet square of water. Eight 4-inch pipes placed beneath the stage serve for heating, the boiler in use being Watson's simple wedge. The staging consists of bars of Pitch Pine, on which Cypripediums and other plants are placed at a short distance from the glass. In another house Masdevallias find a home evidently much to their liking. Elsewhere are Aerides and Vandas, Bolbophyllums, Saccolabiums, Bolleas and Batemannias; in fine, a large and varied collection of the best and most interesting among the Orchids. Many of them are grown on slabs of virgin cork, to which they are firmly affixed by wire and hung close to the glass. Stove plants and plants for furnishing and decorating are grown in endless numbers — Palms and Dracænas, Crotons and Aralias, Begonias and Ferns. Among the Dracænas D. Youngii is found to be hardier than some of the others, and to bear cool greenhouse treatment and stand the dissipation of the London season better than many of its congeners. Among the Ferns we were particularly struck with Aglaomorpha Meyeriana, a handsome Fern with creeping rhizome, like that of a Davallia, and covered with scales of a golden-brown, resembling plush. Bertolonias and Sonerilas, with their jewel-studded leaves, are here in great variety. The golden Caladiums raised by Mr. Bausé at Chiswick, of which Duchess of Teck is noted as one of the best, require to be kept growing on and not rested. Hybrid Rhododendrons have long formed one of the specialities of this establishment. House after house is full of nice healthy young stuff, including not only those for whose parentage the firm is responsible, but also Veitch's hybrids and those of Davis. None of these were in bloom at the time of our visit, but the hint of their existence here in such numbers and variety will suffice for the reader interested in them. One span-house is filled with bulbous plants, such as Nerines and the like, for the most part going to rest, though Coburghia trichoma and Zephyranthes still had representatives in bloom. And why are not Blandfordias more grown? Their elegant grassy foliage and stately clusters of orange bell-shaped flowers, of varied form, size, and hue, should recommend them for more general culture. Sarracenias and Droseras attest the interest which attaches just now to carnivorous plants, and their singularity of form, if no other reason, renders them worthy the attention of plant lovers. Those to whom elegance of form is the chief source of delight in plants should see the Todea-house—a shaded structure with a northern aspect, filled with fine specimens of these plants, with their dense feathery deep green fronds bedewed with crystal dewdrops. This house is worthy of special mention, as one of the most striking features of the establishment. Of course, for those who like colour there is ample choice here, as may be gleaned from what we have already said, but it may be well to mention in this connection a variety of Combretum purpureum, which, when it comes to be known, will, we doubt not, command a large share of admiration. Its oblong lanceolate leaves are freely mottled with various shades of violet, constituting a most effective and beautiful variegation.

The Wellington Road Nursery, belonging to the same firm, is now used as a feeder for the Maida Vale establishment. Here, again, is a small town of houses and pits, filled with Calceolarias, of which Messrs. Henderson have a good strain with moderate sized flowers, varied in colour and marking, and of good form. Chinese Primulas, of course, form a feature. This is not the time to see them to advantage; but even now it is easy to see that the Blushing Beauty, a double white of neat habit, deserves her name. P. crispifolia is noteworthy for its leaves, crisped at the edge as in the old Malva crispa; Pelargoniums and Fuchsias in endless variety; Heaths and Camellias, Adiantums, and Rhodanthes. The numerous plants required now-a-days for furnishing or bedding-out are grown in quantities, but even here supply has a hard task to keep pace with demand. *Alemon.*

## MR. C. NOBLE'S CLEMATIS.

It would be difficult to point to any flower that has so much improved as the Clematis in recent years. Far removed as the Roses of the present day are from their prototypes, the Briers of our hedgerows, and kindred wildings, yet they do not present such an immense stride as exists between the modern forms of Clematis and the least attractive of their species. The size, form, colour, and distinct character existing in the flowers produced by many of the best varieties that have been raised, are such that even those most able to gauge what it is possible for the hybridist to accomplish would not have been sanguine enough to expect. Added to this, the seedlings produced from crossing such of the earlier bloomers as are represented by the patens and florida types with the lanuginosa and viticella division have yielded a number of varieties that keep up a continuous succession of bloom from spring to autumn.

As hardy climbing plants they stand so far unequalled that it might be said, with the exception of Roses, they eclipse all others combined. Their easy cultivation and hardy nature, resisting as they do our severest winters, is also a matter of the first importance. Another thing that does not appear to be generally known is that they do equally well on a north wall, where many things refuse to grow, as they do in a sunny position, in fact, the bloom lasts so much longer, and in the purple-coloured kinds of the Jackmanni shade is so much more intense where not exposed to the full force of the sun that it may be said a southern aspect is not the best for them. It is not only as climbers to cover walls, railings, pillars, or arches, that they may be used, but also, alone or combined with other plants, they may be employed to creep over rock or rootwork, to form divisional screens in conjunction with evergreen climbers, or they may be grown in low beds either trained or allowed to scramble about in a natural way; they are equally suitable for growing in shrubbery borders, occupying a front position amongst such things as Rhododendrons, Azaleas, and others of like character that bloom early in the season and present little beyond masses of green foliage throughout the remainder of the year—it is here where these climbers may be introduced in quantities with the most happy effect. All that is necessary is to see that their stronger growing neighbours do not encroach upon and smother them.

There are no plants that produce such a profusion of flowers with which I am acquainted that afford so long a succession of bloom, or that lighten up a shrubbery so effectively through the summer as these Clematis when introduced in sufficient quantity. But much as they are admired they have not yet been used nearly so freely as they might be with advantage.

Amongst those who have made their mark as raisers of new Clematis Mr. Noble, of Bagshot, holds a conspicuous place, as evident to those who saw the fine varieties he recently exhibited at South Kensington and Regent's Park. Mr. Noble has been steadily at work with them for a number of years, and may well be satisfied with the result of his labours. The new varieties he exhibited have a distinctive character, which, combined with a profuse flowering habit, cannot fail to make them become favourites with those who grow hardy flowering plants. The Jackmanni parentage is distinctly stamped in several of them—a desideratum which most people acquainted with the excellent properties possessed by this good old sort will see the advantage of. The following is a brief description of a few of the most distinct:—

*Pirate King.*—A broad eight-petalled flower, pale plum colour, with the deep Jackmanni substance in both the flowers and leaves, such as I have not seen before.

*George Eliot.* — A medium sized eight-petalled flower; ground colour dark lavender, shaded with violet. A profuse bloomer, and as sweet scented as Violets.

*Margaret Dunbar.* — Colour deep lilac shaded, centre white; a distinct variety, blooming so profusely that the flowers all but hide the foliage.

*Lady Constance Kennedy.*—The flowers of this variety have three rows of petals, snowy white, the centre deep plum colour, giving it a decidedly distinct appearance. This is also a very profuse flowerer.

*W. E. Gladstone.*—An immense eight-petalled flower, just upon 9 inches in diameter; bright lavender in colour.

*Sarah Bernhardt.* — A full double sort; colour pinkish lilac. A free bloomer, and very distinct.

*Imogene.*—An eight or nine-petalled variety, of a beautiful silky white shade; the petals very stout and flat.

*Aurora.*—Flowers double, reddish-violet in colour. An unusually free bloomer.

*E. Booth.*—This variety has seven or eight petals, pale plum-coloured down the centre, the outer edge white; the petals are deeply frilled on the edges, which gives it an elegant appearance.

*Proteus* is variable in habit: sometimes the flowers are quite double, in others semi-double; they are purplish-lilac in colour, and near upon 8 inches in diameter.

*Lord Gifford.*—Reddish-pink, suffused with lilac; an eight-petalled flower, very distinct and pleasing.

*Edith Mallett.* — A seven-petalled flower, pale blush in colour, with a crimson feather at the base; the petals are broad and rounded at the extremity. Colour and form alike distinct.

*May Queen.*—Petals eight in number, white down the centre, pale amethyst on the outer edge. A bright looking handsome kind.

Others there were amongst this fine lot of seedlings that were beautiful and effective, but the above were the cream of the collection. Three of them were awarded First-class Certificates, namely, Lady Constance Kennedy, W. E. Gladstone, and George Eliot. *T. B.*

## EARTHWORMS.

I HAVE long been so much interested in the doings of the earthworms, that I shall welcome the work of the most painstaking and truthful observers of natural phenomena, Mr. Darwin, with much interest. It was only the other day that I inquired in your pages what the worms wanted with the large hard leaves of such Pines as excelsa, Sabiniana, macrocarpa, &c. "Eat them," you say. Well, it seems like it; for, left to the worms, the entire leaves speedily disappear, and yet the leaves are almost as hard as glass or silica, and are rather fully charged with resin and turps—a curious diet for earthworms, is it not? The worms, however, have but a scant choice of food at this season, when the leaves of these and other Pines fall—that is, from April to June; so, probably, the worms have only Hobson's choice—hard Pine leaves spiced with turpentine, or no vegetable diet at all. The worms do not seem to eat grass nor any fresh vegetable food, and possibly belong to the race of scavengers that deal in decomposing matter chiefly or only. No doubt worms in the making or using of their nests not seldom draw in young seedlings; but this is possibly accidental, a mere mechanical effect of their mode of working; on the contrary, dead leaves, &c., seem deliberately drawn in for purposes of food. Whilst worms seem, as you affirm, insensible to light, they appear to be highly sensitive to heat, for several hours after sunrise the grass or grounds may be strewn with worms, for purposes of reproduction, food, fresh burrows, &c. As soon, however, as the heat of the sun directly hits them they disappear almost as quickly as when excited by sound. I am, however, somewhat sceptical about worms hearing. You may talk pretty loudly over earthworms enjoying their dew-bath on your smooth lawn on a summer morning, and they will take no notice; but a heavy footfall, or the dropping of a stone, or a crumb almost, on the ground itself, sends them back to earth as if electrified, as you so forcibly put it. Still, they may retreat, not because they hear the sound, but felt it in the vibration of the earth. Their chief foes are birds and moles; the former can neither alight nor hop near enough to devour a worm without causing the earth to vibrate sufficiently to tell the tale of their presence to the highly sensitive structure of their intended victims; while the upheavings and subterranean workings of the mole affects the worms very much as the eruptions of volcanoes do human beings. I shall be curious to see what Mr. Darwin says on this point. As far as we know of the life-work and history of the earthworm, neither sight nor hearing are essential to its safety.

The supposition that worms are probably *sans* ears as well as eyes seems confirmed by the fact that sound causes worms to advance to the surface as well as retire from it. A gentle vibration, such as would result from the alighting or hopping of a bird, sends them holeward pell-mell, as if shot out of a cannon; while more violent vibrations, such as would result from the working of a mole, or the turning or disturbance of the earth by spade or plough, makes the earthworm bound up to the surface with such force as often to throw itself quite out of the ground.

No doubt the mean despised worm is a wonderfully efficient drainer. We lay our main, secondary, tertiary, and feeding drains—but for each one of the latter made by man the earthworm makes its millions. And it is probably in these infinitely minute drains that the foundations of perfect drainage are laid—just as it is by the hair-like vessels of the ultimate tissues of our bodies that nutrition is completed, and even strength generated. It is now many years ago since I directed attention in your columns to the earthworm as a soil maker. That it manures the ground is obvious to every one; few, however, who have not experience in the removal of worm-casts from smooth lawns could have any idea of the amount of manure manufactured by earthworms. These spread on the surface year by year increase the depth of the tilth. Of course there are other causes at work, such as the decomposition of the roots of grass or other herbage, as well as of fallen leaves. But making due allowance for these annual increments to the surface soil, a large residuum remains to the credit of the earthworm.

Having occasion some two years since to skin an orchard and lower the ground, a layer of chalk that had been applied to the surface about fifteen years before was found at a depth of a foot or more from the surface, as far as I recollect. Making due allowance for a slight sinking by the specific gravity of the chalk, here was a creation of new soil that seemed almost incredible, making every allowance for the decomposition of herbage and the work of the worms combined.

The surface strata afforded visible proofs of worm agency, for the worms had worked at first and for several years from under and through the chalk. As the surface was neared all traces of chalk were lost in the soil, showing that the worms had worked from a higher plane. And this was by no means a solitary instance. In the removal of soils in various parts of the country it has been found almost impossible to account for their character and peculiar admixture, apart from the upheaving additions of worms from the lower to the upper strata. Of course the word "strata" here is used in a limited and artificial sense, as the home of the earthworm is in the upper crust, or the cultivated tilth of the earth, and most of them will be found to congregate where the larder is the richest, that is, the most abundantly filled with vegetable and animal remains, and also perhaps, as a rule, where their services are most needed as drainers. *D. T. Fish.*

## THE VICTORIA AND PARADISE NURSERY.

(*Concluded from p.* 783.)

THE second division is filled with Amaryllis, of which Mr. Williams has long been a cultivator, and has one of the most complete collections in existence, noticeable for the preponderance of varieties with pure white marking in the base of the petals—a most desirable property which many otherwise fine varieties are wanting in having the objectionable green colour in place of white. Here again the back wall is covered with Orchids, consisting of Lælia majalis, L. anceps, L. autumnalis, L. albida, and others requiring a like temperature. This leads to one of the cool Orchid-houses, occupied by Odontoglossums, Masdevallias, &c. In the first division were M. Lindeni and M. Veitchii, each 18 inches across; M. ignea, 2½ feet in diameter; M. Harryana atrosanguinea, in the shape of fine specimens, and all the other kinds of these popular plants in quantity. Odontoglossum crispum, O. cirrhosum, and a host of others that bear cool treatment, with Dendrobium Jamesianum, Ada aurantiaca, and others. The other division is filled with larger plants, the majority of which are Odontoglots, some hundreds of which were pushing up their flower-spikes. Amongst these were O. Pescatorei, O. triumphans, O. cirrhosum, the rare O. Chestertoni, a couple of plants in bloom; O. crispum roseum, O. Hallii, O. roseum, O. Rossii; Oncidium cucullatum—of this there were some beautiful forms in flower. The large stock of Cœlogyne cristata is grown here.

Leading from these houses is another span-roofed range, the first of which contains young Palms of the more elegant-habited kinds, such as Geonoma gracilis, Cocos Weddelliana, and rare Ferns, including Lastrea membranifolia, a new species; and Microlepia hirta cristata. The next division is devoted to similar occupants, and the stock of the new Ferns, Asplenium novæ-caledoniæ and A. Sandersonii, a distinct and handsome kind from Natal that will thrive in a greenhouse temperature; and Davallia aculeata, a rare Fern of elegant habit. On the end which divides this from the next house was a number of plants of plants of Dendrobium Cambridgeanum, on blocks, growing well. The adjoining division is occupied by young Crotons of all the new kinds, including C. Warrenii, and C. Truffautianus, a long-leaved very highly coloured yellow leaved kind. In the last house of the range is a collection of Anæctochilus, which contains most of the species in cultivation, both gold and silver veined kinds, with A. Baylii and A. Heriotii, both new forms of A. setaceus; these, the most beautifully marked of all variegated leaved plants, are in a glazed case at one side of the house. More young Palms go to fill the stages, whilst the roof is hung with Nepenthes, of which there are nine rows running from end to end of the house; these are in beautiful condition, free and vigorous of growth, full of handsome, highly coloured pitchers. Amongst them, along with the older kinds, are several that are new, including N. Lawrenciana, N. Williamsii, N. Outramiana, and N. robusta, all deeply coloured varieties, with handsome pitchers. In this direction are situated the houses especially devoted to new plants. This nursery is justly celebrated for the number of these that are yearly brought before the gardening public, and accessions are continually being made from both the warm and cooler regions of the world that yield something new either in the shape of flowering or fine-leaved species, independent of such as result from hybridising.

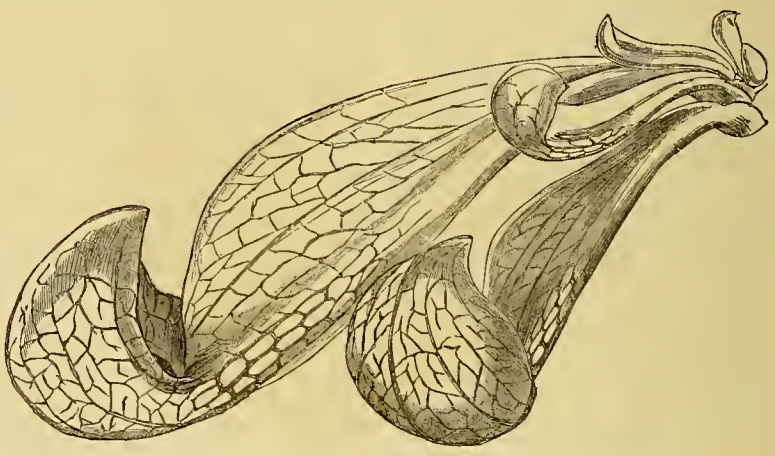

FIG. 146.—PITCHERS OF SARRACENIA PSITTACINA—MOTTLED RED. (SEE P. 817.)

Amongst others now in store are Philodendron elegans, partaking of the character of some already in commerce, but the leaves more finely divided; Dieffenbachia Imperator, a fine, heavily yellow-blotched kind; Anthurium Dickii, and A. Walnewii, both distinct-looking plants. Of the beautiful Tillandsia Lindeni vera there is a good stock. Croton Lady Zetland, colour of C. majesticus, but shorter and more erect in the leaves—a distinct and handsome kind, and several others differing considerably from those now known; amongst them is C. excelsus, a highly coloured long-leaved species; Aralia quercifolia, a handsome green-leaved kind; A. spinulosa, a new species to be let out this spring; Ixora Pilgrimii, Cocos elegantissima, a beautiful habited plant; and the handsome Aralia spectabilis. There are also a number of other new plants, stock of which is being got up previous to their being seen; amongst these may be mentioned Wallichia zebrina, a distinct looking species, with a beautifully mottled stem like Caryota. Here likewise were a considerable number of the handsome Dendrobium Ainsworthii. In this block of houses there is one filled with imported Orchids, including quantities of Cattleya Warnerii, C. Trianæ, C. gigas, C. Mossiæ and C. Mendelii, most of which are in fine masses; one piece of C. Mendelii is some 2 feet across, imported last year, and now pushing up its flowers; Epidendrum vitellinum majus, Lycaste Skinneri, Oncidium concolor. There is a splendid lot of the

handsome persistent flowered Dendrobium superbiens that last year made bulbs 3 feet long from growths not more than 18 inches, but it requires a strong heat to enable the plant to do this.

In cooler quarters there are large numbers of newly established Odontoglossums and Masdevallias. In another of these new houses are grown the Phalænopsis. There are a quantity of fine examples of P. amabilis, P. grandiflora, P. Schilleriana, P. rosea, P. Mannii, P. leucorrhoda, &c. A whole side of one of these houses is filled with Saccolabiums, many of which are wonderful specimens. They consist of S. præmorsum, S. Blumei Dayanum, S. Blumei, a grand mass, with ten growths; S. Turneri, the finest of all the Saccolabiums; S. retusum, with six growths; S. guttatum, a splendid specimen, consisting of nine growths; S. guttatum superbum, a magnificent mass, near upon 3 feet across; S. guttatum (Loddige's variety)—altogether a lot of plants such as it would be difficult to match, and of which those named are the most remarkable. This brings us to the end of the numerous glass structures which this nursery contains with the immense number of plants therein, of which those particularised are not a tithe, but they may in some measure give an idea of the extent and variety cultivated. A healthy, thriving condition in the stock generally, and a systematic arrangement throughout, are features at once apparent to all who visit the nursery.

There is good accommodation for carrying out the large business, including ample shed-room for the storage of dormant stock, such as pot Vines, standard Bays in tubs, of which there is a grand lot of plants in various sizes, and anything of a like description that simply requires a slight protection from the weather during the winter season. The principal packing-shed, 80 feet by 40, is heated by hot water; over this there is a commodious carpenter's shop, where the requisite packing-cases are made, as also the preparation carried out of all materials for hot and greenhouse building, including the heating, which are all done on the place. Mr. Williams has lately secured the two adjoining houses on a long lease, in one of which he intends to reside, as the whole of the room available in the present dwelling is wanted for the seed department.

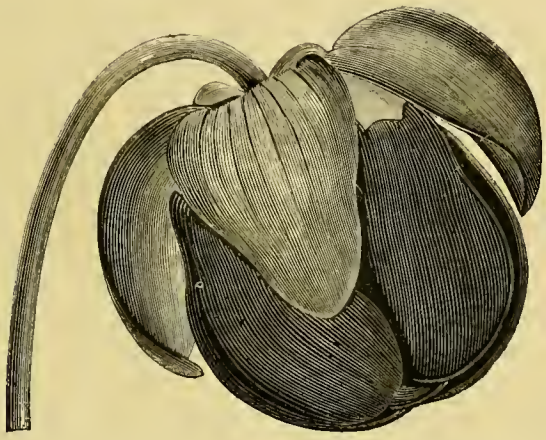

FIG. 147.—SARRACENIA CHELSONI ×: PETALS PURPLISH-BROWN. (SEE P. 818.)

## SARRACENIAS.

OF late years the numerous fine varieties of Sarracenia, raised or imported, have called attention to these extraordinary plants, and have furnished evidence that the singularity, beauty and fragrance of their flowers are quite as remarkable as are their pitchers. We have already figured some of the most remarkable of these (see *ante*, pp. 629, 633), and propose now to give a list of all the forms known to us in English gardens, and to add a few descriptive notes relating to those not as yet described in text-books, or which are comparatively little known. For the means of so doing we are especially indebted to Mr. F. Moore, of Glasnevin, who has kindly furnished us with numerous fresh specimens, and to Messrs. Veitch, Bull, and Williams. Sarracenia culture, it may be remembered, is a tradition at Glasnevin. It was well carried out there by the late Dr. Moore; by him, too, was raised the first of the hybrids which appropriately bears his name, and which still remains one of the most beautiful, if not the most beautiful, of all the hybrids. It was at the Florence Botanical Congress in May, 1874, that we first saw this—the first hybrid Sarracenia artificially produced; and we vividly remember the well-founded pride with which our late friend exhibited the trophy of his skill and of his zeal. The narrative will be found at p. 702 of the first volume of the new series of this journal (1874). Since then several hybrids have been raised, and more are sure to follow. Only the other day Messrs. Veitch exhibited a new one, and we know they have others in progress. Before the distinctive characters get hopelessly mixed, it is desirable to indicate clearly the starting points.

As to their curious insect-catching propensities, it is sufficient to refer to Mr. Boulger's paper at p. 627, in which the present state of our knowledge is summed up.

As to their cultivation we do not intend in this note to say anything, the subject has been treated of by Mr. Baines, at p. 280 of our volume x. for 1878. It may, however, be pointed out that some of the species, such as S. flava and S. purpurea have proved to be hardy in many places in this country, and S. purpurea has even established itself in Epping Forest, so far as to produce seedling plants in Mr. George Paul's Nursery at High Beech. No doubt the great difficulty to be overcome in their culture is our uncertain and treacherous spring. The species are all natives of the Atlantic States of North America, Darlingtonia representing them on the Pacific side. For references to the literature of the species, the reader should consult Mr. Sereno Watson's invaluable *Index to North American Botany* (1878), p. 39.

The forms known to us in English gardens are the following:—

1. S. VARIOLARIS.
? 2. DRUMMONDI.
3. UNDULATA = Drummondi, Hort.
var. ALBA = Drummondi alba, Hort.
4. RUBRA.
var. ACUMINATA.
? 5. SWEETII.
6. PSITTACINA.
7. PURPUREA.
8. FLAVA.
var. maxima.
minima.
ornata.
crispata.
atrosanguinea.
picta = Fildesi.
limbata.
erythropus.

In addition to these there are the following hybrids and crosses already distributed, besides a number which have not as yet been brought before the public:—

| | |
|---|---|
| S. MOOREI × | S. Chelsoni × |
| STEVENSI × | melanorhoda × |
| Williamsi × | formosa × |
| Popei × | |

These admit of being grouped in two divisions according to the colour of the flower; thus—

1. Flowers red or purple are Drummondi, undulata, rubra, Sweetii, psittacina, purpurea, and all the hybrids, so far as we yet know them.

2. Flowers yellow-greenish or whitish, including flava and all its varieties, and variolaris.

The flowers, however, are not so generally accessible as are the pitchers, on which account we give the following table, founded on the variations of the pitcher as a guide to the gardener in the discrimination of the forms. It must, of course, be taken as approximate only, and allowance must be made for natural variation, a variation which will increase as the number of hybrids augments.

In the comments which follow we shall adopt the order of this table, merely mentioning old and well-known forms, but entering into more detail in the case of the newly introduced hybrids and varieties. For the convenience of the reader we shall quote easily accessible figures, but for the literature in general we must refer to Mr. Sereno Waston's work before cited, and to the description of all the species then known in De Candolle's *Prodromus*, vol. xvii. (1873), p. 4, *et seq.*

Pitchers spreading horizontally or obliquely ascending
- Lid concave, hood-like
  - Pitcher cylindrical, straight .. PSITTACINA
  - Pitcher distened in the middle MELANORHODA ×
- Lid flattish, not hooded
  - Pitcher short and thick.. .. PURPUREA
  - Pitcher lengthened .. .. CHELSONI ×

Pitchers erect, long, funnel-shaped
- Lid concave, hooded
  - Wing broad
    - Pitcher green .. .. .. VARIOLARIS
    - Pitcher red .. .. .. FORMOSA ×
  - Wing narrow .. .. .. DRUMMONDI
- Lid flat or wavy
  - Pitcher mottled above .. .. UNDULATA
  - Pitcher not mottled
    - Lid broad at the base
      - Lid acute or tail-pointed .. RUBRA
      - Lid suborbicular
        - Wing broad .. .. STEVENSI ×
        - Wing narrow .. .. MOOREI ×
    - Lid narrowed at the base
      - Wing broad .. .. .. FLAVA and its numerous varieties
      - Wing narrow .. .. POPEI ×

S. PSITTACINA, *Michaux; A. DC. Prod.* xvii., p. 4.

This is one of the most curious plants of the genus, its comparatively small, spreading, purplish-spotted pitchers, with the lid like a parrot's head (whence the name psittacina), being distinct from anything in any other species. The wing is very broad, and the hood-like lid is so inflexed at the margins as to leave only a very small orifice. The interior of the pitcher is lined with coarse deflexed hairs. It is apparently more difficult to cultivate than other species, as it is not so generally met with as others, nor in such good condition. We have not seen it in flower in cultivation, though various hybrids have been raised from it, but the flowers are described as very similar to those of S. purpurea. We reproduce an illustration of the pitcher of this plant which we published in 1866. (Fig. 146, p. 816.)

S. PURPUREA, *Linn.*; *A. DC. Prod.* xvii., p. 4.

The best known probably of the Sarracenias, the one longest cultivated, and the hardiest. It will thrive well, indeed, in any boggy situation, and is hardly likely to be very particular as to temperature, as it extends from Hudson's Bay and Newfoundland to Alabama and Florida. The short barrel-shaped pitchers of a deep reddish-violet, or sometimes wholly green, with their large flap-like, rounded and wavy lid thickly studded with decurved hairs, are too distinct to be confounded with any other species. It frequently flowers in cultivation; we had it ourselves at one time in flower on a window-sill. The sepals are dull reddish-purple; the petals of a similar colour, but rather brighter in tint, paler on the inner surface. The stamens in the bud may be seen to be arranged in five bundles, each consisting of seven filaments, arranged in semicircular manner, so that when they fall off they leave the scars arranged in five festoons. It is probable, therefore, that each bundle of stamens represent one compound stamen, with a central terminal lobe and three subsidiary ones on either side. The ovary is 5-celled below, and sterile, but 1-celled in the middle, owing to the circumstance that the placentas bearing the ovules do not meet in the centre. The ovarian cavities are opposite, the dissepiments alternate with the lobes of the stigma, which latter again are opposite the sepals. A figure of the pitcher of this species is shown in the lower right hand corner of the woodcut at p. 821. It is also figured in *Bot. Mag.*, t. 849; *Bot. Cab.*, t. 308; *Flore des Serres*, t. 1076.

S. CHELSONI ×, *Hort. Veitch, Gard. Chron.*, vol. ix. (1878), p. 11.

This is a hybrid between S. rubra, fertilised by pollen of S. purpurea, raised in Messrs. Veitch's nursery at

Chelsea, whence the name, and was first exhibited in 1877. The pitchers in direction are midway between the erect pitchers of rubra and the somewhat spreading tubes of purpurea, in length they resemble those of S. rubra, in form they are intermediate between those of rubra and purpurea, and the lid, as will be seen from our illustration (fig. 148A, p. 811), is almost the same as that of the last species.

The following description is drawn up from cultivated specimens at Glasnevin and Messrs. Veitch's nurseries :—Pitchers 10—12 inches high and 2 inches in diameter across the mouth, deep claret-purple, decurved and slender at the base, gradually ascending and distending into a somewhat spindle-shaped tube marked with prominent veins and with a shallow straight wing; margin recurved, glossy; lid erect, 4 inches in diameter, suborbicular or reniform, undulate, rich crimson with numerous deflexed closely pressed white hairs. Flowers 4 inches in diameter, purplish-brown (see fig. 147, p. 817). Bracts oblong-obtuse, boat-shaped, brownish with a white edge. Sepalsun equal, ovate oblong obtuse, rather thin, dull brownish-purple. Petals reddish-yellow and spotted at the base, purplish-brown above, cream coloured within, in form they are obovate oblong, broad at the base, below the middle they are constricted and abruptly bent downward, while at the upper portion they are flat. Filaments white. Ovary ovoid, obtuse tubercled, disc of the style 2 inches across, green, its five lobes short, deltoid, and notched at the points. *M. T. M.*

(*To be continued*)

## TRADE MEMORANDUM.

A correspondent writes:—"J. T. Riches, nurseryman, Tooting, London, has been advertising summer flower Chrysanthemums in your paper. I wrote, asking his price per hundred, and he replied, '18*s*., cash with order.' The day I got this answer (May 12) I sent him an order for fifty, and enclosed 9*s*. in stamps. I have neither received the plants nor heard from him, though I have written to him repeatedly. Is there such a nurseryman in Tooting?" [We communicated the substance of the above letter to Mr. Riches, at the above address, on June 8, but up to the hour of going to press we have received no reply, and our letter to him has not been returned. Eds.]

## Notices of Books.

**Horticultural Buildings.** By F. A. Fawkes. (B. T. Batsford, 52, High Holborn; *Journal of Horticulture*, 171, Fleet Street.)

This book treats on a subject of great importance to gardening as it exists at the present day. The acquirement of wealth through a lengthened epoch of national prosperity, with the ever increasing taste for gardening pursuits, has, in conjunction with cheap glass, resulted in most people, who have the means, wishing to possess themselves of some or other of the many forms of plant or fruit structures which during recent times have come into existence—from the little greenhouse made to do duty in providing a few flowers in the cheerless season, and sheltering the occupants of the summer flower-beds, up to the elaborate conservatory attached to a palatial mansion. Demand in such matters never fails to beget supply, and inventors in the horticultural building line have been as plentiful as Blackberries. Many improvements in the details of construction in the various structures have been made, but very many more of the so-called improvements are simply differences without any advantage. The originators, conscious of the prominent existence in the human cranium of the bump, love of novelty, have not been slow to provide something to gratify that inclination. Thus it is that many of the innovations that have been introduced in the construction of horticultural buildings, in practice are found so far wanting that they soon lapse into disuse.

It would not be reasonable to expect a book, such as the one before us, to do more than condemn by silence all the worse than useless appliances that have been ushered before the gardening public, and which the inexperienced and incautious have so often to their cost been led to adopt. This is the more apparent when it is considered that the author himself is a member of an eminent firm of horticultural builders. The book is far from being free from mistakes, such, for instance, as where, at p. 37, we are told that "it is perfectly useless to think of keeping refractory water out of a stokehole by building it of concrete, hard-faced brick, hydraulic cement, or any combination of the three." Concrete alone, where properly managed, will, and does, act effectually in places where the land is always full of water to within 2 feet of the surface.

As regards the form of houses, lean-to or span-roofed, whether for plant or fruit-growing, treated upon at pp. 39—42, and 45, we hold that the combined advantages of the latter, proportionate to their cost, have not the weight given in their favour that they deserve. Lean-to houses are the best for early forcing, and where garden walls, which are not too high, already exist, and there is an absence of anything to diminish the light, houses of this form, especially for fruit growing, may generally with advantage be erected; but for other purposes what is saved in the construction, and in the consumption of fuel, is much outweighed by the ever-present drawback in lean-to houses—want of light. In the important matter of ventilation there is a decided mistake made at p. 137, where it is said that "frequently a mere narrow strip of ventilating area along the ridge is most effective for the outlet." Those who have had to deal with houses so constructed, especially if occupied by Vines, will not require to be told what the results of so defective an arrangement are.

Some errors are committed by the author through anxiety to make his book complete, and thus trenching upon that which more particularly belongs to the cultivator, as at pp. 144—5, where for some kinds of plants, such as Ferns, permanent shade by the use of corrugated glass is said to be the best. We had supposed that there were few, if any, who would now advocate the use of this description of glass for plants of any kind.

The instructions on hot-water heating are sound in principle, except in so far as relates to the estimate of boiler power, respecting which the author falls into the very common mistake of reckoning the power of a boiler by the extent of surface it presents to the fire's action, forgetting that the position in which the surface to be acted upon stands in relation to the heat arising from the fire, goes much further in determining the power of the boiler than does a mere extent of surface which is less favourably placed to extract the heat from the fire. Any given extent of boiler surface, when submitted in a horizontal position to the action of the fire, absorbs much more heat and consequently acts more powerfully than where the same extent of surface is placed in a vertical position over the fire.

As to the so-called art conservatories treated of and illustrated in the book, with their panels of tinted cathedral glass, held together in lead, and the obsolete transverse bars of wood, and furnished internally with Japanese curtains, open fire-places, sculpture, and live parrots, we leave them to the undisputed possession of those who are ecstatic over Sunflowers and peacocks' feathers. Notwithstanding these drawbacks, the book contains much that is sound and practical, both as to the construction of the buildings it treats upon and the materials of which they are composed.

## Florists' Flowers.

Auriculas.—At this season of the year there is some danger of the plants being neglected, owing to the pressure of other work; but this will not answer, and there will not be much chance of a good bloom next year unless the plants are carefully potted. Although I would rather repot the plants in May, I find they do not suffer if the potting is done any time during the summer months. We shall not delay it much longer. Our collection increases so much, and the time available to attend to the plants cannot be lengthened, so that we are at our wits' end sometimes to find time to water the plants, let alone pot them. We had a heavy shower of rain last night (June 17), and the plants were fully exposed to it, so that much time was saved in that way. The seedlings that sprang into life during the present spring have to be carefully attended to, and grown on freely, else a large proportion of them will not flower next year, and will have to be grown on another season. Our own plants will be ready to pot into small 60's in ten days, and in these small pots most of them will flower next season. When repotting is delayed until the end of June or July, the plants are usually well furnished with offsets. These do not strike root so readily at this season as they do if they are not removed until the first week in February; and I would recommend any one having choice and scarce varieties that may be furnished with offsets not in too forward a state to delay removing them until next season. Those that are taken off should be placed in a shady spot, under a close hand-glass; and here many will damp off unless the glass is kept clean and free from moisture, and all mouldy leaves are removed as they decay or damp off.

The alpine Auricula we generally repot at this time; but unless with very scarce varieties, we do not spend much time in propagating from offsets. Each plant will divide into three or four by merely tearing the plants asunder. We pot what we require, and plant the others out in the garden. The alpine Auricula is very beautiful either as an isolated plant on the rock garden or planted thickly in clumps. Those who have no such accommodation for them would find them do well in the front rows of herbaceous borders. They do well there if they do not suffer from scarlet Pelargoniums or Mignonette.—there are few plants so capable of exterminating them as these two. They like deep rich soil. *J. Douglas, Loxford, Ilford, E.*

## Orchid Notes.

Odontoglossum vexillarium.

At p. 800 it is stated that a plant of this variety was exhibited with 200 flower-spikes upon it, and that the plant had been grown from a small one in four years and a-half. Is this not a misprint for 200 flowers? Even then it would be a wonderful example of skilful culture. This is one of the most rapid growing Orchids we have, and seems to grow much more freely in our Orchid-houses than it does in its native habitat, at least if we may judge from the masses sent over to this country, as compared with those grown here. It seems, too, that when a plant has been grown so freely and to such a large size as that belonging to Dr. Paterson, it has a tendency to decline quite as rapidly as it grew, and I have heard of good specimens which changed hands at very high prices giving very little satisfaction to the purchaser. The great enemy of this Orchid is thrips, and unless great care is taken to keep this insect from it the leaves become sadly damaged, and the plants suffer constitutionally. *J. Douglas.*

Cattleya Mendelii.

I have just now a Cattleya Mendelii with seven fully developed flowers on a one-year's lead. Is it not a very remarkable effort? *H. James, Castle Nursery, Lower Norwood.*

Batemannia Meleagris.

A fine specimen of this remarkable Orchid is now in flower in Mr. Bull's nursery. As we shall probably give an illustration of the plant shortly we confine ourselves now to the mere mention of the fact of its being in flower.

Phalænopsis violacea.

A plant of this, with two flower-stalks, each with three or four flowers, is just showing bloom at Messrs. Veitch's, at Chelsea. The flowers are very beautiful, nearly regular in form, the ovate-lanceolate flower segments are deep violet at the base, shading off into white at the ends.

Mr. Hardy's Orchids.

Those who saw the Old Trafford Whit-week Horticultural Show, and noticed the fine Orchids exhibited by Mr. Hardy in the classes for fifteen, six, and three, may have well imagined that the houses in which they were grown would be thinned of large blooming plants whilst the exhibition lasted, but this was by no means the case, as an opportunity of seeing the collection during the time the show specimens were away proved. The collection is not only particularly strong in cool and intermediate heat kinds, but also contains many fine examples of the hotter section; amongst these was a grand plant of Dendrobium clavatum, with twenty-seven spikes of its beautiful flowers, coming in; Dendrochilum filiforme, with some sixty graceful drooping racemes, &c. Of that most variable of Orchids—Cattleya Mossiæ—there were at least thirty different forms in flower; in addition to these there were in bloom Aerides crispum, A. Dayanum, A. roseum; Anguloa uniflora, Cypripedium Roezlii, C. barbatum giganteum, C. Harrisianum, C. niveum, Cattleya Mendelii, C. citrina, C. Warscewiczii, C. Schilleriana, with five flowers on a spike; Dendrobium crystallinum, D. Parishii, D. thyrsiflorum, D. suavissimum, D.

cretaceum, D. Jamesianum, Epidendrum vitellinum majus, Lælia cinnabarina, L. Brysiana, Lycaste Skinneri, Masdevallia Chimæra, M. bella, M. coccinea, M. ignea, M. Harryana, M. Veitchii, M. sanguinea, M. Lindeni, Mesospinidium sanguineum, Oncidium leucochilum, O. crispum, O. Weltoni, Odontoglossum citrosmum roseum, O. Alexandræ, O. Hallii, O. Pescatorei, O. Dawsoni, O. Cervantesii, O. cirrhosum, and O. Roezlii, both the red and yellow blotched forms; Phalænopsis grandiflora, Saccolabium retusum, Vanda cœrulescens, and V. tricolor. Amongst several beautiful forms of O. vexillarium there was one the purest white we have seen.

# Garden Operations.

## *KITCHEN GARDEN.*

Broccoli, &c., Planting.—If not already done, no time should be lost in getting good breadths of Borecole and autumn and early winter Broccoli planted. Of the Borecole the Dwarf Curled and Cottagers' are unquestionably the best and most hardy varieties; but it will not only be necessary to determine what variety to grow, but also to consider how best to grow our plants to withstand the effects of severe weather, should we unfortunately have a recurrence of an arctic winter. The first step to be taken in this direction is to have the seedling plants, as recommended in a former Calendar, transplanted in nursery beds before they have become crowded in the seed-beds, and thence, as soon as the plants have thoroughly established themselves, and before they get crowded, finally planted out, and watered until the plants have taken hold of the soil. In planting, the plants should be buried to the collar, the object being to keep them dwarf and as near the ground as possible, so that in the event of a fall of snow, and its being accompanied, as was the case last December, by a spell of frost, the plants may come under the protection of the former. Moreover, it is a fact that cannot be too well known, that it is the stems of Broccoli and Borecole plants that suffer most, and that where these through habit or cultivation are dwarf, the losses through frost are inconsiderable. Hence the object and advantage of growing dwarf sturdy plants. Borecole will succeed moderately well in almost any garden soil and position; but where a good well-manured open piece of ground can be given to it, the quantity and quality of the crop will be considerably increased. The Green Curled Kale should not be planted closer than 20 inches between the plants in the rows, and 2 feet between the latter; and Cottagers' Kale should be allowed from 9 to 12 inches more each way. Broccoli.—Of these the following varieties, with Walcheren and Autumn Giant Cauliflowers, make a good succession, of which a good planting of the respective kinds should be made forthwith in ground prepared the same as for Cabbage and Cauliflower plants, in drills 2 feet asunder, and at the same distance between the plants in the rows, viz.:—Grange's Autumn White Cape, Early Purple Cape, Veitch's Self-protecting, Dancer's Late Pink Cape, Snow's Winter White, and Early Penzance. The later and stronger growing kinds of Broccoli should have from 6 to 9 inches more room between the plants each way, if that space can be afforded to them, and should be planted in ground from which Peas and old Strawberry plants have been cleared, and, "in order to facilitate the planting process," in holes made with the crowbar. In planting Broccoli plants some kind of classification of the respective kinds and the time at which they come in for use should be observed, so that the crops may be taken and the ground become vacant in regular succession, thereby rendering the ground available for trenching, &c., at the proper time. Another planting of the strongest plants of the respective kinds of Savoys should also be made, the distance between the plants each way being, as with kindred plants, determined by the respective varieties, as well as by the nature of the soil, in poor land less space being required than in rich ground. Small kinds, like Tom Thumb and Early Ulm, may be planted in rows 15 inches asunder and 12 inches in the rows; and the Drumhead and other large kinds should have a space of 2 feet each way between the plants. In taking up the plants care should be taken to examine the roots in order to ascertain whether they are clubbed or not, and all that show any signs of that disease should be cast aside. It is a good plan before planting any of the Brassica family to dip the roots in a puddle made of ordinary garden soil, with sufficient clay added to render it more adhesive, and to which a few handfuls of soot should also be added. This will have the effect of saving the roots of the plants from the attacks of worms, which this year have been very troublesome and destructive to the roots of freshly planted Cauliflower plants here and elsewhere; but since I had recourse to dipping the roots in the liquid compound of soot and clay I have had no further trouble in this direction, and this is due, no doubt, to the agency of soot.

General Work.—Get ground well manured and dug, in which to plant Coleworts and Cabbage plants; 12 inches each way will be sufficient space between the plants of the former, and from 15 to 20 inches between those of the latter. As young plants of Cauliflower, &c., become large enough to handle in the seed-beds prick them out in nursery beds, as already advised, before they become crowded. Advancing crops of Canadian Wonder French Beans will now be the better for having some short sticks put to them to keep the plants erect and the Beans free from damage. Attend to the cleaning and watering of Celery and Cardoon plants, and should slugs find their way to young Lettuce plants, to which they are particularly partial and destructive, dust them occasionally, if the first application does not suffice to stop their depredations, with a mixture of lime and new dry soot, which will check their ravages. See to the thinning, stopping, and training of Tomato plants out-of-doors and indoors too, and in tacking the shoots to the wall leave sufficient shred-room for the shoots to develope themselves. The chief points of Tomato culture, whether indoors or out, are to keep the shoots and leaves well stopped and thinned. If the plants are trained up the wall with one, two or more stems, all side shoots should be pinched-out as soon as they appear, and the leading and secondary branches stopped above the fruit and the plants watered when necessary at the roots with liquid manure when swelling their fruits. Thus treated and with ordinary summer weather, the plants should yield and ripen an abundant supply of good fruit. *H. W. Ward, Longford Castle, Salisbury, June* 18.

## *FLOWER GARDEN.*

Bedding Plants.—The weather has recently favoured the free development of all kinds, even the tender varieties are growing so well that they will very shortly fill out their spaces, and more especially so if the beds are surface-mulched with cocoa-fibre refuse, or old Mushroom bed dung—an operation of the first importance, both as regards the well-doing of the plants and the saving of labour that would otherwise be needed to keep the surface soil open till the plants fill out. By way of warning I may say that last year, being short of both fibre and droppings, old tan that had been used in the Pine-pits was sifted and used as a mulching, but very fortunately to a limited extent only, for wherever applied the plants refused to grow, doubtless owing to some chemical used in the process of tanning. This lesson has already proved of great service by leading to the prohibition of old tan as a surface mulching for kitchen garden crops, for before this circumstance the unaccountable ill-doing of certain crops was a mystery; now all is explained. Peg into form all straggling growers, and pinch the points out to induce a bushy growth, and if the flowers can be dispensed with for a week or two the plants will be strengthened and there will be a greater profusion of flowers eventually. Carpeting plants also need similar treatment; old plants of Mesembryanthemum cordifolium variegatum and of Alternanthera irrepressibly run to flower and seed, so that we now plant only those of spring propagation. Gnaphaliums, Sedums, Saxifragas, and Cerastiums, that are used for this kind of bedding, flower freely at this season only, and therefore give but little trouble other than an occasional clip over to maintain a thick carpet. We have this season planted the upright edgings of all our beds with Herniaria glabra, and the effect is most pleasing; moreover, it is a plant that requires but little attention to keep in form—about twice clipping during the entire season is all that is needed; hence I have discarded the Mentha in favour of Herniaria.

Subtropicals, and other Tall-growing Plants.—With subtropicals the main requirements are tying and staking as growth progresses, and in dry weather liberal supplies of water. Pick the flowers off Cannas and Ricinus, and the undergrowth of all the beds should be pegged down, and the edgings, both turf and plant, be kept neatly trimmed. Stake Hollyhocks, Dahlias, Marvel of Peru, and Love-lies-Bleeding; and place pea-sticks to trailers, such as Sweet Peas, the Canary Creeper, and Clematis.

General Work.—Aim at neatness everywhere and in everything by hoeing, weeding, rolling, or mowing, as may be required. Pick the seed-vessels off Rhododendrons, at least from such plants as are near walks or in other conspicuous places. The present is also a good time to cut away the growth of any flowering shrubs that are getting crowded. Lilacs, Laburnums, Syringas, Weigelas, and Spiræas are with us among the plants needing such curtailment, and if done thus early there is ample time for full development and ripening of the new growth for next season's flowering. The clipping of Box edgings should not be longer postponed. *W. Wildsmith, Heckfield, Hants.*

## *FRUIT HOUSES.*

Peaches and Nectarines.—The earliest house will by this time be pretty well cleared of fruit. I have to-day (21st) gathered the last in ours, and have had the trees well washed with the hose, and also thoroughly soaked at the roots. Any trees that are weak from overcropping or other causes may still be watered with liquid manure. Keep the house as cool as possible by night as well as by day, always keeping the ventilators back and front fully open. Stop any gross shoots that are taking the lead, and pinch in laterals, but not too closely. Keep the foliage clean by syringing twice daily, and although the fruit is all gathered do not on any account let them get dry at the roots, as next year's crop in a great measure depends on the treatment the trees get from the time of ripening their fruit to the time they naturally lose their leaves in the autumn. The second house will now be ripe; and should have the same treatment as was given to the first. Succession-houses will require constant attention as regards tying, finally thinning, if not already done, and watering; later houses will require similar attention. Keep a sharp look-out for red-spider and mildew, and check the latter by applying sulphur and giving plenty of air. *J. Wallis, Keele Gardens.*

### Melons.

Succession crops that are now approaching maturity during the present changeable weather should have the atmosphere of the house or pit in which they are growing thoroughly dried up once in the twenty-four hours with the view to secure that luscious flavour which is characteristic of well grown fruits. Failing artificial means of creating a lively buoyant atmosphere the best must be made of such natural conditions as are afforded by the weather. Keep the plants on the dry side in damp weather and take advantage of solar heat early in the afternoon by gradually reducing the ventilation and finally closing in between 4 and 5 P.M. For the next two months Melons that are grown solely by means of natural heat will hold their own in point of flavour against those that are grown under the most favourable conditions in houses of modern style and finish. The latter have, however, a great advantage in the case of long-continued dull damp weather. There is a good deal of confusion if not muddle in our system of testing flavour and in our estimate of the best kinds. The scores of insipid Melons that we read of as being exhibited are either unripe or over-ripe, and the chance fruit that is (fortuitously) "ready to time" is paraded before the public as the best Melon of the season! Quality should be more strongly and intimately identified with cultivation, for after all the best variety in the world is but little worth unless it is fairly well grown. Where large fruits are desired in preference to those of ordinary size, without making any sacrifice as regards the number of fruits obtained from a given space, two plants should be planted under each light instead of one, thereby securing the same number of large fruits as would be obtained of smaller ones under the ordinary system. In working with double plants, the first fruiting laterals should be removed, and no fruits should be set until the plants (the leader, at least) have nearly reached the top of the trellis. *W. Hinds, Canford, Dorset.*

### Cucumbers.

Nothing seems to be more beneficial in the case of fruiting plants than periodical top-dressings of a rich nature, such as turfy loam cut about 2 inches thick, and which has lain up about six months, with a moderate admixture of cow-dung. A compost of this kind chopped up rather fine, and laid about 2 inches in depth over the surface of a bed, will be alive with young roots in ten days from the time of putting it on. Too frequent applications of thick liquid appears to choke up the pores of the soil, which in process of time gets sticky and adhesive, so that where the former material is come-at-able it is recommended in preference to the constant use of liquids, which, although good in their way, are liable to lose their effect when too freely used. As long as the cultivator aims at keeping the surface of the bed a network of thriving active roots there will be no lack of young healthy foliage and fruits. Keep the latter cut three times a-week to the lowest minimum, and remove all deformed fruits as soon as they are recognisable. Regulate the young growths by finger-and-thumb pinchings rather than by cutting out large quantities at longer intervals. Keep the foliage clean by constant syringings, and shade from strong sun after dull weather. Plants intended to produce fruits for exhibition should be grown to time in order to catch the first fruits, which are always the finest and best. Glasses or light wooden boxes are sometimes requisite to keep the long growing varieties handsome and presentable when the plants are trained over the surface of a bed, but as a rule the medium-sized kinds are the most useful and profitable. *W. Hinds, Canford, Dorset.*

APPOINTMENTS FOR THE ENSUING WEEK.

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| Tuesday, | June 28 | Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Pelargonium Society's Show, Rose Show, and Evening Fête.<br>Sale of Imported Orchids, at Stevens' Rooms. |
| Wednesday, | June 29 | Continuation of above Exhibitions at South Kensington.<br>Farningham Rose Show.<br>Croydon Summer Show.<br>Sale of the Orchids belonging to the late G. Clive, Esq., M.P.; and a Portion of Sir Trevor Lawrence's Collection, at Stevens' Rooms.<br>Sale of Greenhouse and Bedding Plants, at Holly Lodge, Stamford Hill, by Protheroe & Morris.<br>Lee and Blackheath Horticultural Society's Summer Show (two days). |
| Thursday, | June 30 | Canterbury and East Kent Rose Show.<br>Sale of Imported Orchids, at Stevens' Rooms. |
| Saturday, | July 2 | National Rose Society's Show, at the Crystal Palace. |

We are all agreed in theory that for the most perfect cultivation of plants a complete knowledge of their mode of growth is essential, and yet in practice we continue to pay comparatively little attention to the matter. The fact is, that we have learnt a great deal by the experience handed down to us by our predecessors, and have made their experience ours by the same method of daily practice. This is as it should be; but it is not all that it should be, else there would be a greater amount of agreement than there is as to, say, the mode of Strawberry Culture — the length of time required before beds should be renewed, the removal or non-removal of the leaves, and so forth. The botanist and physiologist, too, have had their experience handed down to them, and they have extended it by their own observation and research, but the result is locked up in scientific treatises of little or no value to the practical gardener, because he can only imperfectly appreciate the nature and importance of the observations made by the physiologist. Again, the physiologist is ignorant of much of what the gardener knows of the growth of the plant, and he works away for the most part with the greatest indifference to any practical result that may accrue from his labours. Nor is he to be blamed for this; the greatest and most fertile discoveries almost invariably have been made by those who have been studying and experimenting for knowledge' sake only.

Directly an original investigator begins to work solely for practical considerations he becomes proportionately hampered and fettered, and the results he obtains under such circumstances are as a rule of far less general value than those which he obtains from the cultivation of pure science. The scientific experimenter grows his plant under comparatively perfect control, in a laboratory, in a pot, or under a bell-glass, and his object is to isolate it, and to have as full direction as possible of all the conditions under which the plant grows. The practical man has to take things as he finds them; he is forced to accept a compromise, and to avail himself of the pliability of the plants under natural conditions.

To bridge over the gap between rule-of-thumb practice on the one hand, and transcendental theories on the other, a superior order of cultivators is required—men with training enough to enable them to seize and turn to practical account the labours of the pure scientists. It is here that properly conducted Schools of Horticulture, if we had them, would prove so valuable.

The cultivation of the Strawberry may, as we have hinted already, be taken in illustration of our remarks. Here we have a plant which, from its wide geographical distribution, if we did not otherwise know the fact, we should judge to be of hardy constitution. It has a thick solid rootstock sending to great depths in the soil its much-branched roots, and developing above its crown of leaves, and in good time its flowers. Clearly, then, it has great feeding capacities, and these should be indulged by giving it a deep, rich, well aërated feeding ground. So far the trenching and manuring that take place in the formation of Strawberry beds find their justification. The food so obtained is expended in the formation of leaves and flowers, and much of it is stored in a concentrated form in the stock, to be drawn upon when the already formed flowers are stimulated by heat and light into rapid growth. To rob the plant of its leaves, then, before they are sere and withered would seem to be barbarism itself; and yet we know of good gardeners who still practise it in autumn and get good results. Perhaps they do; but they would get better still by not adopting so irrational a process. If it must be adopted, it should rather be in spring, when, after having the advantage of the protection afforded by the old leaves in winter, their removal in spring would let in light and air, and facilitate the growth of the new leaves.

We now come to the runners. We shall soon be busy with these, and it is worth a little consideration what these mean and what are the indications they afford. They spring from the stock, and, like the flowers, they are dependent on root-action and on the food stored up in the stock, so that unless the plant be able to make a good stock there is little chance of good leafage, good fruit, or good runners. Among the objects served by the runners is the prevention of the plants overcrowding and strangling one another. Another object is to secure fresh fields and pastures new for the offset, so that it may not be dependent on the comparatively exhausted root range of the parent plant. Again, the old crown will in course of time decay; it is subject to all sorts of danger from wet and frost, from grub and other pests, so that the runner acts as a safeguard against extinction much as the seed itself does. This formation of runners and offsets suggests that those who make a fresh bed every year in rich soil with the plants at long distances apart do well, and it is a question whether they do not get a larger crop of better quality by so doing than when the more common plan is adopted. At any rate, we should like to see the two plans carried out side by side under like conditions.

The flowers are more or less unisexual, but are not so frequently one-sexed on this side of the Atlantic as they appear to be on the other. But it must be remembered that this is not of so much importance as at first sight it would appear to be—that is, provided seed be not wanted. On this side of the Atlantic Strawberries in the open, except in the case of certain varieties, are not so frequently entirely "blind." The fruit, or what generally, but incorrectly, goes by the name of fruit, may be formed, and that is all the gardener in general wants. As a rule, he does not want the seeds, unless for experimental purposes, so that it is a matter of indifference whether those seeds are well developed or not. As a matter of fact, they very frequently are not properly developed, as any one may see by cutting them open. Such plants are as truly "blind" as those which are so from complete defect or non-development of the stamens or of the pistils, as the case may be.

We do not intend now to allude more at length to this question of the unisexuality of Strawberry blossoms, as it would take us beyond our limits; but we may, in conclusion, point to it as evidence of the necessity for studying the habit and mode of growth of the plants we cultivate. Knight and Keen, and, later, Myatt and Roden, and all our famous raisers, would not, and could not, have effected the progress they have done unless they had availed themselves of facts which many gardeners would pass by unobserved or unheeded.

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—— Botany of Central Africa.—Some of the plants collected by Major Serpa Pinto were described by Professor Count Ficalho and W. P. Hiern at the recent meeting of the Linnean Society (June 16). Although only a tithe of what the explorers had obtained, others having been accidentally lost, they nevertheless comprise thirty-nine genera and sixty-five species, of which twelve are new. The plants in question were procured along the upper course of the river Ninda, an affluent of the Zambesi. The flora, it seems, resembles that of South Angola, and in some instances extra-tropical South Africa.

—— Day's Early Sunrise Pea.—On June 15 we received a liberal sample of this Pea from the raiser, Mr. John Day, jun., Ash, near Sandwich, and found the quality excellent, superior indeed to any other early Pea we have eaten this season. Mr. Day informs us that they were grown in an exposed field, without a hedge round it, the seeds being sown in November last, and the Peas picked on June 13. In the same field and under the same conditions the best strain of Sangster's No. 1 was sown three days earlier, and each was ready for picking at the same time. Early Sunrise, however, made one-third more per bushel in the market than the others, being so much finer and superior in quality. Mr. Day commenced sending Peas from this field on June 6.

—— Ceylon Plants.—In a letter from Mr. William Ferguson, of Colombo, read at the Linnean Society (June 16), it was mentioned that he had found Wolffia arrhiza, Wimm., in abundance in an abandoned stone quarry, covering the surface of the water, and that in a recent trip to the Kandyan country he had discovered Adiantum æthiopicum, Linn., both these plants being new to Ceylon. It is a curious coincidence that Mr. Ferguson should have discovered this Lemnaceous plant in Ceylon shortly after Dr. Trimen's arrival in that island, the latter having been himself the first to record it as a member of the British Flora.

—— Coleus Mrs. Stedall.—Mr. King, gr. to G. Simpson, Esq., Wray Park, Reigate, informs us that in addition to the First-class Certificate awarded for Coleus Miss Simpson he also received a similar award for Coleus Mrs. Stedall.

—— Sugar Cultivation in British Guiana.—From a recent return of the Crown Surveyor of British Guiana it seems that in Demerara 40,877 acres of land are under sugar cultivation, while in Essequibo 18,286, and in Berbice 15,294 acres are under similar culture.

—— Tree Ferns.—It is very curious to observe that whilst Mr. Hudson is, by means of a thick ring of Moss, striving to lengthen the stems of his Tree Ferns, his immediate neighbour, Mr. Roberts, is, by the very same means, but applied at the base of the stems rather than at the top, seeking to reduce his brace of monsters in the orangery to a lower altitude. These big fellows (see p. 545, 1873) have, since their residence at Gunnersbury, although the roof in the orangery is lofty, yet never had headroom; and the sinking of the boxes in which they grow would be at once costly and undesirable. Mr. Roberts has, therefore, coated the base of the stems just above the soil some 2 feet in height with a thick mass of Moss, and when the stems have become well rooted into this he will cut them clean off just beneath and retub them. These big Ferns would have found a fitting home beneath the lofty domes of the Crystal Palace.

—— The Fruit Crop in Kent.—The *Maidstone and Kentish Journal* reports that although not equal to the anticipations formed when in blossom, the crop of many kinds of fruit will be an average one. Cherries and Plums in most places are short, although a few good orchards can be seen. The cold east wind, varied by hot sunny days and long continued dry weather, has brought a species of blight, more especially in the Apples and Cob-nuts, which have suffered greatly from maggot. The late rains have improved the appearance of the foliage, and will renovate the trees for another year. But although Apples have suffered from these numerous evils, there will be, in many places, a good crop of some sorts. Cob-nuts will not be plentiful, although many more than last year. Many plantations have been "swealed" by the winds, so that it almost appears they cannot bear next year. Gooseberries have suffered from caterpillar, but still there will be a fair crop. Currants, especially the red ones, have run, but there will be a remunerative crop in many parts.

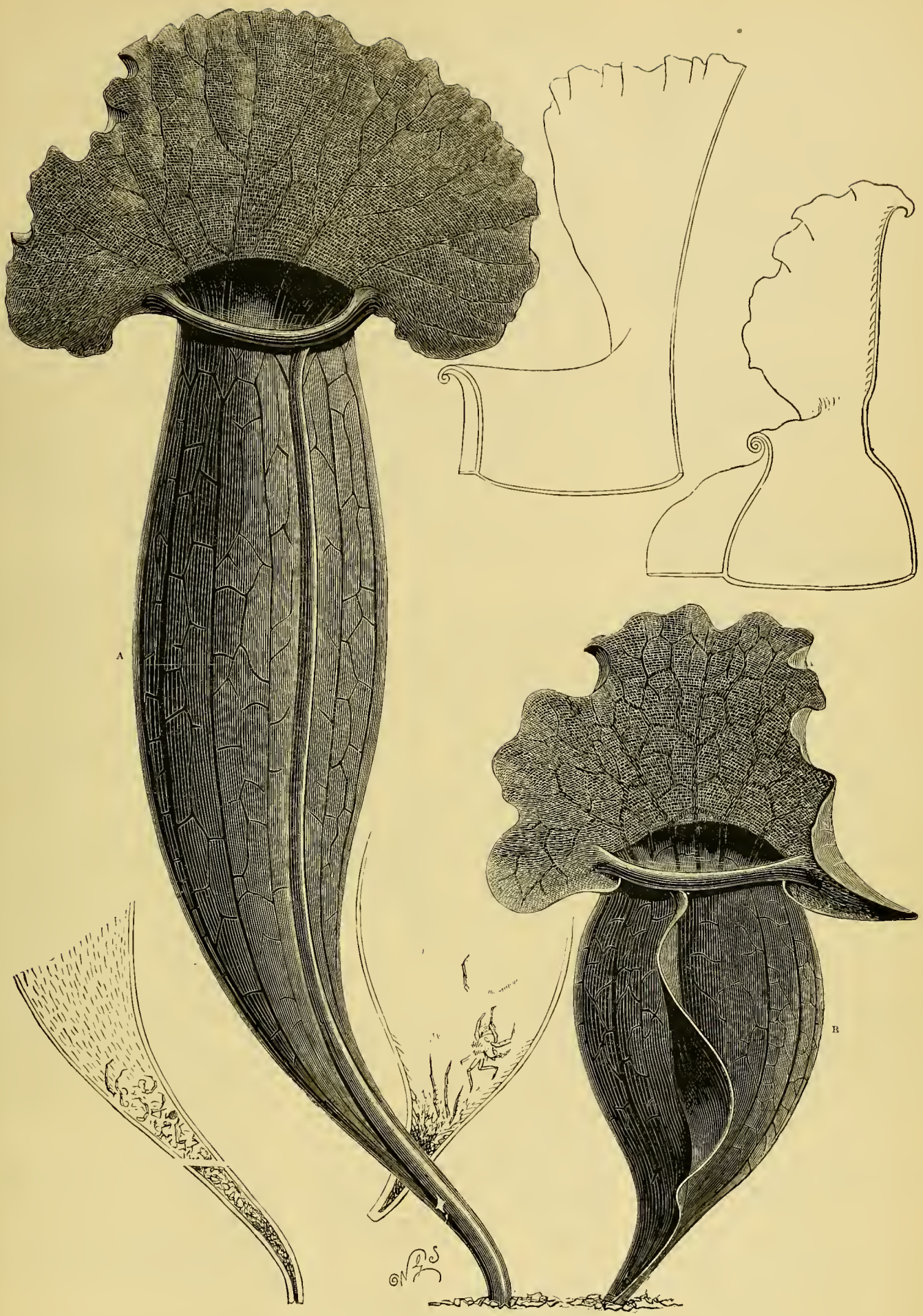


FIG. 148.—A, SARRACENIA CHELSONI, PITCHERS REDDISH-PURPLE; B, SARRACENIA PURPUREA, PITCHERS DEEP PURPLE. (SEE P. 817.)

Strawberries are short. Looking at the fruit crop all round, it will be much better than last year, but will not fulfil the promise of the spring blossoming.

—— The Cork Oak.—The house and grounds at Ealing, once occupied by H.R.H. the Duke of Kent and by Her Majesty when a child, have lately been sold by a Land Company, and the ground divided into eligible building plots. The ground was well planted with clumps of trees, judiciously disposed by some one who knew his business. The trees comprise Turkey Oaks, various of the less common species of Elm, Cratægus, &c., and amongst them is a Cork Oak, measuring at 4 feet from the ground about 5 feet 4 inches in girth.

—— North of Scotland Horticultural Association.—Mr. Sim, Gateside, Strachan, recently read a paper before this Society on the culture of wild plants, in which he advocated the cultivation of certain of the more ornamental of our wild plants. He advocates among other things the forcing in winter of Meum athamanticum for the sake of its elegantly cut leaves, which might be used for decorative purposes.

—— Double-Flowered Epacris.—We have already figured a double-flowered variety of great beauty—E. onosmæflora flore-pleno, and which is becoming known in gardens. Baron von Mueller now sends a spray of E. microphylla with similar flowers to the one just mentioned, but smaller. It was gathered in the neighbourhood of Port Jackson.

—— Flowers in Season.—Mr. Barr kindly sends us a bouquet of Spanish Irises and Lilies. The colours are bright, varied, and effective, while there is transparency—artists would call it "air"—about them which is very striking. Lilium Hansoni is a species with small flowers, the segments of which spread so horizontally that a star-shaped flower results. The individual segments are orange-yellow spotted with purple. A variety of Lilium philadelphicum, with the unpleasant name of L. philadelphicum var. Wansharaicum, is remarkable for the long-stalked ovate tail-pointed segments, the three inner of which are strongly keeled at the back, furrowed down the centre in front. Each segment is of a peculiarly bright lustrous orange-red colour, yellow at the base and spotted with rather large purplish spots. The Irises defy description, so great is the variety in colour, from pure white to pure yellow, violet, and various combinations of these. Their quaint forms and lovely colours should secure to them a place in every border.—Mr. F. Moore, Glasnevin, sends us specimens of the Mexican Calliandra Tweediei, with bipinnate leaves, like those of some Acacias, the leaflets minute, linear oblong, and with stalked heads of reddish-crimson flowers, like those of an Inga. Pavetta indica, a stove shrub, with shining obovate obtuse leaves, tapering to a stalk, and close cymes of white flowers, each with a slender narrow tube and a spreading 4-parted limb. The flowers are remarkable for their slender threadlike styles, which project beyond the flower to a length as great, if not greater than the flower itself. Trichopilia hymenantha is an Orchid rarely seen in flower. The flowers are in racemes, each about an inch across, the segments whitish, lanceolate, tail-pointed, the lip oblong, tail-pointed, rather concave, white, spotted with purplish spots, as is also the minute hooded column. With these came a handsome Thibaudia, with ovate leathery leaves and a terminal cluster or umbel of long-stalked brilliant scarlet flowers of fleshy substance, each about 1¼ inch in length, and in form obelisk-shaped.—From Mr. Charles B. Saunders, St. Saviour's, Jersey, come sprays of Helichrysum rosmarinifolium. The bush is 6 feet high and 4 feet through, covered with thousands of small white sweet-scented heads of flowers, like those of an Achillea. The plant is hardy, of very vigorous habit of growth, and an abundant bloomer. The leaves are linear, ½—¾ inch long, whitish on the under-surface.

—— A Curious Thing in Fruit Culture might have been seen in one of the long Peach-houses at Gunnersbury the other day. It was a ripe fruit of Hale's Early, large and well-coloured, growing upon a tree of Violet Hâtive, the fruit of which were yet but half grown and wanting weeks to ripen. Hale's Early Peach is undoubtedly very precocious, and when got true is an undoubted boon, for it helps to lengthen the fruiting season. Mr. Roberts mentions that other kinds have been put into commerce under the name, but that he has been able to obtain it true only through a friend. Gardeners who are always engaged in budding and grafting take the results of their work as a matter of course, and so far from finding any cause for surprise that the same plant or tree which will produce flowers or fruit of a certain kind will by the mere insertion of a tiny bud produce other flowers or fruits so widely dissimilar, would be filled with astonishment if the produce of the bud were not to differ; yet in the result there is much that is wonderful and full of interest to the student of Nature and her operations.

—— Rosa microphylla.—One of the most desirable of all the hardy Roses for general border cultivation is the present species, which has passed through the two last winters at Kew without the slightest injury from frost, and is now nicely in flower. It makes a charming bush about 3 or 4 feet high, and as much through; its large rosy-pink flowers nestling on short stalks amongst the pretty foliage. A figure appeared in one of the recent numbers of the *Botanical Magazine*, and from the letterpress accompanying the illustration we learn that our plant was introduced from Canton into the Calcutta Botanic Gardens by Roxburgh, and from thence diffused generally into Indian gardens. Like many other Roses, the present was known in its cultivated state long before its native country was discovered, though that this was China was suspected, from its having been early recognised by Dr. Lindley as identical with a plant figured in a collection of drawings of Chinese plants. The rather large fruit, which when ripe is green and exhales a decided Pine-apple odour, is eaten by the Japanese. The double form, which is certainly very much more common than the single form now spoken of, is met with here and there in British gardens, and is cultivated throughout China and Japan, and even in Upper Burmah.

—— The Glen, Innerleithen.—Many visitors have recently been to The Glen, the Peeblesshire residence of Charles Tennant, Esq., M.P., and one of them writes:—"Mr. Tennant's gardener at The Glen is a clever fellow, and I, with many others, have had the pleasure of an invitation there to see the fine Orchids and other plants of horticultural interest. In the conservatory, which is 90 feet long, I noted some fine Tree Ferns, and especially the handsome specimens of Cibotium Schiedei and C. princeps. Adjoining are the conservatory and a show-house, and in the former are beautiful specimens of various Crotons, Bougainvillea glabra, trained over an arch; and a fine Clerodendron on a globe. In the show-house were, amongst others, fine specimens of Kalosanthes coccinea and others coming into bloom, and which as a summer-flowering plant ought to be more grown. But the greatest attraction of all was the Orchid-house, in which, on the centre stage, were three notable examples of Vanda tricolor, one of which was 7 feet high, with fifteen growths and twenty-one spikes of flowers, the plant being in perfect health and having leaves down to the top of its basket; a good Vanda teres was also in bloom, and a grand specimen of Peristeria elata was just coming into flower. A specimen of Anthurium Scherzerianum bore upwards of sixty spathes. Adjoining are the Vineries and Pine stoves, all in first-rate order—the Vineries especially showing the good effects of a recent renovation of the borders. Amongst many grand specimen plants I also noticed in flower I should specially mention the old Erica elegans, which is seldom seen in such perfection. There are in all twenty-one houses at The Glen; and the healthy, thrifty character of all the plants, and the extremely cleanly appearance of every department were features that one could not help admiring, to Mr. McIntyre's credit. The crops of Peaches and Nectarines, and Apricots, were such as any gardener might be proud of; and I would also mention that in the pleasure grounds, which were so well described in your columns some time ago by Mr. Downie, I noticed that a new rockery of a very ornamental character had recently been added to the other good features of the establishment."

—— Nepenthes sanguinea.—The grandest specimen of this Pitcher-plant that we have yet seen is now on view in Messrs. Veitch's nurseries. The pitchers, of which there are nine, measure 13 inches from base to apex, and are of a deep blood-red colour.

—— An Extraordinary Grass Crop.—It will be remembered that at the Paris Exhibition of 1878 some remarkable results were produced with grass seeds, but they have been eclipsed by what has this year been achieved at the Derby show ground of the Royal Agricultural Society, where Messrs. Carter, of High Holborn, are sowing a very considerable area with their grass seeds in the same manner as they did at Kilburn and Carlisle. We are informed that on June 20 Messrs. Carter mowed for the first time the grass which was sown on the afternoon of June 2. The ground has thus presented a perfect sward in the short period of seventeen days from the time of sowing—probably the most expeditious growth of grass that has been recorded.

—— Masdevallia chimæra.—The true plant so called is now in flower at Mr. Bull's nurseries. Its flowers grow on erect not deflexed stalks, and are in the way of M. Backhousiana, but much larger and finer. We shall revert to this on another occasion.

—— Campanula pulla.—Few of the Bell-flowers are more beautiful than this little gem from the Austrian Alps. More than half a century ago it was figured in the *Botanical Magazine* and there spoken of as "a rare alpine plant of very considerable beauty and likely to be especially prized by the admirers of the diminutive productions of the vegetable kingdom, such as our predecessor and dear friend, the late Mr. William Curtis, used to compare to 'cabinet pictures.'" According to Aiton the species was cultivated in this country as early as 1779. At Kew it grows most freely, and forms a perfect forest of little stems about 3 inches high, each surmounted by a large solitary purple blossom. Some cultivators of alpine plants, however, find considerable difficulty in getting the plant to grow at all.

—— Delphiniums.—Those who want to see what herbaceous plants can effect in the way of brilliancy of colour should see a bed of Delphiniums in Messrs. Veitch's nursery at Chelsea. Among the most splendid of a group, all of which are remarkable, are Phœnix, with single metallic-blue flowers; Nohama, the lustre of which surpasses description; Henri Dubot, double blue; Enchantress, pale lilac-blue; and splendidissima, pale blue.

—— Gooseberries.—The Gooseberry is having a fine time of it this year, what between the sawfly, the Currant-moth, and the Æcidium. We have had several inquiries about these pests lately, and may refer our readers to the articles on the subject in our correspondence columns, and in the Notices to Correspondents.

—— The Weather.—General remarks on the temperature, rainfall, and duration of bright sunshine, for agricultural and sanitary purposes, during the week ending June 20, issued by the Meteorological Office, London:—The weather has been dull all over the kingdom; very heavy rain has fallen in the south-west, and rather large amounts in most other districts. At several stations thunder and lightning occurred. The temperature, though much higher than during last week, was again below the mean in all districts except "Scotland, W." The maxima were nowhere high, varying from 70° to 74° in most districts, but not exceeding 59° at Prawle Point and Pembroke. The minima occurred generally at the commencement of the period, and varied between 38° and 43° in all except the south-western and southern districts, where they were higher. The rainfall was equal to the mean in "England, E.," and the "Midland Counties," but more elsewhere. In the south and south-west the excess was very great. Bright sunshine shows a further decrease in duration; the percentages were everywhere low, ranging from 9 in "Scotland, E." and 16 in the "Midland Counties" to 30 in "England, E." Depressions observed:—Pressure during the whole of the period was highest in the east, and lowest in the west. Several depressions, but none very deep, travelled from south to north, outside our western coasts, or from south-west to north-east across our westerly and northerly districts, causing fresh or strong southerly or south-westerly winds in the west and south-west, and moderate southerly and south-south-easterly winds in the east and north.

—— Gardening Appointments.—Mr. R. J. Wilson, late Foreman to Mr. Carlton, at Kilkenny Castle, has been appointed Gardener to the Earl of Desart, Desart House, Co. Kilkenny.

# Home Correspondence.

**Tacsonia exoniensis.**—"M." must, I think, have got some other Tacsonia instead of exoniensis, as he could not fail to flower that variety, which is the freest among the whole family, and where it has root-room and a temperature anywhere above 40° to grow in, it is rarely out of bloom. Has "M." his in a pot? If so, I would advise him to at once plant it out in a border of fresh turfy loam, and run the main leader up to and along near the roof of the house, and let the lateral shoots, as they come, depend from the same, and he will find that as soon as they get a foot or two long they will begin to show flower, and continue to do so at nearly every joint. It is just likely the plant "M." has may be out of health from being cramped, or that the same thing may have arisen from its being infested with scale, an insect Tacsonias are all more or less subject to, which pest increases at such a rate that in a short time they quite cover the bark, and are often thickly dispersed over the leaves. The most effectual remedy is to well wet every part of the plant above-ground with a strong solution of nicotine soap, which soon makes them leave their hold, as it is very penetrating, and seems to go right through them at once. Tacsonias, like most conservatory climbers when growing freely, as they are or ought to be at this season, require plenty of water, and are greatly benefited by an occasional soaking of liquid manure. *J. Sheppard.*

**Phlox ovata.**—The cultivation of this finest of Phloxes is very easy, far easier than that of its cousin, P. divaricata, and as it is by no means a new plant, one wonders why any herbaceous garden is without it. Like many other plants, however, it is liable to be lost if not frequently renewed by cuttings or layers. A side-shoot taken off now, if not already rooted, will root under a hand-glass in a few days, and if then planted in good well-drained soil, and not neglected, —not allowed to suffer either from drought, or from the overgrowth of other plants—will produce five or six flowering heads, and be in flower all next June. Larger plants than this are not desirable, as the flower-heads then overlap one another, and do not show so well. This year the flowers, which were open the second week in June, were mostly spoilt by frost, having the colour burnt out of them like those of frosted scarlet Pelargoniums; but this was quite exceptional, and the plant is one of the hardiest grown. The plant called Phlox canadensis seems to be very closely allied to, if not identical with, P. ovata. *C. Wolley Dod, June* 18.

**Early Peas.**—Since writing the remarks on early Peas, at p. 798, I beg to state that we gathered our first lot of Kentish Invicta on June 6, and that Day's Early Sunrise, sown at the same time and grown on the same border, are now (June 18) only just ready. It looks a good Pea, however, as it is heavily hung with well filled pods, but I question if it is any better than MacLean's Gem, which is a fine second early kind, as is also Advancer, a sort that should be largely grown to succeed the first earlies as it is a remarkably free cropper, and of very superior quality. *J. S.*

**Lilies in Sun and Shade.**—Mr. G. F. Wilson, of Heatherbank, advocates shade for Lilies, whilst Mr. Ewbank, of Ryde, thinks they do best in full sun. Both these gentlemen live in very sunny places, but in the sunless county of Cheshire I have never found them want shade. In a range of Lily-beds in my garden under a south wall one part is shaded by trees, others are exposed to all the sunshine there is. In the shaded part the heads of Lilium pardalinum were many of them frozen to pulp the second week in June, whilst in the exposed beds all of the same species, and of the same height and growth, were quite uninjured. Gardens, I think, have not suffered so much from June frosts since 1854, when there were 7° of frost in my garden at Eton on the night of June 19, and the Potatos about London were most of them killed to the ground. *C. Wolley Dod, June* 18.

**Pyrus Aria as a Standard.**—We have here a good specimen of this native tree, budded on a Mountain Ash, 10 feet in height. It forms a very striking object in the autumn, with its white leaves and scarlet berries. *G. Bath.*

**Stirling Castle Peach.**—Mr. E. Morgan asks a question which, had he read carefully the remarks I made relative to the Stirling Castle Peach, need not have been put, as he will see that what I stated with regard to it was from my own personal experience of a tree under my charge, which tree, as I asserted at the time, suffered more from the effects of cold last spring than any other Peach in the garden, and I quite thought it would have died, but I am glad to say it has since recovered, and, with the exception of being rather bare of young shoots near the base, it looks healthy and well. As regards the quality and appearance of the fruit of the Stirling Castle Peach there cannot be two opinions, as all who know it can testify, that it is a highly coloured good flavoured sort; but that does not alter what I said respecting its hardiness, on which point Mr. E. Morgan and I appear to differ widely, and the two opinions must therefore be taken for what they are worth. *J. S.*

**Magnolia fuscata.**—Of this cool greenhouse plant I have had for some years two varieties. Both have been covered for many weeks past with small stiff upright fragrant flowers, and still have more to bloom. The one variety grows quickly and strikes easily from cuttings, the flowers being small and dark purple. The other variety is of slower growth; flowers of a yellowish-creamy colour, shaded with purple, about twice the size of the former variety, and perhaps more powerfully fragrant. *Hon. Mrs. Hope, Belmont, Murrayfield, Mid-Lothian June* 19.

**The Gooseberry and Currant Grub.**—Last year about this time there was much discussion in the daily papers on this subject. Some asserted that

Fig. 149.—The Gooseberry Saw-fly.

the grubs were the larvæ of the magpie, or Gooseberry moth, and that they emerged from the ground in a state to begin their depredations at once. About a month ago I and a friend noticed in his garden the beginning of the annual devastation. He at once caged some grubs, with their food, and the result at present is that they gained their bulk, and disappeared

Fig. 150.—The Gooseberry Moth.

underground. Several flies like the one figured in my sketch have appeared, but no moth. Yesterday afternoon we devoted two hours to careful examination of the trees, and found on every tree, generally near the bottom, several leaves with round holes, like shot holes. On turning these over in every case a row of oblong white eggs up the principal veins was to be seen, with the grubs, very small, eating away at the edges of the holes (fig. 149). We found these in all stages, and formed the conclusion that the flies come from the chrysalis, which has lain in the ground all the winter, deposits its eggs, which are hatched, and so the work goes on, by how many generations in one year it is impossible to say. I believe myself that the most effectual way to stay the devastation is to throw dust or slaked lime up under the trees while the dew is on them, so that it may adhere to the underside of the leaf, where the eggs are deposited. I am merely prompted to make these remarks by reading last year the numerous letters written in the London daily journals on the point. *G. R. C.* [The insect is the common Gooseberry saw-fly, Nematus ventricosus (see fig. 149). There are two broods in the year; the second will appear in autumn, the produce of the larvæ now feeding. They go underground to effect their transformation, and one of the best plans of stopping their ravages is to dig out and remove the earth round the stems of the bushes and burn it. This is best done late in the autumn or during the winter. The larvæ of the magpie moth, Abraxas grossulariata, of which we also give a figure (fig. 150), do not enter the ground in order to change; the pupa state is effected in the bushes, or at some adjacent spot, the pupa being naked, that is, not enclosed in a cocoon. *F. R. S.*]

**Nolina georgiana.**—I notice your description and figure of Nolina georgiana in the *Gardeners' Chronicle* for May 28, but I am sorry to see some errors stated and perpetuated respecting it. Elliott described it as having a "very large tunicated bulb," and Chapman, without having seen the root, copied the description. Mr. Baker was led astray by this, and placed the genus in his tribe Chlorogaleæ, though, in reality, it has a thick woody rootstock or caudex bearing a dense clump of rigid leaves dilated at base, just as in Beaucarnea. This can readily be verified upon Mr. Elwes' specimen. Again, the species is undoubtedly polygamo-diœcious, and I think I may venture to say, from your figure, that Mr. Elwes' plant will bear no fruit. As in the Beaucarneas, the sterile plants have fascicled flowers, with stamens and abortive ovaries, while the fertile ones have the flowers mostly solitary. In fact, there is nothing whatever to separate Beaucarnea from Nolina. I identified the two genera, and reduced Beaucarnea to a synonym of Nolina in my *Revision of the North American Liliaceæ*, and this reduction has been fully adopted by Dr. Gray. For Dr. Gray's recorded opinion I would refer you to his review of my paper in the *American Journal of Science* for October, 1879. Mr. Baker, in his late Synopsis of the Yuccoideæ, however, maintains his previously expressed opinion, very naturally, perhaps, but, as I think, erroneously. *Sereno Watson, Boston, Mass.*

**The Ox-eye Daisy.**—A charming thing in its way is the Ox-eye Daisy (Chrysanthemum Leucanthemum) that now adorns the railway embankments and other waste places with its great sheets of silver and gold. A bunch of it with two or three spikes of Sorrel and some fronds of Filix mas or F. fœmina placed in a dark blue vase is quite *recherché*; but let Ox-eye keep its place. We remember years ago how this charming stranger, neither "wee" nor "modest," appeared in the Isle of Colonsay; probably a few seeds had arrived mixed with others, and in spite of the most persevering efforts of the noble owner —ploughing and hoeing and picking—it was found impossible to eradicate the pest. Let Ox-eye adorn the waste places only. *S. G. H.*

**Broccoli, and the Winter of 1880-81.**—The three varieties which stood the winter best at Thorndon were Sutton's Queen, Cattell's Eclipse, and Model—the later by far the best, being sturdy in habit, the heads well protected, firm, and white, also good in quality; so far, nothing in my experience equals it. *Jno. Gadd, Brentwood.*

**Unheated Vineries.**—In "Philodendron's" sensible remarks on this subject he concludes with the following statement:—"I use the main root merely as a store of nutriment." I presume root ought to read stem, should it not? There is much to be said for the short-rod system. Will "Philodendron" repeat in brief his plan, giving the length of his main rod, and the number and average length of his short rods on the same, and oblige me and others? *D. T. Fish.*

**Agave filifera variegata, Hort.**—The plant (p. 757) under this name is the true A. filifera; the name variegata is not good for it, the variegation being caused by the adhesion of a part of the marginal filament. The one figured as a contrast is what is called in collections A. filifera viridis—not a good type of the plant. There is a variety called filifera superba, which is the best of all, and more like a variegated plant than the beautiful plant from Mr. Kellock's collection. A. filifera, like all Agaves, is a most variable plant, especially from seed, when you will get A. filifera, A. filamentosa, A. viridis, &c., all from one seed-pod. *J. Croucher.*

**Early Sunrise Pea.**—This new Pea, I doubt not, will meet with the approbation of all gardeners who have grown it this season. Our sowing was made on Feb. 16, and on the same border, at the same date, a sowing of William I. William I. was the first to flower and show pod; but, however, so rapidly grew the pods of Sunrise, that we gathered excellent dishes on June 15—from William I., June 17. Sunrise being a white wrinkled marrow of delicious flavour, a dwarf strong grower and an abundant cropper, and very early, requires no further recommendation. Ringleader, sown December 21, 1880, gathered June 9, will not be discarded until proved side by side with Sunrise, and sown at an earlier period another season. *Thomas Carlton, Wildernesse Park, Sevenoaks.*

## Reports of Societies.

**York Gala:** *June* 15, 16, *and* 17.—The York horticultural exhibition has this year been a great success. Taking it collectively, there is no doubt the show was the best the Society has ever been the means of bringing together in the well-known Bootham Field, which, by the way, seems in danger of becoming too small to give the requisite room to the increased number of exhibits and the immense crowds of people who go to see them. A noticeable feature in this year's display was that there were very few weak places, almost the whole of the classes being filled with productions possessing more than usual merit.

In the open class for sixteen stove and greenhouse plants, ten in flower and six fine-foliage, there were three competitors—Mr. Letts, gr. to the Earl of Zetland, Upleatham, Marske-by-the-Sea; Messrs. Cole, Withington, Manchester; and Mr. Tudgey, gr. to J. F. G. Williams, Esq., Worcester—the groups shown by each being alike remarkable for their general excellence and the little in point of merit there was to choose between them. Mr. Letts was 1st, Messrs. Cole and Mr. Tudgey equal 2d. In the winning collection the plants were large, finely-grown, and all fresh, the blooming examples as well as the fine-leaved representatives being in excellent trim. Amongst the flowering plants was Ixora coccinea, 5 feet through, and as much in height, carrying a fine lot of big heads of bloom; Stephanotis floribunda, equal in size and covered with flower; a good form of Anthurium Scherzerianum, bearing fifty flowers; Azalea Brilliant, over 5 feet through and well bloomed; Erica insignis, 3½ feet diameter; and E. depressa multiflora, a little smaller—both beautifully flowered and finely coloured; and Dracophyllum gracile, large and thickly covered with strong heads of flower. These were well supported by Gleichenia rupestris glaucescens, 7 feet in diameter, a thick mass of feathery fronds all but covering the pot; a grand Encephalartos Vroomii, Croton Weismanni, and C. Johannis, each from 6 to 7 feet in diameter, and densely furnished with leaves, in which the bright yellow predominated. In their blooming examples Messrs. Cole had a very finely-coloured, well-flowered Darwinia tulipifera; Dipladenia Brearleyana, with large flowers; Azaleas Mrs. Fry and Extranei, large, beautifully bloomed, and by their free unformality of training offering a pleasing contrast to the smooth-surfaced pyramids we are so much accustomed to see. For six stove and greenhouse plants (amateurs) Mr. Letts was easily 1st, with a well flowered half-dozen, individually smaller than those in his large group. Noticeable amongst them was a large Stephanotis, full of fine fresh flowers; Dipladenia amabilis, Statice profusa, and Anthurium Scherzerianum, bearing some sixty flowers, a medium sized form. Mr. Noble, gr. to T. Fry, Esq., Darlington, 2d, staged a nice group, which contained Darwinia tulipifera, Erica tricolor, and Trachelospermum jasminoides. Mr. Berry, gr. to W. Dove, Esq., York, was 3d. For three stove and greenhouse plants (amateurs), Mr Wright, gr. to G. Talbot, Esq., Leeds, was 1st, and Mr. Rollisson, gr. to W. Bateman, Esq., Harrogate, a close 2d.

Azaleas were indifferently represented, excepting those shown by Messrs. Cole, who took the 1st prize in the class for four, with medium-sized, loosely-trained, but nicely flowered examples. Mr. Scott, gr. to J. Buckle, Esq., York, was 2d. With Heaths Mr. Tudgey took the lead, putting up small examples evenly flowered, the Messrs. Cole being 2d.

Of fine-foliage plants there was a number of exhibitors, showing well grown plants, the collections standing near in merit. For eight Mr. Tudgey came in 1st, with an even group, containing Cocos Weddelliana, Cordyline indivisa, and Crotons Queen Victoria and C. Andreanum, in good condition; Mr. Noble was 2d, his best plants being Anthurium crystallinum, Croton Veitchii, Davallia Mooreana, and Cycas revoluta, all in fresh bright order. 3d, Mr. McIntyre, gr. to Mrs. Pease, Darlington, showing a handsome lot. For four Mr. Winterbourne, gr. to T. Simpson, Esq., Leeds, was 1st, his group containing Encephalartos villosus in fruit, and a good Cocos Weddelliana. Mr. Osman, gr. to R. B. Dodgson, Esq., Blackburn, who was 2d, had a very large Croton Queen Victoria and Gleichenia rupestris glaucescens.

Ferns were well shown—not so large as we have seen them, but beautifully fresh. With eight Mr. Tudgey took the highest honours, showing in a neat lot Gleichenia Mendelii, G. dichotoma, Microlepis hirta cristata, 6 feet through; Cibotium regale, and Cyathea dealbata. Messrs. Cole, who were 2d, had, in a very well grown collection, Gleichenia rupestris glaucescens, G. Mendelii, and Cibotium Schiedei. With four Ferns Mr. Berry was 1st, having, in a pretty group, Davallia Mooreana and Gleichenia rupestris; Mr. Nash, gr. to Captain Starkey, York, 2d, also exhibiting a fresh healthy lot. For a pair of Tree Ferns Mr. Eastwood, gr. to F. W. Tetley, Esq., Leeds, was 1st, with Cyathea dealbata and Dicksonia antarctica. Hardy varieties were even better represented than the tender kinds. With twelve Mr. Scott came in 1st, with a grand lot, in which Athyrium grandifolium, A. polydactylon, A. grandiceps, and A. plumosum were each some 5 feet in diameter; Mr. Rodwell, York, was 2d, and Mr. C. Rylance 3d, both staging meritorious groups. In the class for six hardy Ferns Mr. Scott was again 1st, with beautiful plants, in which Polystichum cristatum and Athyrium corymbiferum were unusually fine; 2d, Mr. Rodwell.

Orchids formed one of the principal features of the show, and in point of numbers and individual merit were much in advance of what used to be forthcoming at York. They formed a large bank, occupying a considerable portion of the central stage in one of the long tents. Mr. Mitchell, gr. to Dr. Ainsworth, Manchester, who was 1st for six, came out stronger than he did at the Manchester show. His lot consisted of Vanda suavis, with eleven large spikes of bloom; Phalænopsis grandiflora, bearing fourteen racemes; Odontoglossum vexillarium and O. crispum, both well bloomed; Saccolabium præmorsum, six handsome racemes; and Aerides Schröderi, with six spikes, four of which had two or three branches each; Mr. Osman, 2d, having fine examples of Masdevallia Harryana, M. Veitchii, Cypripedium villosum, C. barbatum, Lælia purpurata, and Epidendrum vitellinum majus, with thirty-six good spikes; Mr. Hayward, gr. to Capt. Hincks, Thirsk, 3d, with a fresh, well-grown lot, in which Dendrobium suavissimum, Calanthe veratrifolia, and Odontoglossum vexillarium were conspicuous. In one class for three Mr. Osman took the lead with Masdevallia Harryana, Cypripedium bifolum, and Epidendrum vitellinum majus; Mr. Hayward 2d, having beautiful plants of Odontoglossum vexillarium and O. crispum, and a well flowered Lælia purpurata, the blooms of which were injured by damp; 3d, Mr. Mitchell. Single Orchid: 1st, Mr. Eastwood, for a healthy example of Aerides Fieldingii; 2d, Mr. Mitchell, Dendrobium infundibulum; 3d, Mr. Winterbourne, with a very distinct form of Lælia purpurata, the lip of which has its colour laid on in longitudinal stripes as well defined as those of a Pleione.

Pelargoniums, as usual, were an exhibition in themselves. In the class for twelve show varieties, including spotted kinds, Messrs. Lazenby & Sons, York, took the lead with a fine lot, in which Prince Leopold, Brigantine, Madame Hillaire, Queen Bess, Claribel, and Duchess of Edinburgh were grandly flowered, the plants averaging near upon 4 feet in diameter. Mr. Rylance, who was a good 2d, had Mary Hoyle, Empress, and Queen Bess unusually fine. 3d, Mr. May, Bedale. For six show varieties Mr. Eastwood came in 1st, staging well-grown, handsomely flowered examples; Mr. Gowthorpe, gr. to Miss Steward, York, was 2d. Zonals were likewise well done, the plants being full of flower, backed with healthy foliage. With twelve Mr. Macintosh, gr. to J. T. Hingston, Esq., was a good 1st; in his dozen Queen of Beauties, Grand Duke, and Colonel Holden, were extremely good. 2d, Mr. R. Simpson, Selby, showing a very good lot. With six Mr. Winterbourne had 1st, and Mr. Wright 2d. For six Fancy Pelargoniums Mr. Rylance was 1st with, amongst others, Sarah Turner, Delicata, and Roi des Fantaisies, beautifully managed; 2d, Mr. Eastwood. Fuchsias were fairly done, Mr. Clarke, gr. to Miss Wharton, Clifton, York, taking the 1st prize for six.

Bedding plants are always well shown at York; in the class for sixteen, excluding Pelargoniums, Mr. R. Simpson, Selby, was 1st, putting up a well-grown group in large pans; 2d, Messrs. Simpson & Sons, York; 3d, Messrs. Lazenby. Twenty alpine and herbaceous plants: 1st, Mr. Rodwell, with a distinct and well-assorted collection; 2d, Mr. R. Simpson.

The liberal prizes offered for groups staged for effect brought out a number of competitors, whose exhibits filled two large tents. In the class confined to 200 square feet there were four exhibitors, Mr. Letts being a good 1st. The materials he used for covering the surface of the space consisted of Adiantum cuneatum and other low-growing Ferns, mixed with light coloured Coleus and Spiræa japonica, interspersed with small Dracænas, Crotons, Pandanus Veitchii, and a few examples of the yellow Oncidium flexuosum; these were relieved by medium-sized plants of Dracænas, Cocos Weddelliana, and similar Palms; in the centre was a large Tree Fern — Dicksonia antarctica — flanked right and left by a pair of large Dracæna australis. The pots of the bigger plants were all hidden by the under-surface plants, as likewise the whole of those at the outer edge of the group, by a broad fringe of Panicum variegatum. Mr. Berry who was 2d, had a good exhibit, composed of suitable materials, which however presented too much of an even slope from the centre to the outer edge—a fault which most exhibitors commit, but which should be avoided, now that the necessity for sufficient relief in the surface of these arrangements is admitted. Mr. R. Simpson was 3d, and Mr. McIntyre 4th. In the competition confined to a space not exceeding 100 square feet Mr. Scott was to the fore with a nice arrangement, Mr. Gowthorpe 2d, Mr. Noble 3d; Mr. Hutton, gr. to W. T. Walker, Esq., York, and Mr. Macintosh having equal extra awards in this class.

Pot Roses were well represented by medium-sized plants, very well flowered. With six Messrs. Pybus & Son, Ripon, had 1st, the plants being about 3 feet through and finely bloomed; 2d, Messrs. Jackson & Co., Bedale, with smaller plants; Mr. May, Bedale, 3d. Nine varieties in 8-inch pots were also well done; Messrs. Pybus 1st, Mr. May 2d, and Messrs. Jackson 3d. Fifteen varieties in 8-inch pots.—Here Messrs. Jackson took 1st, with plants remarkable for the size of their flowers; Mr. May 2d, Messrs. Pybus 3d. In the amateurs' class for six Mr. W. W. Gatliffe, Ripon, was 1st, Mr. Eastwood 2d. For six varieties in pots, not more than 8 inches in diameter (amateurs), Mr. Eastwood was 1st, and Mr. Gowthorpe 2d.

Cut Roses, as might be supposed from the lateness of the season, were all of inside growth. For forty-eight Messrs. Jackson were 1st, showing a nice lot of blooms. Mr. May, who took 2d honours, also had a nice stand of flowers. With thirty-six Mr. May came in 1st, and for twenty-four varieties Messrs. Jackson again gained the 1st prize. For twelve white and yellow Roses, not less than six varieties, Mr. Oldroyd, gr. to Mrs. Grimston, Cranswick, was 1st, and Mr. E. R. Whitwell, Darlington, 2d.

Miscellaneous cut flowers were in great force, and made a fine display. For a single group in vase or stand Mr. C. W. Baynes, gr. to R. Dickinson, Esq., Durham, was 1st; for twelve bunches of cut flowers Mr. Cartwright, gr. to A. Wilson, Esq., Hull, came in 1st; and Mr. McIndoe, gr. to J. W. Pease, Esq., M.P., Guisborough, and Mr. Black, gr. to Miss Pease, Darlington, were equal 2d. Six bunches of cut flowers: 1st, Mr. McIndoe; 2d, Mr. C. W. Baynes. These were collectively nicely arranged, handsome flowers. Mr. McIndoe had a beautiful lot of cut hardy flowers, amongst which were the true dwarf double white Rocket, Linaria reticulata, Dodecatheon Jeffreyanum, Delphinium nudicaule, Asphodelus ramosus, Hyacinthus candicans, and Erysimum Barbarea. For two bride's bouquets Mr. Rylance was 1st, and Mr. Wright 2d; and for two ball bouquets Mr. Wright came in 1st.

Fruit, for the season, was well and plentifully shown. In the class for ten dishes Mr. Coleman, gr. to Earl Somers, Eastnor Castle, Ledbury, was easily 1st, with good dishes of Black Hamburgh and Foster's Seedling Grapes, Eastnor Castle and Golden Gem Melons, Queen and Charlotte Rothschild Pines, A'bec Peaches, very fine; Violette Hâtive Nectarines, splendidly coloured; Brown Turkey Figs, and Sir J. Paxton Strawberries. Mr. McIndoe, who came in 2d, had nice dishes of Muscat and Black Hamburgh Grapes, a Queen Pine, Barrington Peaches, Best of All and Rosebery Topping Melons, May Duke Cherries, Brown Turkey Figs, and Scarlet Premier Nectarines. Mr. Mann, gr. to Mrs. Hornsby, Grantham, was 3d. For six dishes, Mr. Wallis, gr. to Sir H. M. Thomson, York, took 1st, showing Buckland Sweetwater and Black Hamburgh Grapes—the former very well coloured, a nice dish of Peaches, Nectarines, Cherries, and a Melon. Mr. Coleman was 2d with a very good lot, and Mr. McIndoe 3d. For four dishes of fruit, Pines excluded and only one dish of Grapes admitted, Mr. Westcott, gr. to the Duke of Cleveland, Raby Castle, was 1st with a handsome collection; 2d, Mr. McIntyre. One Pine: 1st, Mr. Clayton, gr. to J. Fielden, Esq., Grimston Park, Tadcaster. Black Grapes, two bunches: 1st, Mr. Coleman, with beautifully finished Black Hamburghs; 2d, Mr. Allsopp, gr. to Lord Hotham, Hull. White Grapes, two bunches: 1st, Mr. Cartwright; 2d, Mr. Allsopp. Peaches, single dish: 1st, Mr. McIndoe; 2d, Mr. Hutton. Nectarines, single dish: 1st, Mr. Coleman, showing Violette Hâtive in beautiful order; 2d, Mr. McIntyre. Melon, scarlet-fleshed: 1st, Mr. Cartwright. Melon, green-fleshed: 1st, Mr. Coleman, with Eastnor Castle in fine condition; 2d, Mr. Osman. Dish of Figs: 1st, Mr. Coleman. Cherries, single dish: 1st, Mr. Coleman—Bigarreau Napoléon, very fine; 2d, Mr. McIndoe. Strawberries: 1st, Mr. Mann; 2d, Mr. Anderson, York.

For Messrs. Backhouse's extra prizes, offered for ten dishes of vegetables, Mr. Kirke was 1st, and Mr. Cartwright 2d, both showing good collections.

Messrs. Smith & Co., of Worcester, had an extra prize awarded for a collection of cut herbaceous flowers, and a First-class Certificate for Clematis Princess Beatrice, a distinct six-petalled variety, in colour a very pale shade of lilac with a dark lilac veining.

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**South Essex, Leyton, &c., Floricultural.**—The annual exhibition of this old-established Society was held in the grounds of J. G. Barclay, Esq., Knott's Green, Leyton, on Wednesday, June 15, and from every point of view may be said to have been a great success. The day was remarkably fine, the result being an unprecedented number of visitors, attracted quite as much by the beautiful grounds, which are in splendid condition (much to the credit of Mr. Donald, the head gardener), as by the floral exhibition. The large conservatory and the annexes thereto, as well as the whole of the extensive pleasure grounds and flower garden, were freely open to the public to come and go as they please on this great gala day. It seemed to give both Mr. and Mrs. Barclay great pleasure to see the large concourse of people so thoroughly enjoy themselves. It would occupy too much space to enumerate the whole of the exhibits in the numerous classes, which were very well filled indeed.

The principal prizes were given to a group of eight stove and greenhouse flowering plants, and the 1st prize was easily won by Mr. Donald, who amongst other plants had a grand specimen of Statice profusa, a mass of richly-coloured blooms. In the collection were two large and remarkably well grown Ericas, E. Candolleana and E. Fairrieana; the plants were well trained, the flowers large and richly coloured. The old Diplacus glutinosus, introduced as far back as the year 1794 from California, was represented by a handsome specimen, freely studded with its rich orange flowers. Mr. Bones, gr. to D. Macintosh, Esq., Havering; Mr. Monk, gr. to W. Fowler, Esq., M.P., Leytonstone; and Mr. Douglas, gr. to F. Whitbourn, Esq., Ilford, also exhibited flowering plants. Orchids were well represented, although the usual group from Alfred Borwick, Esq., Higham Hill, Walthamstow, was sadly missed. Mr. Borwick is one of the most enthusiastic local cultivators, and cannot well be spared as an exhibitor. The Society is indebted to Mr. Borwick and Mr. Scott for special donations of money to the Orchid classes. Mr. Douglas was the principal exhibitor, and gained the 1st prize in the class for eight specimens; he had a good Aerides Fieldingii with three spikes, an Odontoglossum vexillarium, with forty open and unopened blooms, a fine Masdevallia Stangeana, &c.

The contest for the best specimen Orchid was between a large Lælia purpurata with fourteen flowers from Mr. Douglas; and a grand Dendrobium Devonianum from Mr. T. Foster, gr. to R. Johnson, Esq., of Walthamstow; the

flowering growths were strong and well furnished with bloom, and would have been more effective if they had not been twisted round three sticks placed in the pot. J. R. Scott, Esq., was also an exhibitor of small but well-grown plants.

The finest Palms, foliage plants and Ferns, exotic and British, were sent by Mr. Donald, and well deserved the 1st prizes awarded to them. Mr. Bones was the principal prize-taker for Calceolarias and Fancy Pelargoniums; Mr. Donald for large flowering Pelargoniums and Heaths; Mr. Monk exhibited well in many classes, gaining a 1st prize for Azaleas, and also for a nice group of plants arranged for effect. Before quitting the large tent we must notice a nice little group of plants sent by Mr. B. S. Williams, of Holloway. There was the very pretty little Stenogaster concinna, introduced from India in 1860, which attracted much attention; the Actinopteris radiata australis, an enlarged form of the species; also a neat little group of Rhipidopteris peltata, and numerous Orchids and other stove plants. Mr. C. Hart, The Nursery, Beaumont Road, Leyton, at the other end of the tent, had also arranged another fine group of plants; amongst some well grown Carnations, finely flowered, were Orchids, Ferns, &c.

There was a tent this year specially devoted to cut flowers, table decorations, fruit, &c. Mr. Sutton Abbot and his family were the principal prize-takers for table decorations, Mr. Douglas for cut flowers, amongst them a stand of the Scotch strain and another of the French strain of Ranunculi, flowers that seemed to be quite unknown to a large proportion of the exhibitors. Mr. Donald had the best black Grapes, and Mr. W. Jones, gr. to Sir Thomas White, Bart., Chigwell, the best white—a good dish of Buckland Sweetwater.

Mr. Donald and Mr. Monk had each very good collections of vegetables; and the exhibits of vegetables, fruits, and flowers sent by Mr. Garward, of Leyton, were wonderfully fine for a grower of limited means.

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**Royal Counties (Hants and Berks) Agricultural Exhibition:** *June 21 to 24.*—A fruit and flower show was held in connection with the annual exhibition of this Society; and the horticultural committee and the indefatigable Hon. Secretary and his assistant (Messrs. A. Watson and W. H. Williams), together with Mr. S. Griffin—a gentleman well experienced in the management of fruit and flower exhibitions, and an amateur of distinction in the neighbourhood—are to be congratulated upon the success with which their efforts to make the show a thorough good one (the like of which has never before been seen in Salisbury or district) were crowned—success which, we trust, will be an incentive towards resuscitating the defunct Wiltshire Horticultural and Arboricultural Society, which used to be held annually in Salisbury, Wilton, &c., and which died with a "decent nest-egg" to its credit in one of the city banks. The exhibits were staged under the superintendence of Mr. J. Wyatt, of the Castle Street Nurseries, and other members of the committee, in two spacious and well ventilated tents, well filled with fruits, plants, and cut-flowers, which were all arranged to the best advantage, and greatly admired—especially the plants shown by Messrs. Cypher, Tudgey, Jackson & Son, Rann, and Hinds—by a fashionable influx of visitors.

PLANTS.—For twelve stove and greenhouse flowering plants distinct: 1st (£20), Mr. James Cypher, Cheltenham; 2d (£10), Messrs. Jackson & Son, Kingston. Mr. Cypher's twelve were as follows:—Allamanda Hendersoni, Bougainvillea glabra (a finely flowered plant), Dipladenia amabilis, Azalea Alfordiana, Dracophyllum gracile, Anthurium Scherzerianum, Erica Cavendishiana, in fine condition; Ixora Williamsii, nearly 5 feet through, and grandly flowered; Allamanda grandiflora, another grand and well flowered plant of the kind, about 3 or 3½ feet through; Polygala Dalmaisiana, Clerodendron Balfourianum, and Anthurium grandiflorum. For six stove and greenhouse plants in flower, Mr. Tudgey took, without competition, 1st honours with compact, grandly flowered plants of Erica tricolor, Azalea Souvenir du Prince Albert, Erica Cavendishianum, Darwinia tulipifera, Erica ventricosa magnifica, and Anthurium Scherzerianum. In the class for twelve variegated and fine-foliaged stove and greenhouse plants, distinct varieties, Mr. Cypher was again to the front, with grand specimens of Croton angustifolius, Gleichenia Mendelii, Croton majesticus, Latania borbonica, Encephalartos villosus, Thrinax elegans, Croton Johannis, Verschaffeltia splendida, Cordyline indivisa, Areca lutescens, Croton Disraeli, and Gleichenia dichotoma. Mr. Rann, gr. to J. Warren, Esq., Handcross Park, Crawley, was a good 2d. Six variegated and fine-foliage stove and greenhouse plants, distinct: 1st, F. G. Dalgety, Esq. (gr., Mr. J. Budd), Lockerley Hall, Romsey, who showed nice plants of Dracæna Baptistii, Dasylirion glaucum, Pandanus Veitchii, Croton Queen Victoria, C. pictus variegatus, and Dracæna Chelsoni, all in good condition. Mr. Hinds, gr. to Lord Wimborne, Canford Manor, Wimborne, was a good 2d, with Alocasia metallica, a good specimen; Cycas revoluta, Yucca aloifolia var., Croton longifolius, Maranta zebrina, and Chamærops Fortunei. For six Orchids, distinct: 1st, H. Cruger Miles, Esq. (gr., Mr. W. Perry), who staged nice well-flowered plants of Aerides Lobbii, Odontoglossum Phalænopsis, O. vexillarium, Cattleya Mendelii, Anguloa Clowesii, and Dendrobium suavissimum; 2d, Mr. James Cypher. For nine exotic Ferns, distinct: 1st, Lord Wimborne (gr., Mr. W. Hinds). His lordship also staged six Ferns in class G, but not for competition; these greatly assisted in the embellishment of the tents, these amongst them being Davallia Mooreana (which was a basket plant hung from the roof of one of the plant stoves eighteen months' ago, now a specimen 5 or 6 feet through), Alsophila excelsa and Davallia bullata being particularly good. A miscellaneous and choice collection of Palms, Crotons, Ferns, and other good new plants, &c., was exhibited by Mr. B. S. Williams, Upper Holloway, but not for competition, and they did good duty at the south entrance of No. 2 tent, where they were greatly admired. In the same tent Pelargoniums and Dracænas contributed by Messrs. Cypher, Rann, &c., also not for competition, were much admired, as also were the Orchids (eighteen in number) shown by Messrs. Jackson & Son, Kingston. Mr. T. Challis, of Witton Gardens, also contributed a small but well grown collection of Orchids, amongst which were a couple of large and well flowered specimens. Messrs. Turner, Slough, Jackson & Son, and Cross, of Salisbury, contributed Pelargoniums, which gave variety to the exhibition.

CUT FLOWERS.—For forty-eight Roses, single trusses, distinct: 1st, Earl of Pembroke (gr. Mr. T. Challis), Wilton House, Salisbury, who staged a very praiseworthy lot of blooms for the season being fine in size, form, and colour. His Lordship was again 1st for thirty-six "trebles," distinct, his flowers being all in fine condition. For twenty-four single trusses, distinct: 1st, Mr. Davis, Wilton; 2d, Mr. Hooper, Bath. Twelve singles, distinct. Here Mr. Davis was to the front again, with, as in the preceding class, fine fresh looking blooms, 2d, F. G. Dalgety, Esq., Lockerley Hall, Romsey. Messrs. Keynes & Co. also exhibited a grand lot of Roses in their usual good style, exhibits which now, as of yore, illustrate their abilities and success as rosarians. For the best twelve blooms of Carnations, distinct varieties, given by the Countess of Pembroke: 1st, Mr. Hooper, Bath (no competition). For eighteen bunches of cut flowers, distinct kinds: 1st, H. Cruger Miles, Esq. (whose stand, like the 2d prize stand, was made up principally of choice Orchid blooms); 2d, F. G. Dalgety, Esq., and John Scott, Esq., Warminster (gr., Mr. Stephen Goodfellow), was a good 3d.

FRUIT.—For a collection of fruit, six dishes, one of a kind: 1st, F. G. Dalgety, Esq., who showed three bunches of Black Hamburgh Grapes, ditto white Frontignan Grapes, one Pine-apple, Royal George Peaches, one Read's Scarlet-flesh Melon and Elruge Nectarines. W. Baring, Esq., Norman Court, Romsey (gr., Mr. Thomson), was a good 2d; 3d, Earl of Pembroke. Three bunches of Black Grapes: 1st, H. St. Vincent Aimes, Esq., (gr., Mr. Bannister), with compact well finished bunches; 2d, W. Baring, Esq., who also showed good large bunches. For three bunches of white Grapes W. Baring, Esq., was to the front with Buckland Sweetwater; the 2d prize in the same class, with Foster's Seedling, going to the Earl of Radnor, Longford Castle (Mr. Ward, gr.) Six Peaches: 1st, W. Baring, Esq.; Lord Wimborne being a good 2d. For six Nectarines: 1st, Lord Wimborne, with large finely coloured fruits of Elruge; 2d, W. Baring, Esq. Class G, best flavoured Melon: 1st, Earl of Radnor, Longford Castle (Mr. Ward, gr.), with Sutton's Hero of Bath; 2d, H. St. Vincent Aimes, Esq. For two dishes, distinct varieties, of Cherries: 1st, Earl of Pembroke, Wilton House, with Empress Eugenie and Black Tartarian, in good condition. For three dishes of Strawberries, distinct varieties: 1st, Earl of Radnor, who showed James Veitch, British Queen, and President; 2d, F. G. Dalgety, Esq. Three dishes from Longford Castle Gardens of Stamfordian and Vick's Criterion Tomatos, staged, not for competition, there being no class for them, were highly commended by the judges.

For the best dressed stand for dinner-table decoration Miss S. Leach, 41, Castle Street, Salisbury, was 1st, with a very creditably arranged vase. Hand Bouquet: 1st, Miss Cypher, Cheltenham, in whose bouquet was a choice variety of Orchids; 2d, Mr. W. J. Cross, whose arrangement was light, but was beaten by the use of the greater quantity of choice Orchids; W. Baring, Esq., was a good 3d. Three button-hole bouquets: 1st, Mr. W. J. Cross, nurseryman, Canal, Salisbury, with three gems; 2d, Miss Cypher; 3d, Miss L. G. Waters.

In all cases the awards of the judges, who came from a distance, seemed to give satisfaction. Outside the exhibition tents the chief attractions for horticulturists were an elaborately fitted and extensive stand, in which were displayed grand examples of seeds and roots, by Messrs. Webb & Son, of Stourbridge, and the horticultural exhibition of lawn mowers and other garden implements by the Messrs. Wilkes & Son and Messrs. Wilton Brothers, of Salisbury. Messrs. Coleman, Burton (Upper Holloway Nurseries) and Turner, Slough, were the judges.

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**Scottish Pansy:** *Thirty-seventh Annual Competition.*—In such a trying season as this has been it must have been very gratifying to all concerned to see such a successful show as the Scottish Pansy Society had on the 17th inst. in Edinburgh. Contrary to all expectations, the number of competitors was quite equal to that of previous years; and as many of the prize-takers were new members, it shows that the interest in this favourite garden flower is still on the increase. The quality of the flowers was, perhaps, scarcely so perfect as we have seen, but in point of size we do not think they could be surpassed. In the nurserymen's and amateurs' classes the competition was large and very keen; but the practical gardeners were not so well represented as could be wished. As a proof of the lateness of the season, we noticed that there was not a certificate granted, and this has not occurred for many years; exhibitions to be held later this season will therefore be looked forward to for new seedlings. The funds of the Society are in a flourishing state.

## Obituary.

THE death of Mr. S. M. CARSON, for many years gardener at Nonsuch Park, Cheam, removes from horticultural circles a central figure at the large exhibitions of a quarter of a century and less ago. It is not too much to say that Mr. Carson was one of the foremost plant growers of his day, and the records of horticultural exhibitions testify to his great success. He was conspicuously successful as a cultivator of Azaleas and Orchids, also of stove and greenhouse plants generally; and for a length of time was a near neighbour and rival exhibitor of the late Mr. John Green, former gardener to Sir E. Antrobus, Bart., at Cheam. At the time of his death Mr. Carson was in his sixty-seventh year.

The subject of this notice was a native of Gatehouse-of-Fleet, in Kircudbrightshire, and served his apprenticeship to gardening in the fine gardens of Cally House, now the residence of H. G. Murray Stewart, Esq., close by his native place. In November, 1854, he went to Edinburgh, and was for some months in the nurseries of Dicksons & Co., and from thence went as a journeyman gardener to Elderslie, Renfrewshire, where he remained for some two years: when, it is believed, he was sent by the Messrs. Dicksons to fill a very responsible situation, as second gardener, in an extensive place in Ireland, and where the head gardener discharged the duties of bailiff, &c. This position Mr. Carson filled with great credit for a term of three years, when he was recommended to the notice of the Messrs. Loddiges of Hackney, as a young man fond of his business, having a good knowledge of plants, and desirous of extending his knowledge. Here Mr. Carson found employment eminently calculated to feed his ambition to excel, and had the charge of the Orchids and plant stove, which improved so much under his care that his employers set a high value on his services and capacities. After remaining at Hackney for about two years the late Mr. Thomas Farmer, of Nonsuch Park, Cheam, who was a great patron of gardening, was contemplating the erection of a range of plant-houses, and forming a collection of plants, more particularly of Orchids. As the Hackney Nurseries were at that time the leading establishment for plants generally, Mr. and Mrs. Farmer were frequent visitors, and came into contact with the young Scotchman, and eventually engaged him to take charge of the plants at Nonsuch Park, where he also became bailiff, and continued to fill the appointment for thirty years under his first as well as his late employers. Here Mr. Carson discharged his duties with great fidelity and credit to himself, and enjoying the fullest confidence and trust of his employers. During that period the houses and grounds were admirably kept, his specimen plants were thoroughly well done, and his Azaleas probably never excelled. In his exhibition days the district of Cheam was strongly represented at our great shows by such men as S. M. Carson, John Green, of Lower Cheam; James Falconer, of Cheam House, and others.

In 1872 Mr. Carson retired from the management of the gardens at Nonsuch Park, to the great regret of his employer, who allowed him a liberal annuity. The late Mr. Thomas Farmer died in the prime of life, about 1867, and was succeeded by his son, Mr. W. R. G. Farmer, who, like his father, was a great patron of horticulture. Mr. Carson died on May 22 last at his residence at Gatehouse-of-Fleet, having retired to his nativx place to pass in serenity the declining years of his life. To a large circle of attached friends his memory will be sweet and pleasant as the flowers he grew with so much judgment and success.

A son of the late Mr. Carson—Mr. W. H. Carson—is in business as a nurseryman at New York. He was for some years with Messrs. Veitch & Sons at Chelsea, and went from London to the nurseries of Messrs. P. Henderson & Co., of New York; and finally started in business on his own account.

## Variorum.

ECONOMIC PLANTS IN DOMINICA.—In some notes from the West Indies, in a recent number o the *Colonies and India*, it is stated that the exceptionally dry weather which prevailed in the island of Dominica from the beginning of the year was followed at the beginning of last month (May) by fine showers, which brought the vegetation on very rapidly. The long-continued dry weather, however, will affect next year's sugar crop, for the growth of the young canes has been checked, and for a time planting was entirely out of the question on most of the sugar estates. The drought was also general in

the Leeward Islands. The Lime crop promised to be a large one, and it was reckoned that the gathering would commence in the early part of the present month. "The exports," it is stated, "of concentrated lime-juice and essential oil of Limes has increased largely within the last few years, and indications are not wanting to show that before long Dominica will become the Sicily of the West Indies." The planting of Nutmegs has been advocated by a local Dominican paper. There is as yet no systematic cultivation of the spice in Dominica, although the Nutmeg tree grows and bears well in the island, and in the neighbouring colony of Granada there are several Nutmeg estates. Each tree in full bearing gives a return of from one to two pounds sterling a-year; so that the cultivation is a very profitable one. But it takes seven or eight years for a tree to come into bearing, and few residents in the West Indies are content to wait so long for a return for money expended in cultivation.

INTRODUCED PLANTS IN SOUTH AUSTRALIA.—In the introduction to the Catalogue of the South Australian Court at the recent Melbourne Exhibition it was stated that the Olive-oil industry is beginning to assume considerable proportions. Several thousand gallons of oil were made during the past season, and the area under Olives is increasing. The oil commands a ready sale in the colony at a higher price than the imported article. Nearly all kinds of European fruits are produced in the colony; those of the Continent almost everywhere, and the more peculiarly English fruits in the hilly districts. Apricots, Peaches, Plums, and Grapes, are especially abundant, and are exported in considerable quantities. Raisin-making Vines are largely grown, and about 80 tons of Raisins, equal to the best imported, are manufactured every year. The Zante Grape is also grown, and the Currant-making industry promises to become of importance. Hops are grown with great success in the south-eastern districts. Flax, Tobacco, the Castor-oil plant, the Sunflower, Mustard, Rape, Lupin, Maize, Lentils, Chicory, Osier, Broom, Millet, Opium, and many plants used in the distilling of perfumes, are grown in the colony.

A MUSHROOM FARM IN THE MAMMOTH CAVE OF KENTUCKY.—The novel proposal (the *Times* learns from the *Scientific American*) has been made by an enterprising Frenchman to the trustees of the Mammoth Cave to rent a portion of the cave for raising edible Fungi. He has been cultivating Mushrooms in the neighbourhood of New York, but complains of want of cellar space, and of the conditions of temperature and moisture as not uniform enough for the best results. The portion of the cave which he has in view is that known as Audubon's Avenue, the first passage to the right after entering the cave. It is about half a mile long, and contains little of special interest, unless it be the swarms of bats in the Great Bat Room. The rich deposits of bat guano that have accumulated there for centuries would no doubt prove serviceable, when mixed with other fertilisers, in growing the Fungi. The soil is at present very dry, but might easily be moistened to any desired degree. The idea of thus utilising caverns has long been a familiar one, and practically realised in France. One cave at Montrouge is said to have six or seven miles run of Mushroom beds; another, near Frepillon, sixteen miles; a third, at Mery, over twenty-one miles. The special advantage of subterranean culture lies in the uniformity of temperature, which in the Mammoth Cave hardly varies from 56° Fahr. all the year round. Mushroom culture is found highly remunerative. It is thought choice Mushrooms would find a ready market in Louisville, Cincinnati, and other western and southern cities, not to speak of more distant markets. The project in question is thought to be regarded favourably by the trustees.

THE NEW CITY FURIT AND VEGETABLE MARKET.—The *Builder* states that this market will be exceptionally well situated for obtaining its supplies of fruit and vegetables. Surrounded as it will be by good broad roads on all four of its sides, vans from the railways and steam-packet wharfs bringing supplies of English and foreign produce will have much greater facility of access to the new market than they have to the existing Farringdon Market (which latter will be superseded by the building above described), and great facilities will be afforded for bringing produce from all parts of England, north and south of the Thames (and even from the Continent, *viâ* Dover and other ports) by means of the railway. The site of the market is partially over the piece of railway which connects the London, Chatham, and Dover Railway at Snow Hill with the Metropolitan Railway (and the railways in connection therewith, such as the Great Northern, Midland, and Great Western) at Farringdon Street. Just to the north of Snow Hill station four lines of railway sidings converge to the westward, and pass underneath the new market. The work of constructing a new bridge underneath Charterhouse Street, in order to allow these lines of sidings to pass under that thoroughfare and to form junctions with the railway just to the south of Farringdon Street station, is in progress. By means of these sidings, and by platforms and lifts, the produce will be easily transferred to the market above. Besides fruit and vegetables, flowers will be sold in the market; but should the market prove to be the great success that is anticipated, it is, we believe, in contemplation to erect a separate flower-market on the comparatively small triangular-shaped piece of ground which still remains unoccupied to the south of the new market, bounded on its three sides by Snow Hill, King Street, and the southern roadway.

# The Weather.

*STATE OF THE WEATHER AT BLACKHEATH, LONDON,*
FOR THE WEEK ENDING WEDNESDAY, JUNE 22, 1881.

| Month and Day. | Barometer: Mean Reading Reduced to 32° Fahr. | Barometer: Departure from Average of 18 years. | Temperature of the Air: Highest. | Temperature of the Air: Lowest. | Temperature of the Air: Range. | Temperature of the Air: Mean for Day. | Temperature of the Air: Departure of Mean from Average of 60 years. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point. | Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100. | Winn: Average Direction. | Rainfall. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| June | In | In. | ° | ° | ° | ° | ° | ° | ° | | In |
| 16 | 29.77 | —0.02 | 74.2 | 53.3 | 20.9 | 62.2 | + 3.1 | 53.1 | 72 | S.E. | 0.01 |
| 17 | 29.73 | —0.06 | 72.0 | 57.3 | 14.7 | 62.8 | + 3.5 | 57.3 | 82 | S. | 0.50 |
| 18 | 29.68 | —0.10 | 68.0 | 57.0 | 11.0 | 60.0 | + 0.5 | 57.2 | 91 | S.S.E.: S.E. | 0.09 |
| 19 | 29.63 | —0.16 | 69.0 | 54.1 | 14.9 | 59.0 | — 0.7 | 52.0 | 78 | W. | 0.02 |
| 20 | 29.56 | —0.23 | 71.0 | 54.6 | 16.4 | 60.4 | + 0.5 | 52.6 | 76 | S.W. | 0.00 |
| 21 | 29.63 | —0.16 | 72.5 | 57.0 | 15.5 | 62.5 | + 2.4 | 58.3 | 86 | SW.: S. | 0.02 |
| 22 | 29.60 | —0.20 | 69.0 | 53.5 | 15.5 | 59.0 | — 1.4 | 51.8 | 77 | S.W | 0.00 |
| Mean | 29.66 | —0.10 | 70.8 | 55.3 | 15.6 | 60.8 | + 1.1 | 54.6 | 80 | S.W.: S.E. | 0.64 |

June 16.—A fine day; occasional light rain in afternoon and evening. Fine and warm night.
— 17.—Dull morning, with a little rain. Heavy rain from 6 P.M.
— 18.—A little rain early in the morning; fine and pleasant day generally. A thin rain at night.
— 19.—Morning generally overcast; faint gleams of sun. Fine afternoon, with a strong wind. Fine night, but cold.
— 20.—A fine day and night.
— 21.—A fine and pleasant day, with a soft air. Fine night, but rather windy.
— 22.—Early morning dull and lowering; sun shining brightly before noon. A strong wind. Fine day. Night fine, but cold.

LONDON: *Atmospheric Pressure.*—During the week ending Saturday, June 18, the readings of the barometer at the level of the sea increased from 30.06 inches at the beginning of the week to 30.08 inches by 9 A.M. of the 12th; decreased quickly to 30.03 inches by 3 P.M. on the same day; increased to 30.12 inches by midnight of the 13th; and there were slight changes only during the remainder of the week, and at the end the reading was 29.86 inches. The mean reading for the week at the level of the sea was 29.98 inches, being 0.14 inch higher than that of the preceding week, and 0.01 inch above the average of the week.

*Temperature.*—The highest temperatures in the week were 74°.2 on the 16th, and 72°.6 on the 15th. The lowest of the high day temperatures were 68° on the 18th, and 68°.5 on the 12th. The mean of the seven high temperatures was 70°.5. The lowest temperature in the week was 50°, on the 15th. The highest of the low temperatures was 57°.3, on the 17th. The mean of the seven readings was 53°.5.

The mean temperatures were—June 12, 59°.3; 13th, 58°.4; 14th, 57°.8; 15th, 59°.2; 16th, 62°.2; 17th, 62°.8; and the 18th, 60°—being 0°.8 above, 0.3° below, 1°.1 below, 0°.2 above, 3°.1 above, 3°.5 above, and 0°.5 above their respective averages.

The mean temperature of the week was 60°, being 9°.7 higher than that of the preceding week, and 1° above the average of the same week for sixty years.

The highest readings of a thermometer with blackened bulb placed in the full rays of the sun was 142° on the 12th and 141°.5 on the 14th; on the 18th the highest reading was 84°; the mean of the seven readings was 123°.

The lowest reading of a thermometer with its bulb resting on short grass was 45°, on the night of the 15th; the mean of the seven readings was 49°.

*Rain* fell on the 17th to the depth of 0.5 inch, and on the 18th to 0.09 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, June 18, the highest temperature was, or exceeded, 74° at Blackheath, Cambridge, and Norwich. At Sunderland the highest in the week was 62°. The mean from all stations was 69°.9. The lowest temperature in the week was at or below 42° at Truro, Wrottesley, and Hull; at Blackheath the lowest temperature in the week was 50°. The mean from all stations was 44°.3.

The range in the week exceeded 30° at Cambridge, Norwich, and Hull; and was less than 21° at Bristol, Liverpool, and Sunderland. The mean from all stations was 25°.6.

The mean of the seven high day temperatures exceeded 70° at Blackheath and Cambridge, and was less than 63° at Plymouth and Sunderland. The mean from all stations was 66°.

The mean of the seven low night temperatures below 49° at Wrottesley, Hull, and Sunderland; and exceeded 52° at Truro, Blackheath, and Liverpool. The general mean was 50°.5.

The mean daily range was greater than 18° at Cambridge, Nottingham, and Hull; and was less than 13° at Plymouth, Liverpool, and Sunderland. The mean from all stations was 15°.6.

The mean temperature of the week was highest at Blackheath, 60°; and lowest at Sunderland, 52°.3. The general mean was 56°.3.

*Rain.*—Some fell at all stations; on one day only at Norwich, the 18th, to the amount of 0.35 inch; on five days at Plymouth, to the amount of 0.86; on the 17th, at Brighton, 1.02 fell. The largest fall in the week was at Brighton, 1.11 inch; the smallest fall, 0.26 inch, was at Cambridge and Nottingham. The general average was 0.55 inch, and the average number of days was three.

SCOTLAND: *Temperature.*—During the week ending Saturday, June 18, the highest temperatures were 67°.2 at Greenock, and 67° at Glasgow. At Aberdeen the highest in the week was 57°, and the general mean was 64°.1, being 1°.6 higher than in the preceding week.

The lowest temperature in the week was 32°, at Leith. At Edinburgh the lowest temperature in the week was 45°.9, and the general mean was 41°, being 4°.4 higher than in the preceding week.

The mean temperature of the week was highest at Glasgow, 55°.2, and lowest at Aberdeen, 49°.2. The general mean was 52°.7, being 4°.9 higher than in the preceding week.

*Rain.*—The largest falls were—1.83 inch, at Greenock; 1.40 inch at Dundee, and 1.07 inch at Paisley. The smallest fall was 0.52 inch at Edinburgh. The general mean was 1°.02 inch.

JAMES GLAISHER, F.R.S.

## Enquiries.

*He that questioneth much shall learn much.*—BACON.

WIREWORM.—Will any correspondent of the *Gardeners' Chronicle* kindly give their experience as to the best method of exterminating wireworm from a garden? *G. H.*

## Answers to Correspondents.

CABBAGES RUNNING TO SEED: *V. J.* The growing season has not been propitious, first from cold and then from drought; hence the tendency to flower has been precociously developed at the expense of leaf formation.

CHELSONI: *Enquirer.* The word does not, as its form would indicate, represent the name of a person. It was originally used by Knight and Perry, many years ago, for an Azalea raised in their establishment, and has been used in like manner by their successors. It would be more correct to say Chelseianus, or Chelseiensis.

DAISIES AND PLANTAINS: *G. K.*—Yes, poorness of the soil. Top-dress the lawn with nitrate of soda at the rate of 100 lb. to the acre. Mix the soda with three or four times its weight of dry soil, and apply the dressing in showery weather.

FUNGUS: *B.*—Æcidium menthæ.

GLOXINIAS: *H. Hepburn.* A very good strain, but none of them distinct enough to put in commerce. Flowers such as yours are commonly obtained now from a packet of good seeds.

GOOSEBERRY FUNGUS: *Connon & Read.* — The Gooseberry leaves seat are afflicted badly with the Gooseberry Æcidium, Æcidium grossulariæ. At times the fungus is very common, at other times exceedingly rare: the fungus also attacks and distorts the Gooseberry fruits and at the same time gives them a disagreeable flavour. There is some reason to dread this pest, as it has been known to spread to other species of Ribes, and even attack the flowering Currants. The Hollyhock leaves are badly attacked by the terrible Hollyhock fungus, Puccinia malvacearum. A full account and illustration of this pest was given in the *Gardeners' Chronicle* for June 13, 1874, soon after the parasite first appeared in this country, and a woodcut of an affected leaf was given last week. The Horse-radish leaves are attacked in an unusually bad manner by the "white rust" of Cruciferous plants, Cystopus candidus, a fungus agreeing in many of its characters with the fungus of the Potato disease. *W. G. S.*

NAMES OF PLANTS: *R. S. N.* Browallia alata, probably.—*A. B.* A Pavia, which we cannot name without flowers.—*S. W. L.* 1, A double-flowered garden variety of Pyrethrum; 2, Danae racemosa; 3, Negundo aceroides.—*C. E. F.* Cystopteris fragilis, and Saxifraga Aizoon.—*J. M., Holyport.* Tecoma grandiflora, Japan. —*C. M. Owen.* Lychnis diurna, Pæonia corallina? and Asphodelus albus var.—*H. W.* 1, One of the varieties of Quercus Ilex; 2, Enonymus europæus; the grass is Hordeum marinum.—*C. W. D.* Calamintha Acinos.—*J. B., Bromley.* Sedum spathulifolium; see *Gardeners' Chronicle*, v., 1876, p. 821, f. 146: see *Gartenflora*, t. 741.—*Camjee.* Jasminum Sambac; and the yellow flower, Celsia cretica; it is a native of Crete, and therefore requires some protection.—*L. & S.* Teucrium Chamædrys.—*A Lawn Gardener.* Your tree is probably a hybrid between Pavia rubra and P. flava.—*M. A.* The little plant appears to be Antennaria dioica; and the others to be Alyssum calycinum and Euphorbia hiberna.—*Ignoramus.* Crucianella stylosa.

PAINT: *J. W. Webb.* There is no better paint for horticultural purposes than that which is made up from pure white lead and good linseed-oil and turpentine; indeed, in our opinion, there is none other so good.

REMOVING PLANTS: *Pro bono publico.* Consult a respectable solicitor.

SECRETARY AND EXHIBITOR: *W. M. Godfrey.* If the secretary of a society or committee is one of the largest competitors at an exhibition held under the auspices of such society or committee, he ought not, as a question of good taste, to pass round the tables with the judges, and assist them in placing the prize-tickets. His presence, under such circumstances, tends to embarrass the judges, and raises the suspicions of rival competitors, both of which should as far as possible be avoided.

SOOT: *J. E.*—If your gardener is using the liquid you describe of moderate strength, and clear, he cannot well apply anything better. Soot-water is most beneficial when judiciously used. See Mr. Rust's letter in our last issue.

VICIA SEPIUM: *W. H.*—The white flowered variety is not common; indeed, we do not remember to have seen it before.

## CATALOGUE RECEIVED.

CATALOGUES RECEIVED. — Benjamin Edgington, 10, Duke Street, London Bridge, S.E.—Marquees, Tents, Rickcloths, and Flags, Garden Netting and Shading Materials, &c.

DAMMANN & Co., Portici, near Naples, Italy—Wholesale Catalogue of Garden and Flower Seeds, Bulbs, &c.

COMMUNICATIONS RECEIVED:—J. C. & Co.—B. S. W.—C. & R.—J. Alexander.—N. E. B.—D. T. F.—T. Edwards. —G. N.—B. C.—J. H. M.—T. C.—H. T. Ayton (enclosure). —Baron von Mueller (enclosure)—E. T. M. (enclosure). —R. McL. (enclosure).—P. B. (with specimens).—H. J. V.—F. M. (with specimens).

# Markets.

*COVENT GARDEN, June 23.*

We are now fairly supplied with outdoor Strawberries from the home districts, and the prices at present are high, owing to a partial failure of the early growths. Business has been brisk, with a good demand for best fruit, especially Peaches. *James Webber, Wholesale Apple Market.*

VEGETABLES.—AVERAGE RETAIL PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Artichokes, Globe, per doz. | 3 0– 6 0 | Herbs, per bunch | 0 2– 0 4 |
| Asparagus, English, per bundle | 6 0– .. | Horse Radish, p. bun. | 4 0– .. |
| — Sprue, per bund. | 1 6– 2 0 | Lettuces, Cabbage, per doz. | 0 6– 1 6 |
| Beans, French, p. lb. | 1 0– .. | — Engl. Cos, score | 1 6– .. |
| — Broad, per bush. | 6 0– .. | Mint, green, bunch | 0 4– 0 6 |
| Beet, per doz. | 1 6– 2 6 | Mushrooms, p. baskt. | 1 6– 2 0 |
| Cabbages, per doz. | 1 0– 2 0 | Onions, per bushel | 7 0– .. |
| Carrots, per bunch | 0 4– 0 6 | — Spring, per bun. | 0 6– .. |
| — New Fr., bund. | 0 9– 1 0 | Parsley, per bunch | 0 4– .. |
| Cauliflowers, English, each | 0 6– 0 9 | Radishes, per bun. | 0 2– 0 6 |
| Celery, per bundle | 1 6– 2 0 | Rhubarb, per bund. | 0 4– 0 6 |
| Cucumbers, each | 0 6– 1 6 | Small salading, pun. | 0 4– .. |
| Endive, per doz. | 2 0– 3 0 | Spinach, per bushel | 2 0– 2 6 |
| Garlic, per lb. | 1 0– .. | Tomatos, per lb. | 0 9– 1 0 |
| | | Vegt. Marrows, each | 0 6– 0 8 |

POTATOS, NEW:—Kidney, 12s. to 14s.; Round, 10s. to 12s. Malta, 8s. to 10s. per cwt.

FRUIT.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Apricots, per box | 1 6– 2 6 | Lemons, per 100 | 4 0– 6 0 |
| Cherries, per ½-sieve | 2 0– .. | Melons, each | 2 6– 4 0 |
| Figs, per dozen | 6 0– 9 0 | Peaches, per dozen | 6 0–20 0 |
| Gooseberries, ½-bush | 2 6– 3 6 | Pine-apples, Eng., lb. | 2 0– 4 0 |
| Grapes, per lb. | 2 0– 6 0 | Strawberries, per lb. | 0 6– 2 0 |

An advance of 20 per cent. on the above prices may be taken as a fair average of the retail value of the articles quoted.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Aralia Sieboldii, doz. | 18 0–42 0 | Fuchsias, per dozen | 6 0–12 0 |
| Begonias, per doz. | 6 0–12 0 | Ivy Geranium, doz. | 4 0– 6 0 |
| Calceolaria, per doz. | 6 0–12 0 | Lilium longifl., doz. | 18 0–42 0 |
| Creeping Jenny, doz. | 3 0– 4 0 | Lobelia, per dozen | 4 0– 6 0 |
| Cyperus, per dozen | 6 0–12 0 | Marguerite, white, per dozen | 18 0–24 0 |
| Dracæna terminalis | 30 0–60 0 | — Yellow, per doz. | 12 0–30 0 |
| — viridis, per doz. | 12 0–24 0 | Mignonette, per doz. | 4 0– 6 0 |
| Erica, in variety, doz. | 18 0–30 0 | Myrtles, per doz. | 6 0–12 0 |
| Euonymus, various, per dozen | 6 0–18 0 | Palms in var., each | 2 6–21 0 |
| Evergreens, in var., per dozen | 6 0–24 0 | Pelargoniums, doz. | 9 0–32 0 |
| Ferns, in variety, per dozen | 4 0–18 0 | — tricolor, per doz. | 3 0–12 0 |
| Ficus elastica, each | 1 6– 7 6 | — scarlet, per doz. | 4 0– 9 0 |
| Foliage Plants, various, each | 2 0–10 6 | Rhodanthe, per doz. | 6 0–10 0 |
| | | Roses, various, doz. | 12 0–30 0 |
| | | Spiræa japonica, doz. | 9 0–18 0 |

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

| | s. d. s. d. | | s. d. s. d. |
|---|---|---|---|
| Abutilon, 12 blooms | 0 3– 0 6 | Marguerites, 12 bun. | 0 4– 0 9 |
| Antirrhinum, 12 bun. | 6 0– 9 0 | Mignonette, 12 bun. | 4 0– 9 0 |
| Arum Lilies, 12 blms. | 4 0– 6 0 | Pelargoniums, 12 sprays | 0 9– 1 0 |
| Azalea, 12 sprays | 0 6– .. | — zonal, 12 sprays | 0 4– 0 9 |
| Bouvardias, per bun. | 0 9– 1 6 | Pæony, 12 bunches | 9 0–24 0 |
| Calceolaria, 12 bun. | 9 0–12 0 | Pinks, white, 12 bun. | 2 0– 6 0 |
| Carnations, 12 blms. | 1 0– 2 0 | — coloured, 12 bun. | 3 0– 6 0 |
| Cornflower, 12 bun. | 2 0– 4 0 | Primula, double, per bunch | 0 6– 1 0 |
| Eucharis, per doz. | 4 0– 6 0 | Ranunculus, 12 bun. | 3 0– 6 0 |
| Forget-me-not, 12 bunches | 3 0– 6 0 | Rhodanthe, 12 bun. | 8 0–12 0 |
| Gardenias, 12 blms. | 1 6– 6 0 | Roses (indoor), doz. | 1 0– 6 0 |
| Heliotropes, 12 sp. | 0 6– 1 0 | — (outdoor), 12 bun. | 4 0– 9 0 |
| Hemerocallis (Day Lily), 12 blooms | 1 0– 1 6 | — (Moss), 12 bun. | 8 0–12 0 |
| Iris, 12 bunches | 6 0–18 0 | — (de Meaux), 12 bunches | 4 0– 6 0 |
| Lapageria, white, 12 blooms | 4 0– 6 0 | Spiræa, 12 bunches | 8 0–12 0 |
| — red, 12 blooms | 1 0– 3 0 | Stephanotis, 12 spr. | 3 0– 4 0 |
| Lilium longiflorum, 12 blooms | 4 0– 6 0 | Tropæolum, 12 bun. | 1 0– 3 0 |
| | | Tuberoses, per dozen | 2 0– 3 0 |

## CORN.

At Mark Lane on Monday Wheat was firmly held, but the day's business was a very moderate one, and no appreciable advance on the rates of the previous Monday could be obtained. Flour was quiet, but fine qualities were rather firmer than of late. Barley was firm, and Beans were held for full value. Maize on the spot was a slow sale. Of St. Petersburg Oats the supplies were large, and prices 6*d.* lower on the week, but heavy Swedish maintained their value.—The tone of the trade on Wednesday was firm, especially for red Wheats, but there was too little doing to trace much effect on values, which remain at fully Monday's currency; flour tending rather in sellers' favour. Barley, Beans, and Peas were quite as dear. Maize was firm on the spot, and rather dearer forward. Oats met more inquiry, and the market ruled quite at late rates.—Average prices of corn for the week ending June 18:—Wheat, 44*s.* 9*d.*; Barley, 30*s.* 5*d.*; Oats, 22*s.* 10*d.* For the corresponding period last year:—Wheat, 45*s.* 4*d.*; Barley, 30*s.* 9*d.*; Oats, 26*s.* 10*d.*

## CATTLE.

At the Metropolitan Market on Monday beasts were firmer, and a fair clearance was effected. Prices ruled 2*d.* per stone higher in some cases, but the advance was not general. Sheep sold in many cases better than on Thursday last, as also did lambs, but of the latter the rates obtained were not up to those of Monday se'nnight. Calves sold slowly. Quotations:—Beasts, 4*s.* 4*d.* to 4*s.* 6*d.*, and 4*s.* 8*d.* to 5*s.* 2*d.*; calves, 4*s.* 8*d.* to 6*s.* 2*d.*; sheep, 5*s.* to 5*s.* 6*d.*, and 5*s.* 10*d.* to 6*s.* 4*d.*; lambs, 7*s.* 4*d.* to 8*s.*—On Thursday there was a fair supply of beasts on offer. The trade was dull at nominal prices. Sheep met with some attention, and were fairly steady. Choice lambs were in request, but inferior were dull and drooping. Calves realised fair prices for choice sorts.

## HAY.

Tuesday's Whitechapel report states that with shorter supplies and brisk demand prices were firmer. Quotations:—Prime Clover, 100*s.* to 128*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 85*s.* to 116*s.*; inferior, 30*s.* to 70*s.*; straw, 30*s.* to 47*s.* per load.—On Thursday there was a moderate supply of fodder on offer, with a fair trade at firm prices.—Cumberland Market quotations:—Superior meadow hay, 112*s.* to 120*s.*; inferior, 65*s.* to 90*s.*; superior Clover, 120*s.* to 130*s.*; inferior, 90*s.* to 100*s.*; and straw, 44*s.* to 50*s.* per load.

## COALS.

The following are the quotations current at market during the week:—Ravensworth West Hartley, 14*s.* 3*d.*; Walls End—Hetton Lyons, 14*s.*; Tees, 15*s.* 3*d.*; Hawthorns, 14*s.* 3*d.*; Lambton, 15*s.* 6*d.*; Wear, 14*s.*; Tunstall, 13*s.* 6*d.* and 14*s.*; Chilton Tees, 14*s.* 6*d.*

**Government Stock.**—On Monday Consols closed at 100⅛ to 100¼ for delivery, and 100⅛ to 100⅜ for the account—both ex div. Tuesday's prices for delivery showed no alteration, but 100 3/16 to 100 5/16 (ex div.) were the final prices for the account. The records for Wednesday and Thursday showed no alteration.


GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,

3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.

LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.

BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.

COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.

YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.

SPHAGNUM MOSS, 8*s.* 6*d.* per sack.

Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH,

17A, Coal Yard, Drury Lane (late of Castle St., Long Acre), W.C.

COCOA-NUT FIBRE REFUSE, all newly made, as supplied to nearly all the Principal Nurserymen and Head Gardeners in England. In 4-bushel bags at 1*s.*; 15 bags, 12*s.*; 30 bags, £1, bags included; or vanload of loose, about 100 bushels, delivered free within 4 miles of London Bridge, 15*s.*; truckload of about 250 bushels, £1 3*s.* (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, by Chubb's Patent Process, as supplied to all the Royal Gardens and principal Nurseries of Europe, useful at all seasons. Invaluable for Potting, Plunging, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c.; Destroys all Slugs and Insects. Sacks, 1*s.* each; 15 Sacks, 12*s.*; 30 Sacks, 20*s.* (all Sacks included); Van-load at Works, 45*s.*; ditto delivered within 5 miles, 10*s.*; Truck-load (equal to about 300 bushels when dry), free on rail, 25*s.* Terms cash with order.

CHUBB, ROUND AND CO.,

Fibre Works, West Ferry Road, Millwall, London, E.

WEEDS, HOW TO DESTROY THEM.—Gentlemen can have the Weeds, Moss, &c., destroyed on their Garden Walks and Carriage Drives, without disturbing the gravel, by using SMITH'S WEED KILLER, a liquid preparation, which when mixed with cold water and applied with an ordinary watering-can, will prove thoroughly destructive to all vegetable growth. Full particulars and price on application to

MARK SMITH, Manufacturing Chemist, Louth, Lincolnshire.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.

Delivered on rail at Blackwater, South-Eastern Railway, or Farnborough, South-Western Railway, by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.

Fresh SPHAGNUM, 10*s.* 6*d.* per bag.

WALKER AND CO., Farnborough Station, Hants.

PEAT.—Superior Black or Brown Fibrous PEAT, for Rhododendrons, Azaleas, Orchids, &c., same as supplied to Messrs. John Waterer & Son, and other noted growers, 6 tons, loaded on trucks at Camberley Station, S.W.R., £4 4*s.*—Address,

Mr. W. TARRY, "Golden Farmer," Farnborough Station.

*HURRY'S*

PLANTAIN and DAISY EXTRACTOR.

*The most Simple Invention before the Public.*

Over 2000 Sold last Season.

Plantain, &c., removed Without Destroying the Lawn.

Carriage Free of the Patentee, 4s. 3d. and 5s. 3d.

A. F. HURRY, Pampesford, Cambridge.

Wholesale Agent: THOS. TILLEY, 12, Walbrook, London, E.C.; BEALE AND CO., Cambridge.

GISHURST COMPOUND.—Used by many of the leading Gardeners, since 1850, against Red-spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 oz. to the gallon of soft water, and of from 4 to 16 oz. as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. In Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*

AMERICAN BLIGHT on APPLE TREES CURED by rubbing a wet hard Painter's brush on Gishurst Compound, and working the lather into the infected part.

GISHURSTINE keeps feet dry, softens hard boots, preserves leather, takes a polish. In boxes, 6*d.* and 1*s.* each.

Wholesale by PRICE'S PATENT CANDLE COMPANY Limited). Retail by Seedsmen and Oilmen.

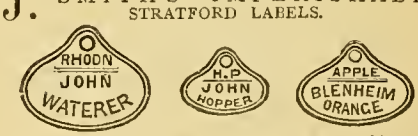
TOBACCO CLOTH and PAPER, Best and Cheapest.—PAPER, 7*d.* per pound; 28 lb. 15*s.* CLOTH, 8*d.* per pound, 28 lb. 18*s.* Best ROLL, 9*d.* per pound, 28 lb. 18*s.* J. DENYN, Manufacturer, 73, Rendlesham Road, Clapton, E.

GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest Prices of

WATSON AND SCULL, 90, Lower Thames St., London, E.C.

Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.




The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

## DOULTON & CO.,
LAMBETH POTTERY, LONDON, S.E.

**VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,**
IN
**IMPERISHABLE TERRA COTTA.**

PLAIN AND ORNAMENTAL PAVINGS; TILES FOR LINING WALLS OF Conservatories.

**ART POTTERY, including JARDINIERES** AND OTHER
**Table Decorations and Vases, Fountains, &c., for the Conservatory, in**
DOULTON WARE, LAMBETH FAIENCE AND THE NEW SILICON WARE.

**Show Rooms, Albert Embankment, S.E.**

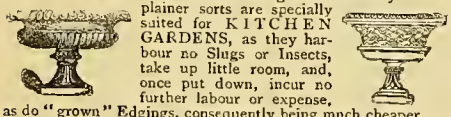
---

**Geometrical Mosaic and Encaustic**
TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
MAW AND CO., Benthall Works, Broseley, Shropshire.

---

**Rosher's Garden Edging Tiles.**

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price Lists free by Post. The Trade supplied.

---

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
F. ROSHER AND CO., Brick and Tile Merchants.
See Addresses above.

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SILVER SAND, fine or coarse grain as desired. Price, by post, per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in any quantities.
F. ROSHER AND CO.—Addresses see above
N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

---

T. MILLINGTON AND CO.,
43, Commercial Street, E.
*PLATE, SHEET, CROWN GLASS.*
SHEET GLASS, IN CASES, FOR CUTTING UP.

| | | | | | |
|---|---|---|---|---|---|
| Common .. | 15-oz., | 300 feet, | 30s. 0d., if 21-oz., 200 feet, | | 30s. 0d. |
| Fourths .. | ,, | ,, | 34s. 6d. | ,, ,, | 34s. 6d. |
| Thirds .. | ,, | ,, | 38s. 6d. | ,, ,, | 38s. 6d. |
| Seconds .. | ,, | 200 feet, | 42s. 0d. | ,, ,, | 48s. 6d. |
| Best .. | ,, | ,, | 51s. 0d. | ,, ,, | 61s. 0d. |

Also 26-oz., 28-oz., and 32-oz. Glass.

SMALL SIZES, IN 16-OZ., PER 100 FEET.

| | | | |
|---|---|---|---|
| 6 × 4 to 7½ × 5½ | .. 8s. 6d., | 9s. 6d., | 10s. 6d., 11s. 6d. |
| 8 × 6 to 10½ × 8½ | .. 9s. 0d., | 10s. 0d., | 11s. 0d., 12s. 0d. |
| 11 × 9 to 14 × 10 | .. 10s. 0d., | 11s. 6d., | 12s. 6d., 13s. 6d. |
| 15 × 10 to 18 × 12 | .. 11s. 0d., | 12s. 0d., | 13s. 0d., 14s. 0d. |
| 20 × 12 to 20 × 18 | .. 11s. 6d., | 12s. 6d., | 13s. 9d., 15s.; |

if 21-oz., 14s., 15s. 6d., 17s. 6d., 19s.
SHEET LEAD, WHITE LEAD, OILS, TURPENTINE, and COLOURS.

---

**BELGIAN GLASS for GREENHOUSES, &c.,**
Can be obtained in all sizes and qualities of
**BETHAM & SON,**
9, LOWER THAMES STREET, LONDON, E.C.
B. & Son have always a large stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. and 21-oz.; and also large sizes in all qualities for cutting up purposes, in 200-ft. and 300-ft. cases.

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**HORTICULTURAL WINDOW GLASS,**
15-oz. and 21-oz., in Boxes containing 200 feet.
**Carriage Paid to any Railway Station in England.**
*Price Lists on application.*
ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

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SHADING MATERIALS.—A large stock of TIFFANIES, CANVAS, NETTING, &c., of the best known makers, at special Prices to the Trade.
CORRY, SOPER, FOWLER AND CO., 18, Finsbury Street, E.C.

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RAFFIA FIBRE.—RUSSIA MATS.—We beg to offer to the Trade Raffia direct from Madagascar, at wholesale price. We can offer Russia Mats to the Trade at very low prices this season.
MARENDAZ AND FISHER,
Russia Mat Warehouse, James Street, Covent Garden, W.C.

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ARCHANGEL and ST. PETERSBURG MATS, RAFFIA, SEED BAGS and SACKS, NETTING and SHADING, &c. Prices on application.

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MARQUEES and TENTS, SECOND-HAND GOVERNMENT TENTS, 45 feet round, complete, 35s., suitable for the Garden, Cricket Clubs, &c.
W. PETERS, 44, Tenter Street South, Goodman's Fields, E.

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FARRER'S GARDEN NETTING, the cheapest and most durable, 1d. per square yard, and in quantities of 250, 500, and 1000 yards, carriage free.
FARRER'S CRICKET and GARDEN TENTS are the prettiest.
FARRER'S RICK COVERS are made from the best Navy Canvas by experienced workmen.
FARRER'S MARQUEES for hire are most handsome and capacious.
TIFFANY, SCRIM CANVAS, and every kind of NETTING.
Several good Second-hand GOVERNMENT TENTS for SALE Cheap. Sample of material free on application.
**JOHN FARRER & SON,**
(21 years Managing Partner with FREDK. EDGINGTON & Co.,) 52, Old Kent Road, and "Ceres" Works, London, S.E.

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**RUSSIA MATS**
For COVERING, TYING and PACKING.
RAFFIA FIBRE for Tying.
TANNED GARDEN NETTING, SCRIM CANVAS and TIFFANY, SEED BAGS and SACKS, TARPAULINS and HORSE CLOTHS. Descriptive Catalogue post-free on application.—JAMES T. ANDERSON, 140, Commercial Street, Shoreditch, London.

---

HAY RICK CLOTHS.

| | | | | | | |
|---|---|---|---|---|---|---|
| To cover 20 loads | 20 feet | by 24 feet, | £2 | 13 | 2 |
| To cover 25 ,, | 24 ,, | by 30 ,, | 3 | 15 | 2 |
| To cover 30 ,, | 30 ,, | by 30 ,, | 4 | 14 | 5 |
| To cover 35 ,, | 30 ,, | by 34 ,, | 5 | 7 | 3 |

All other sizes at proportionate rates. Carriage paid to any railway station in England. Terms, cash. Samples on application.
THOMAS H. HUNKIN, St. Sampson's, Guernsey.

---

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 2d. per yard; 100 yards, 16s. 4 yards wide, 4d. per yard; 50 yards, 16s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.
TIFFANY, 5s. and 6s. per piece of 20 yards.
EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

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G. ELAM AND SON, 43, Wellington Street, Strand, London, W.C.
Manufacturers of ROPES, TWINES, SACKS, TARPAULINGS, HORSE-CLOTHS, COCOA MATS and MATTINGS, SADDLERS and HARNESS MAKERS, ARCHANGEL and PETERSBURG MATS, RAFFIA FIBRE, NETTING, &c. COCOA-NUT FIBRE REFUSE, single sacks, 1s. each; 15 sacks, 12s.; 30 sacks, 20s; truck-load, delivered to any station in London, 25s. Try our HEMP SASH-LINE, made especially for Greenhouses and Heavy Sashes—the best in the Trade.
Chief Office: 25, Commercial Road, E.
Works: Belgrave Street, Stepney, London, E.

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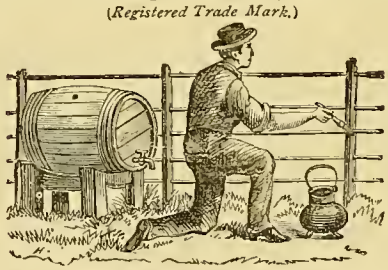
**Oil Paint No Longer Necessary.**
HILL AND SMITH'S BLACK VARNISH
for Preserving Ironwork, Wood, or Stone.
(*Registered Trade Mark.*)



This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.
Sold in Casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.
UNSOLICITED TESTIMONIAL.
"*Piercefield Park, June* 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had Address Varnish to Piercefield Park, Chepstow.—I am, Sirs, yours respectfully, WM. COX."
*CAUTION.*—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.
H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.
Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to
HILL AND SMITH, Brierley Hill Ironworks, Staffordshire; 118, Queen Victoria Street, London, E.C.; and 180, Buchanan Street, Glasgow.

---

PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., 2½d. per lb.—all colours. Improved Zinc White Paint, 4½d. per lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

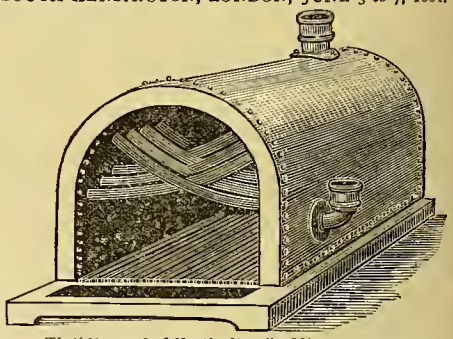
---

*Registered.*

INDIA-RUBBER
**BUTTON-HOLE FLOWER WATER BOTTLE.**
A new invention for keeping flowers fresh in the button-hole, &c. Six free by post for 1s. 7d.
JAMES MACKENZIE, Camden Quay, Cork.
N.B.—Agents Wanted.

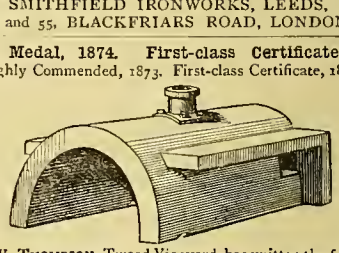
---

## GREEN'S PATENT TUBULAR SADDLE BOILER
**Had the First and Highest Prize, a Silver Medal,** AWARDED TO IT AT THE
**Royal Horticultural Society's Show,**
SOUTH KENSINGTON, LONDON, JUNE 3 to 7, 1881.



*The "Journal of Horticulture" of June 9 says:—*
"HEATING APPARATUS.—A great number of boilers, valves, &c., were exhibited by eight competitors, and considerable interest was manifested in the verdict of the judges, and much discussion was brought to bear on the merits and shortcomings of the different boilers. The apparatus for which the Silver Medal was awarded was a wrought-iron saddle boiler, with a series of intersecting tubes, somewhat in the form of the letter X, but the tubes in ogee form, in the crown of the boiler. Most gardeners who examined the boiler expressed a favourable opinion of it. It is no doubt a quick and powerful boiler without being complex, the latter condition having, no doubt, had weight with the judges."
*The "Garden" of June 11 says:—*
"The premier prize, a Silver Medal, was taken by Messrs. Green & Son for their new patent tubular saddle boiler. It is a modification of their original patent, the boiler being longer and not so high. It is found to be a powerful and efficient boiler, and heats a large quantity of water quickly with a small consumption of fuel."
Descriptive Illustrated Price List free on application to
**THOMAS GREEN AND SON (Limited),**
SMITHFIELD IRONWORKS, LEEDS,
And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

**Silver Medal, 1874. First-class Certificate, 1867.**
Highly Commended, 1873. First-class Certificate, 1875.



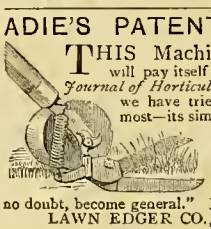
Mr. W. THOMPSON, Tweed Vineyard, has written the following letter to a gentleman who inquired respecting this Boiler:—
"Galashiels, February 4, 1881.
"The Terminal Saddle Boiler is BY FAR the best one we have here, and we have had all sorts. It does its work well, and with less fuel than most Boilers. It is the most economical and efficient Boiler we have, and has not cost sixpence since we fixed it some eight years ago."
Illustrated Prospectus Post-free.
**THOS. JONES, Temple Street, Manchester.**

---

## PUMPS
For HOUSES, YARDS, GARDENS.
For WATER or LIQUID MANURE.
For TANKS or WELLS of any depth.
Supplied with Pipes ready for fixing.
*Catalogues on application.*
**GEORGE INGOLD,**
Pump Manufacturer,
BISHOP STORTFORD.

---

**ADIE'S PATENT LAWN EDGER.**



THIS Machine constantly employed will pay itself in two days. Dr. Hogg, in the *Journal of Horticulture*, says—"This Edge Clipper we have tried, and know not which to admire most—its simplicity or efficiency." Mr. Moore, in the *Florist*—"This new machine does its work rapidly and admirably, the grass being cut with precision, and" he further adds, "the use of it will, we have no doubt, become general." Prices 27s. and 30s.
LAWN EDGER CO., 15, Pall Mall, London, W.

## PIPES and FITTINGS,
FOR HEATING APPARATUSES.
The largest stock in the Kingdom. 4-inch pipes, 1s. 7d. per yard.
**SILVESTER & SAINSBURY,**
Castle Hill Foundry, Newcastle, Staffordshire.

## ECONOMY IN FUEL.
## Toope's Asbetos Covering Company
(LIMITED)

Manufacture an easily fitted and removable Patent Covering for Hot-water Pipes of any diameter, which effectually prevents any loss of heat in pipes passing from the boiler to the Glass-houses, no matter what the distance.

*It will be found invaluable where used.*

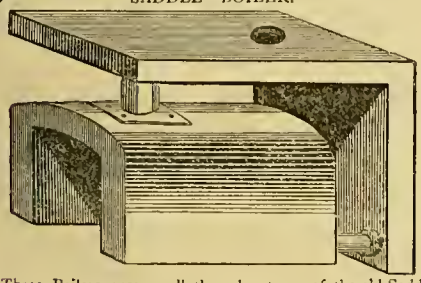
**Price 10d. per superficial foot.**

NUMEROUS TESTIMONIALS.

Send circumference of pipe, and length required, to the Factory,

1, BEN JONSON'S ROAD, STEPNEY, LONDON, E.

## JONES'S PATENT "DOUBLE L"
SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz, the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

| Sizes. | | | To heat of 4-in. Pipe. | Price. |
|---|---|---|---|---|
| High. | Wide. | Long. | Feet. | £ s. d. |
| 20 in. | 18 in. | 18 in. | 300 | 7 0 0 |
| 20 ,, | 18 ,, | 24 ,, | 400 | 8 0 0 |
| 20 ,, | 18 ,, | 30 ,, | 500 | 9 0 0 |
| 24 ,, | 24 ,, | 24 ,, | 700 | 12 0 0 |
| 24 ,, | 24 ,, | 30 ,, | 850 | 14 0 0 |
| 24 ,, | 24 ,, | 36 ,, | 1000 | 16 0 0 |
| 24 ,, | 24 ,, | 48 ,, | 1400 | 20 0 0 |
| 28 ,, | 28 ,, | 60 ,, | 1800 | 25 0 0 |

Larger sizes if required.

*From* Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

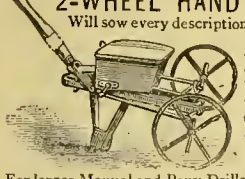
"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

## 2-WHEEL HAND GAPPING DRILLS.
Will sow every description of Farm and Garden Seeds.



There is no spring and slide to get out of order and damage the seed, being worked by a brush. The rows can also be put in at equal distances without a line.

Price, with 2 wheels, 20s. each.
,, with 1 wheel, 16s. each.
,, to sow 2 rows, 34s. each.

For larger Manual and Pony Drills, see Illustrated List free from F. BIRD & CO., 11, Great Castle St., Regent St., London, W.

## THOS. W. ROBINSON,
*DENNIS PARK IRONWORKS, STOURBRIDGE,*
MANUFACTURER OF
## HOT-WATER PIPES,
IMPROVED "EXPANSION JOINT" PIPES,
**BOILERS,**
SPOUTING, PUMPS, TANKS, WROUGHT-IRON TUBING,
And every description of Ironwork for Horticultural and Building Purposes.

**SOCKET HOT-WATER PIPES.**

| | s. d. | s. d. | s. d. |
|---|---|---|---|
| Pipes (6 ft. long)—2-in., | 1 6 .. | 3-in., 2 8 .. | 4-in., 3 4 each. |
| ,, (9 ft. long)— ,, | — .. | ,, 3 9 .. | ,, 4 6 ,, |
| Elbows (No. 12)— ,, | 1 1 .. | ,, 1 8 .. | ,, 2 0 ,, |
| Tees (No. 33)— ,, | 1 5 .. | ,, 2 4 .. | ,, 3 3 ,, |
| Syphons (No. 23)— ,, | 1 3 .. | ,, 2 0 .. | ,, 3 0 ,, |

**"Expansion Joint" Hot-water Pipes.**

The "Expansion Joint."

The Best and Quickest Made.

*This Joint, being easily removed, is specially adapted for Tenants.*

| | s. d. | s. d. | s. d. |
|---|---|---|---|
| Pipes (6 ft. long)—2-in., | 1 5 .. | 3-in., 2 3 .. | 4-in., 2 11 each. |
| ,, (9 ft. long)— ,, | — .. | ,, 3 4 .. | ,, 4 3 ,, |
| Elbows (No. 3)— ,, | 0 8 .. | ,, 0 10 .. | ,, 1 0 ,, |
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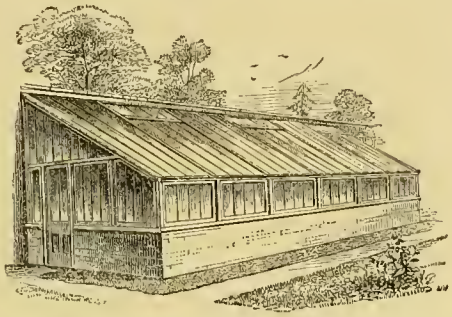

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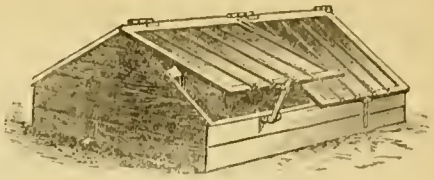

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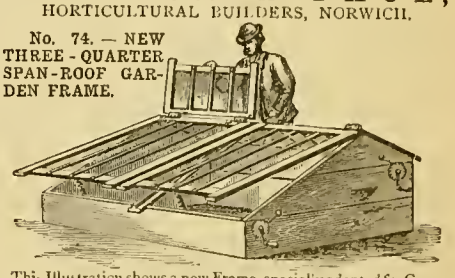

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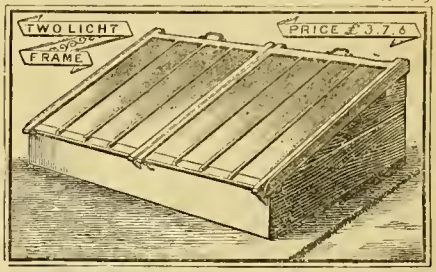


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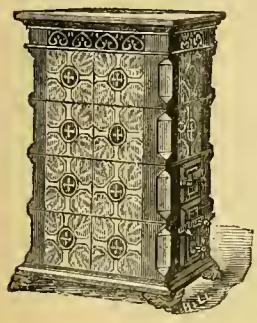

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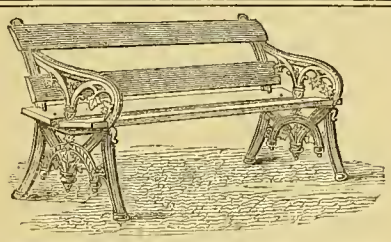

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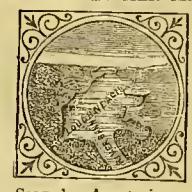

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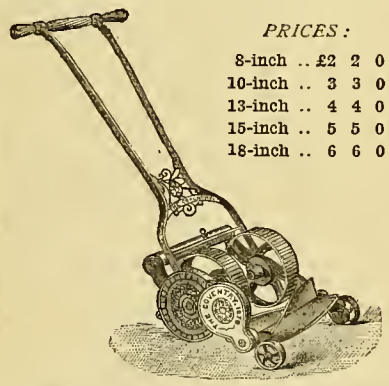

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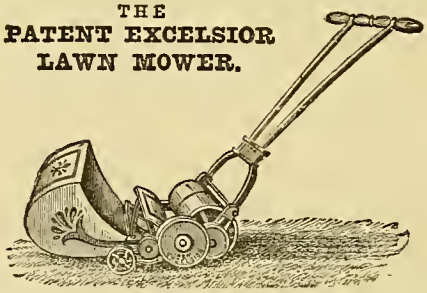

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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, June 25, 1881.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.